Warren County, Georgia
Pre-Disaster Hazard Mitigation Plan Update
Original Approval: 08/16/2007
Update Approval: 10/07/2013
2nd Update Approval: 00/00/2018

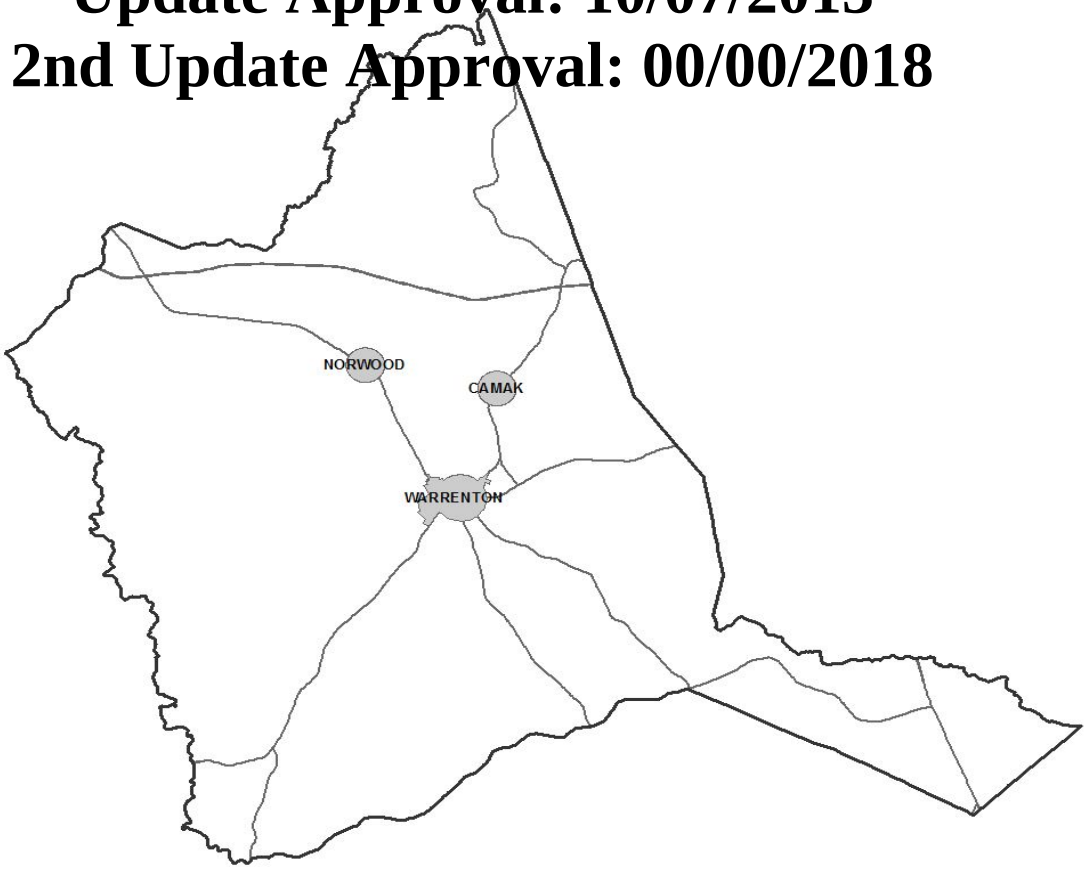

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TABLE OF CONTENTS

CHAPTER I. 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

Chapter I. Section		Updates to Section
I.	Purpose and need of the plan, authority & statement of problem	Updated text of this section.
II.	Local methodology, brief description of plan update process, Participants in update process	Updated the participants, planning process and how data collection was performed
III.	Description of how each section of the original plan was reviewed and analyzed and whether it was revised	Since there have been numerous changes to the GEMA-PDM planning template since the 2013 approval all sections of the original plan were analyzed and revised.
IV.	Organization of the plan	Organized updated by GEMA local planning template Local Hazard Mitigation Plan Update Template 5-23-12 and includes a timeline.
V.	Local Hazard, Risk, and Vulnerability (HRV) summary, local mitigation goals and objectives	Added new information to summary, new purpose for plan.
VI.	Multi-Jurisdictional special considerations (HRV, goals, special needs)	Added new information regarding multijurisdictional concerns.
VII.	Adoption, implementation, monitoring and evaluation	Evaluated the chapter, added additional text clearly delineating the task for implementation, and monitoring. Adopted after GEMA and FEMA reviewed and approved the update.
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 Warren County 2018 Plan Update is a review and improvement of our Multi-Hazard Pre-Disaster Mitigation Plan Update approved on October 7, 2013. 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 lessen the impact of hazard events.

The 2018 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 2018 update covers all of Warren County to include the Town of Camak and the Cities of Norwood and Warrenton. 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 2013 plan update.

The plan also contains the following information on:

- The vision of mitigation in our community.
- The profile of Warren 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.
- Warren 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 Warren 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 Warren County's current policies, goals and regulations that pertain to hazard mitigation.
- Documentation of the planning process.
- Update hazard events that occurred since 2013;
- Update critical facilities that have been added since 2013;
- To document current mitigation strategies that have been implemented since 2013; and
- Examine and update mitigation strategy goals, objectives and action steps.

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

Continued mitigation planning is imperative to lessen the impacts of disasters throughout the county. 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. It is the objective that implementation of this plan will result in a reduction in loss of life and property, thus allowing the county to prosper with minimal disruption of services.

SECTION II. LOCAL METHODOLOGY, PLAN UPDATE PROCESS AND PARTICIPANTS

The Warren County Board of Commissioners contracted with the Central Savannah River Area Regional Commission (RC) to assist in the update to the 2013 plan update. The RC has assisted 11 counties in the completion and update of their Pre-Disaster Mitigation Plans. The RC is currently assisting 10 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 EMA Director, Tommy Wolfe, assembled the Hazard Mitigation Planning Committee. Table 1.2 identifies the 2013 members:

Table 1.2

Name	Agency	Jurisdiction
Anita Foster	Nurse Manager	Tri-County Medical
Anne L. Johnson	Clerk	Town of Camak
Mike Shields	Owner / Operator	Georgia Pacific
Jamie Sikes	Mayor	Town of Camak
Carol J. Carey	Superintendent	Warren County School System
Danny Williams	Street Superintendent	City of Warrenton
Keith Murphy	Forester	Ga. Forestry Commission
David Harper	Mayor	City of Norwood
Gwanda Murray	Director	Warren County Senior Center
Brandon Davis	Chief Ranger	Ga. Forestry Commission
Joe Peebles	Sheriff	Warren County
John Graham	Commission Chair	Warren County
John Kent	Fire Chief	City of Warrenton
Chette Kendricks	Director of Nursing	Warrenton Health & Rehab
Karl Haywood	Publisher/ Owner	The Warrenton Clipper
Larry Stewart	Road Supervisor	Warren County
Mary Ann Mosely	Clerk	City of Warrenton
Michael Thigpen	Code Enforcement	Warren County
Keith McIntosh	Deputy EMA Director	Warren County
Pamela Lester	Clerk	Warren County BOC
Pamela McCord	Clerk	City of Norwood
Pat Rogers	Water and Sewer Super.	Warrenton Water Dept.
Patricia Walker	Director	Warren County 911
Paul Lowe	Coroner	Warren County
Randy Morris	Superintendent	Warren County BOE
Ron Sellers	Police Chief	City of Warrenton
Mary Beth Lukich	Director	Warren County DFCS
Tiffany Lott	Dispatch Supervisor	Warren County Dispatch E 911

Tommy Wolfe	Director /Fire Chief	Warren County EMA-EMS-FIRE
James Yelton		Warren County EMA
Tony D. Mimbs	Mayor	City of Warrenton
Virginia Bradshaw	Director	Warren County Health Dept.

The 2013 planning committee members still employed by their respective jurisdictions received an invitation to participate in the update. The 2018 committee are identified in Table 1.3 by their respective organizations and political subdivisions.

Table 1.3

Name	Agency	Jurisdiction
Anita Foster	Nurse Manager	Tri-County Medical
Anne L. Johnson	Clerk	Town of Camak
Challender Christopher	Warren County EMA-EMS-FIRE	Warren County
Jamie Sikes	Mayor	Town of Camak
Carol J. Carey	Superintendent	Warren County School System
Danny Williams	Street Superintendent	City of Warrenton
Keith Murphy	Forester	Ga. Forestry Commission
David Harper	Mayor	City of Norwood
Gwanda Murray	Director	Warren County Senior Center
Brandon Davis	Chief Ranger	Ga. Forestry Commission
Joe Peebles	Sheriff	Warren County
John Graham	Commission Chair	Warren County
John Kent	Fire Chief	City of Warrenton
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Karl Haywood	Publisher/ Owner	The Warrenton Clipper
Larry Stewart	Road Supervisor	Warren County
Mary Ann Mosely	Clerk	City of Warrenton
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Keith McIntosh	Deputy EMA Director	Warren County
Pamela McCord	Clerk	City of Norwood
Pat Rogers	Water and Sewer Super.	Warrenton Water Dept.
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Paul Lowe	Coroner	Warren County
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Ron Sellers	Police Chief	City of Warrenton
Mary Beth Lukich	Director	Warren County DFCS
Tiffany Lott	Dispatch Supervisor	Warren County Dispatch E 911
Tommy Wolfe	Director /Fire Chief	Warren County EMA-EMS-FIRE
Meloni Wall	Warren County EMS	Warren County
Virginia Bradshaw	Director	Warren County Health Dept.

The 2018 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:

- Warren County Board of Education was responsible for providing structural replacement and content values for all schools as well as square footage and occupancy limits.
- Warrenton 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.
- Warren County Sheriff's Office provided staff support to the PDM planning effort.
- Warren 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.
- Officials and Staff from Warren County, Camak, Norwood, and Warrenton provided information relative to their jurisdiction and provided replacement value estimates for their critical facilities.
- Georgia Forestry Commission provided data on wildfire events and assisted with the formulation of mitigation measures.
- Warren County Chamber of Commerce assisted in identifying major businesses.
- Warren County Code Enforcement Officer provided information about county government buildings including their respective replacement and content values and square footages.
- Warren 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 Warren 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 Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI), 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 1.4 provides a list of existing planning documents used during the update.

Table 1.4

Existing planning mechanisms	Reviewed? (Yes/No)	Method of use in Hazard Mitigation Plan
Warren 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;
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	The current CWPP was reviewed and a copy can be found in Appendix C. The CWPP is being updated and any new information will be incorporated as needed during the annual review.
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 seven meetings over a 17-month period to guide the development of the plan. Individual jurisdictions and/or agencies were contacted, as information was needed. The committee was responsible for developing the mission statement, as well as the goals, objectives, and action steps identified in the plan. The committee researched previous hazard information in the areas of 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 1.5 provides the dates and synopsis of committee meetings. All meetings were open to the public and meeting notices posted at all governmental offices. Of the seven meetings, three were advertised in *The Warrenton Clipper*, the County's legal organ. This is the most efficient means

to disseminate information to residents and organizations located in the county. In order to meet the requirement to afford an opportunity for neighboring communities, local and regional agencies, businesses, academia and other private and non-profit interests to be involved in the planning process, invitations were extended by email. Invitations were extended to the following counties: Burke, Columbia, Glascock, Hancock, Jefferson, Jenkins, Lincoln, McDuffie, Richmond, Taliaferro, Washington, and Wilkes including all municipalities located within the counties. It is noted that no public comments or feedback was provided by the public.
Copies of correspondence, emails and advertisements are in Appendix E.

Table 1.5

Meeting Date	Purpose of Meeting
August 30, 2016	Advertisement ran in *The Warrenton Clipper* for public meeting on August 19, 2016. This was the kick-off meeting Laura Radford, GEMA provided a presentation about the purpose need of the plan along with changes to the process since the 2013 Update.
August 24, 2017	This meeting was to confirm all date gathered by email and phone to date was correct for critical facilities and to review current mitigation strategies and action steps and to review the STAPLEE.
September 5, 2017	All emergency personnel meet to review mitigation strategies and review situations resulting from hazard events over the last 5 years.
December 11, 2017	To review mitigation strategies completed and add new ones.
December 19, 2017	All emergency personnel meet to discuss new mitigation strategies and review HAZ-US.
February 28, 2018	This meeting was to ensure the committee and public had a final opportunity to provide input before submission to GEMA for review. An advertisement ran in *The Warrenton Clipper* advertising the public meeting on February 16, 2018 for public input before submission of plan.
TBD *(will add date once approved by FEMA)*	Advertisement ran in *The Warrenton Clipper* 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 for 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 2013 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 Warren County, Camak, Norwood, and Warrenton.

SECTION IV. ORGANIZATION OF THE PLAN

The estimated time to complete the plan update was approximately 20 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 Warren 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 2013 plan update. These goals and objectives are as follow:

- To actively involve and gain support from Camak, Norwood, Warrenton and unincorporated Warren 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 Warren County, Camak, Norwood, and Warrenton. Monitor, evaluate, and update the progress of the plan as needed.
- To form partnerships among local, state, and federal agencies to make Warren 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 Warren County, Camak, Norwood, and Warrenton.

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 Warren County, Camak, Norwood, and Warrenton 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 2013 committee identified six major hazards that have the potential to affect Warren County: flooding, dam failure, drought, wildfire, severe weather (tornados, tropical storms, thunderstorms and lightning) and winter storms. The update committee reviewed current hazard data and added hail to the already identified hazard. Appendix A provides an updated comprehensive table for each hazard event.

Profiling Hazard Events: The committee analyzed the causes and characteristics of each hazard, and its effect on Warren 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 A.

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 Warren County. Steps were ranked as high priority, medium priority, or low priority. Past occurrences of disasters and historical trend data aided committee members in assigning priorities. A copy of the STAPLEE is located in Appendix D.

SECTION VI. MULTI-JURISDICTIONAL SPECIAL CONSIDERATIONS

Warren County, Camak, Norwood, and Warrenton provided active participants throughout the planning process and identified mitigation goals, objectives and action items specific to their

jurisdiction. All governing bodies formally adopted the Multi-Hazard Pre-Disaster Mitigation Plan.

Camak, Norwood, and Warrenton were notified in June of 2015 of the requirement concerning the update to the 2013 plan. Representatives from Warren County, Camak, Norwood, and Warrenton 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. Warren County, Camak, Norwood, and Warrenton 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 1.6

Jurisdiction	Adoption Date
Warren County	*(will add after FEMA Approves)*
Town of Camak	*(will add after FEMA Approves)*
City of Norwood	*(will add after FEMA Approves)*
City of Warrenton	*(will add after FEMA Approves)*

The plan was submitted to GEMA for review and then to FEMA for approval. Their respective governing bodies have formally adopted the 2018 update after GEMA and FEMA approval. 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 Warren 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 Warren 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.
- Collaborate with businesses in effort to communicate with customers about the community hazards and possible solutions.

Individual citizens need to be aware of the hazards they face and educated on how to protect themselves and their property. They must be shown mitigation is an important part of reducing loss of life and property in their community. The publics support is critical to the success of any mitigation effort. The Warren County Plan supports the following FEMA recommendations regarding individual citizens:

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

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

SECTION VIII. COMMUNITY DATA

Political Boundaries - Warren County

Warren County

GA Department of Community Affairs Region 7

Georgia

History: Warren County, Georgia's sixteenth county, was created on December 19, 1793, from portions of Burke, Columbia, Richmond and Wilkes Counties. Warren County is a rural county covering 287 square miles. Warren County is one of 13 counties that comprise the Central Savannah River Area (CSRA). There are three incorporated municipality in Warren County; Camak, Norwood, and Warrenton.

Government: Warren County operates under a commission-based system of government in which three commissioners are elected to four-year terms. Other county officials are the Clerk of Courts; Coroner; Emergency Communications Director; Emergency Services Director; Magistrate Judge; Superior Court Judge; Probate Judge; Sheriff; Surveyor; Tax Commissioner; Planning and Code Enforcement Staff; and Public Works Director.

Warrenton is the County seat and operates under a Mayor and City Council-based system of government with 5 elected council members. Other officials charged with presiding over activities within the City are the City Clerk, City Attorney, Personnel Director, Police Chief, Fire Chief, City Engineer, Public Works Director, Sanitation Superintendent, Municipal Court Clerk, Downtown Manager, and Parks and Recreation Director. City Hall houses the administration and the police and fire departments.

Camak and Norwood operate under similar Mayor and City Council based systems of government. Camak has a Mayor Pro-Tem and 4 council members in addition to the Mayor; Norwood has 6 council members working with their mayor. Other officials in Camak are the City Clerk, City Attorney, and Water Superintendent. Norwood employs a City Clerk, City Attorney, and Water and Wastewater Superintendents.

Demographics: Presently, Warren County has a population of 5,834 persons. The two tables below provide a comparison of the jurisdictions and a historical prospective of the population trends within the county.

Table 1.7

Category	Warren County	Camak	Norwood	Warrenton
Population	5,834	138	239	1,937
Number of Households	2,315	63	103	730
Average Household Size	2.48	2.19	2.32	2.53
Race - White	37.4%	48.6%	32.6%	27.2%
Race - Black	62.1%	50%	66.9%	70.6%
Race - Hispanic	0.9%	1.4%	0.8%	1.3%
Race - Other	0.5%	1.4%	0.4%	1.6%
Median HH Income	$31,875	$45,313	$25,000	$18,019
Per Capita Income	$15,987	$13,594	$11,597	$12,778

Source: 2010 -US Census Bureau, 2016 American Community Survey

Table 1.8

Community	Population				Growth (%)		
	1980	**1990**	**2000**	**2010**	**1980-1990**	**1990-2000**	**2000-2010**
Warren County	6,583	6,078	6,336	5,834	-7.7%	4.2%	-7.9%
Camak	283	220	165	138	-22.3%	-25.0%	-16.4%
Norwood	306	238	299	239	-22.2%	25.6%	-20.0%
Warrenton	2,172	2,195	2,013	1,937	1.1%	-8.3%	-3.8%

Source: US Census Bureau

Economy: In the year 2016, the labor force for Warren County was 2,701 and 2,513 were employed, giving the County an unemployment rate of 7%. The average weekly wage for employment sectors in Warren County was $709. The county's per capita personal income was $32,447.

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. The table below provides a list of jobs, number of establishments and jobs along with average weekly wages per job for 2016 in Warren County.

Table1.9

Annual Industry Distribution of Jobs and Average Wage in 2017 (NAICS)	Establishments	Jobs	Weekly Average Wage Per Job
Total Covered Employment and Wages	**89**	**1,494**	**709**
Total Private Sector	**72**	**1,221**	**750**
Total Government	**17**	**273**	**524**
Agriculture, forestry, fishing, hunting	2	*	*
Mining, Quarrying, and Oil and Gas Extraction	3	42	1,153
Construction	5	14	566
Manufacturing	4	416	801
Wholesale trade	6	379	833

Annual Industry Distribution of Jobs and Average Wage in 2017 (NAICS)	Establishments	Jobs	Weekly Average Wage Per Job
Retail trade	15	96	466
Transportation, warehousing	5	6	786
Utilities	0	0	0
Information	1	*	*
Finance and Insurance	4	*	*
Real Estate, rental, leasing	3	6	737
Professional, Scientific, and Technical services	3	10	693
Mgmt. of companies, enterprises	0	0	0
Administrative and support and waste management services	3	*	*
Educational services	1	*	*
Health care, social assistance	7	128	552
Arts, entertainment, recreation	0	0	0
Accommodation and food services	2	*	*
Other services, except public administration	6	13	437
Unclassified-Industry not assigned	2	*	*

Source: 2017 Georgia Department of Labor ** Industry group does not meet criteria for disclosure*

Climate: According to the National Weather Service, Central Georgia where Warren County is located experiences all four seasons. Warren County, GA, gets 47.5 inches of rain per year. The US average is 37. Snowfall is 0.7 inches. The average US city gets 25 inches of snow per year. The number of days with any measurable precipitation is 91. On average, there are 218 sunny days per year. The July high is around 91 degrees. The January low is 35. Our comfort index, which is based on humidity during the hot months, is a 30 out of 100, where higher is more comfortable. The US average on the comfort index is 44.

Physical Features: Warren County covers an area of 287 square miles in East Central Georgia. The county is comprised of 183,680 acres with 90 percent dedicated to agricultural and forestry. Small isolated wetlands are scattered throughout unincorporated Warren County. Ninety-five percent of the land in Warren County has slopes between two and ten percent with five percent steeper slopes of ten to twenty-five percent and slopes of less than two percent compromising only one percent of the County total land area. The Ogeechee River is an important resource for the County

Warren County is located at the edge of two geological regions providing a mixture of features and landscapes. The southern portion of Warren County is bisected by the Fall Line, a geological boundary following the Appalachian Mountain range from Alabama to New York. The Southern Piedmont Region is in the northern part of the County, Carolina and Georgia Sand Hills in the central part of the County, and Southern Coastal Plain in the southern part. Below is a brief description of these land types:

Southern Piedmont - Characterized by steep to gently rolling thin and well drained red soil with sandy loam surface layers over sandy clay to clay subsoil. This area has fair to good suitability for building foundations and fair to poor suitability for septic tanks.

Carolina and Georgia Sand Hills - Consists of a belt of gently sloping to steep, well drained soils originally derived from marine sands, loams, and clays. The area is largely covered with sparse forest of scrub oaks and pines, and has poor to good suitability for residential development and commercial-industry uses.

Southern Coastal Plain - Characterized by gently sloping well-drained sandy loam to sandy soils over friable and sandy clay loam to clay subsoils that are sticky when wet. This area has fair to good suitability for residential development and commercial industry uses. A map of the soil types, wetlands and flood plains are located in Appendix A.

A survey of Warren 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_warrenGA1981/CMW.pdf. A map of the soil types, wetlands and flood plains are located in Appendix A.

Transportation

Vehicle Traffic: There are roughly 421 miles of roads in the County network. This mileage includes 92 miles of state highways, 301.49 miles of county roads, 27.57 miles of city streets (Camak, Norwood, and Warrenton). State highways 12, 80, 223, 128, and 171 are major transportation routes along with Interstate 20. Currently Warren County has no mass transit system.

Table 1.10

Mileage by Route and Road System Report 445 for 2016			
	Total Road Mileage (2016)	Lane Mileage	Vehicle Miles Traveled (VMT)
State Route	92.2	217	490,461
County Road	301.49	603	59,209
City Street	27.57	55	10,650
Total	**421.26**	**875**	**560,320**

Source: Georgia Department of Transportation, Office of Transportation Data, 2016 "445 Series Reports."

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: The rail companies provide crucial cargo transport for industries in Warren County. Many items and materials are too bulky or heavy to be shipped by truck and are moved by rail. Both CSX Railroad (from Augusta through Camak) and Norfolk Southern (from Savannah

through Warrenton) serve Warren County. Currently Warren County is not served by passenger rail.

Air Service: Warren County does not have any local aviation facilities. The nearest local airport is 20 miles away in McDuffie County. The nearest commercial air service is in Augusta, 50 miles away offering direct flights to Columbia, South Carolina and Charlotte, North Carolina. Atlanta-Hartsfield International Airport, located approximately 105 miles from Warrenton, provides major commercial airline service.

Utilities

Electricity: Three utility companies provide service to customers in Warren County and its municipalities. Georgia Power provides service to all jurisdictions while Jefferson Electric Membership Corporation and Washington Electric Membership Corporation provide service to the unincorporated area.

As part of Georgia's modern integrated electrical transmission system, Warren County has excellent ability to supply industrial electricity demands. Coal accounts for 84% of fuel used by the state's power generating plants compared to 47% for the U.S. This assures long-term continuity. If demand exceeds 900kw, any supplier can step in and offer service.

Natural gas: Customers in Warren County using natural gas are served by Atlanta Gas Light Company, Scana and Wilhoit Gas Company. Natural gas is available in industrial quantities on both a firm and an interruptible basis.

Water: Warren County does not operate a public water system. Most Warren County residents rely on private wells for their water supply while some areas of the unincorporated portions of Warren County are served by municipal water systems or by the Thomson-McDuffie County Water Authority.

The City of Warrenton has an intake station at Paul Marshall Lake and draws raw water and produces potable water through a process of coagulation, filtration and disinfection. The current plant production capacity is 750,000 gallons per day with a current production rate of 350,000 gallons per day. The City of Camak purchases water from Warrenton. The City of Norwood relies on its surface water intake from two deep-water wells, which produce, on average, 24,000 gallons per day.

Sewer: Warren County residents rely on individual septic systems, as the County does not operate a public sewerage system in the unincorporated areas. The City of Camak also relies on septic tanks for sewage disposal and does not provide public sewerage system for the residents.

The City of Warrenton’s sewer system relies on two oxidation ponds located south of highway 16 and north of Highway 278. Both primary treatment facilities encompass 1.5 acres and have the capacity to treat 500,000 gallons per day. The system was developed in 1928 and has a useful life of 100 years. The City serves 900 customers with a daily demand of 250,000 gallons of sewage.

The City of Norwood operates a public sewerage system established in 1992 and a useful life of 30 years. The system serves 116 customers with an estimated flow of 17,000 to 25,000 gallons of waste per day and has the capacity to treat 50,000 gallons of sewerage per day.

Solid Waste: After the Warren County landfill was closed in 1994 and the D&H Rail Transfer Station was closed in 1997, Warren County entered into an agreement with McDuffie County so that all waste generated within the County is transported to the McDuffie County transfer station.

Green box collection is used in the unincorporated areas for solid waste disposal. Warren County contracts with a private company to collect waste from the green boxes and transport the solid waste to the McDuffie County transfer station. Camak and Norwood contracts with the County for waste disposal. Waste is collected and taken to the McDuffie County transfer station.

Warrenton provides solid waste collection through a private waste hauler. Household waste is collected once a week for residents. Solid waste in Warrenton is transported to the McDuffie County transfer station. Warrenton also offers yard waste pickup, which is transported to the City Inert Landfill.

Communications

Local telephone service is provided by AT&T Telephone Company with all the various options for long distance available as the customer chooses. Cable for television and high-speed internet are available from Comcast in the city limits and in some of the County.

Local print media consists of *The Warrenton Clipper (*which serves as the legal organ of Warren County) and *The Augusta Chronicle*. Warren County is served by 11 FM radio stations and 9 AM radio stations. All metro Augusta television stations broadcast in Warren County. These are WRDW, WJBF, WAGT, and WFXG.

Fire and Emergency Services

Response: The Warren County Emergency Operations Center (EOC) houses an enhanced E-911 services. There are nine communications officers, or dispatchers, who work in the E-911 dispatch center. The County is currently upgrading their system to allow the precise location of 911 calls from wireless phones. The wireless E-911 program is an important part of the County's program to apply modern communications technology to public safety.

Fire and Rescue: Warren County Fire and Rescue services also operate from the EOC where there are six bays housing fire trucks and ambulances. There are seven fire stations located throughout the County: one in each of the Cities, and four located throughout the unincorporated areas of Warren County. There are 32 volunteer fire fighters countywide equipped with three Class-A pumpers, one tanker and three fire knockers. The Insurance Services Organization (ISO) ratings for Warren County fire services improved upon the 2008 inspection. The ISO rating for Warren County is 6/9, for Camak is 5/9, and for Norwood is 5/9. These ratings are indicative of the limited water resources in the County rather than the adequacy of the fire services. The City of Warrenton operates a fire department within the city limits, staffed with 16 volunteers and one

Class-A pumpers. The city's ISO rating is 6. All fire stations are in operation 24 hours a day. Fire protection response times across the County average between 12 and 15 minutes.

Law Enforcement: Three law enforcement entities serve Warren County: the Warren County Sheriff's Office, the Warrenton Police Department, and the Georgia State Patrol. The Warren County Sheriff's Office provides police protection for unincorporated Warren County along with Camak and Norwood. The Warrenton Police Department provides services within the city limits.

Warren County residents depend on the Warren County Sheriff's Office led by the elected sheriff and employing seven deputies equipped with eight law enforcement vehicles, including the serving of arrest warrants and civil papers. The Sheriff's Office is located in the EOC in Warrenton, which serves as the base of operation, records bureau, administration, and one holding cell. The Warren County EOC does not have a jail. The County contracts with McDuffie Counties for jail facility space when necessary.

Warrenton city residents are served by a separate Police Department, which is staffed by a Chief of Police, one sergeant, one senior patrol officer and four patrol officers. The Police Department is located in City Hall and is equipped with five police cruisers and has no detention area.

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

The committee identified all-natural hazards that could potentially affect Warren County, Camak, Norwood, and Warrenton 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 Warren County. Task B then narrowed the list to only hazards most likely to impact the county by reviewing hazard websites to determine if Warren 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 Warren 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 five natural hazards pose a direct, measurable threat: flooding, drought, wildfire, severe weather (to include tornados, tropical storms, thunderstorm winds, lightning and hail), and winter storms. The committee profiled each of these hazards using FEMA worksheet #2 and #3a, which included obtaining a base map and recording hazard-event profile information. Of the five hazards mentioned, the entire County is exposed to four: severe weather, winter storms, wildfire and drought while flooding is isolated to select areas. Each of these potential hazards is addressed with relevant supporting data.

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

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. All four jurisdictions comply with NFIP requirements and intend to remain in compliance by enforcing flood plain ordinances that prohibit or severely limit development in floodplains. The following table provides information about each jurisdictions participation level.

Jurisdication	Init FHBM Identified	Init. FIRM Identified	Curr. Eff. Map Date	Reg-Emer Date	Sanction Date
Warren County	N/A	07/22/2010	07/22/2010	07/22/2010	N/A
Camak	N/A	07/22/2010	07/22/2010	07/22/2010	N/A
Norwood	N/A	07/22/2010	07/22/2010	07/22/2010	N/A
Warrenton	04/04/1975	07/23/1982	07/22/2010	07/23/1982	N/A

Source: FEMA Community Status Book

B. Hazard Profile: Severe flooding within Warren County is a relatively infrequent event. The county has 23 rivers/streams and 22 reservoirs. Ninety-five percent of the land in Warren County has slopes between two and ten percent. Steeper slopes of 10 to 25 twenty-five percent compromise only five percent of the county and are located on the hillsides of the piedmont section to the north. Slopes of less than two percent compromise one percent of the county total land area and are located in the floodplain. The committee examined historical data from the NCEI, USGS, SHELDUS™, past newspaper articles and conducted interviews on the effects of past flooding events. In the last 67 years, three flooding events were recorded. The table below is a result of information gathered from interviews, newspaper articles, and the NCEI and SHELDUS™ databases.

Date	Fatality	Inj	PrD	CrD	Event Narrative
October 5, 2005	0	0	0	0	a result of Tammy followed a period of nearly 40 days during which most of the region had received less than 0.10 inch of rain causing flash flooding throughout county
June 06, 2013	0	0	3K	0.00K	Brier creek around 5 miles east of Warrenton overflowed a portion of East Warrenton Road with up to one foot of water.
July 07, 2013	0	0	10K	0K	Washed out culverts or damaged several roads Norwood

Source: NCEI, SHELDUS and The Warrenton Clipper

Most flood events resulted in flash flooding which washed out several roads and wooden bridges. The flooding event in 2005 due to Tropical Storm Tammy, affected all four jurisdictions equally while the June 2013 was in the unincorporated areas of the County and July 2013 was isolated to Norwood. Data pinpointing the depth of floodwaters and exact locations of all washed out roads and bridges is limited. The table above provides all data that is 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, Camak, Norwood and Warrenton 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, Camak, Norwood and Warrenton.

The magnitude of a major flood event could have approximately 35 percent of the county experiencing some damage from flooding. While data was collected looking at 67 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:

- 15 percent for all of Warren County;
- 10 percent for the unincorporated areas of Warren County;
- 5 percent for Camak;
- 10 percent for Norwood; and
- 5 percent for Warrenton

(*See Appendix A, Section I for Worksheet 3A, Historical Event Tables, Critical Facilities Reports, and Flood Maps and Appendix D for Hazard Frequency Tables).*

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 81 structures/properties valued at more than $1.9 million and a population of 149 are located in known flood prone areas within the County.

All 81 structures/properties have been identified by federal floodplain maps and/or parcel maps and not all structures/properties will experience damage from floods. The extent of each flood varies according to the amount of rainfall in a given area. If a complete loss of the 81 structures/properties located would result in approximately $1.9 million in damages assuming 100 percent loss, a 75 percent loss would represent approximately $ 1.4 million, a 50 percent loss would represent approximately $989,218, and a 25 percent loss would represent approximately $494,609. The table below shows the hazard scores assigned by the GMIS to critical facilities with replacement values content values and daily occupancy.

Jurisdiction	Flood Hazard Score	# of Critical Facilities	Replacement Value $	Content Value $	Occupancy	
					Day	Night
Warren County	1	8	10,031,000	2,995,000	1,073	38
Warren County	0	7	7,382,500	857,500	624	123
Camak	1	1	800,000	7,500	2	0
Camak	0	3	600,000	415,000	1	0
Norwood	1	4	2,021,663	919,750	3	0
Norwood	0	5	245,713	218,500	0	0
Warrenton	1	1	11,000,000	50,000	4	1
Warrenton	0	7	3,790,000	680,000	348	2
Total			35,870,876	6,143,250	2,055	164

The GMIS has no repetitive flooding NFIP properties and no NFIP mitigated property. There are no estimates for future structures since future development will be limited in known floodplains. *(See Appendix A, Section I 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 Warren 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 Warren County flood risk assessment analyzed at risk structures in the SFHA. The results of the Riverine 1% Flood Scenario revealed that buildings in Warren 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 4 residential buildings damaged at a loss of $225,939.
- **Essential Facility Losses:** The analysis no essential facilities subject to damage.
- **Flood Shelter Requirements:** The scenario estimates 24 households are subject to displacement. Displaced households represent 71 individuals, of which one may require short-term publicly provided shelter.
- **Flood Debris:** Hazus-MH estimates that an approximate total of 763 tons of debris might be generated by the flood. The model breaks debris into three general categories:
  - Finishes (dry wall, insulation, etc.) - 256 tons generated;
  - Structural (wood, brick, etc.) – 190 tons generated; and
  - Foundations (concrete slab, concrete block, rebar, etc.) - 317 tons generated.

D. Land Use and Development Trends: The Warren County Joint Comprehensive Plan 2014-2024 presents future development scenarios for Warren County. It is also the guiding document for the basis of future development decisions. Warren County and its

municipalities are presently experiencing several significant issues which will be exacerbated in the future without major intervention. These issues include:

- Population decline,
- Increasing stock of abandoned and dilapidated housing,
- Exodus of young residents,
- Exodus of families with children,
- Aging population,
- Pattern of decreasing per capita income

The concerns identified above are presented as those General Demographic issues Warren County must confront over the time-period for which this Comprehensive Plan covers.

To the greatest extent possible, the County and municipalities shall attempt to encourage development away from the Rocky Comfort Creek Watershed, groundwater recharge areas, wetlands, floodplains, and primary agricultural lands. There are significant land structures/properties outside these environmentally sensitive areas to develop. Population and housing growth rates are not projected to be significant. Even with the County's aggressive economic policy related to manufacturing growth, there are numerous locations in proximity to Warrenton, Norwood and Camak that do not impact environmentally sensitive areas.

An analysis of the existing and future land-use maps of Warren County establishes that the no land use has changed more than six (6) percent. Major changes are not expected to occur in the county. A copy of the comprehensive plan on land use can be found in Appendix B.

E. Multi-Jurisdictional Concerns: 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 transmit signals. The County, Camak, Norwood, and Warrenton are aware of the need to develop communication capabilities that will serve their County. Since flooding has the potential to affect all of Warren County, any mitigation steps taken related to flooding should be undertaken on a countywide basis to include Camak, Norwood, and Warrenton.

F. Hazard Summary: Based on interviews, data from the NCEI covering 67 years, and the local paper, *The Warrenton Clipper*, there have been three reported flooding events. 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 10 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 Warren 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, parcel and flood maps, all or a portion of 81 known structures/properties valued at approximately $1.9 million and a population of 149 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. DAM FAILURE

A. Hazard Identification: Dam failures involve unintended release or surges of impounded water. They can destroy property and cause injury and death downstream. While they may involve total collapse of a dam, that is not always the case. Damaged spillways, overtopping of a dam or other problems may result in a hazardous situation. Dam failures may be caused by structural deficiencies in the dam itself. Dam failures may also come from other factors including but not limited to debris blocking spillways, flooding, earthquakes, improper operation and vandalism. Dam failures are potentially the worst flood events. When a dam fails, a large quantity of water is suddenly let loose downstream, destroying anything in its path and poses a threat to life and property.

Dams are classified into three categories:

- High Hazard: Dams where failure or disoperation will probably cause loss of human life.
- Significant Hazard: Dams where failure or disoperation results in no probable loss of life but can cause economic loss, environment damage, disruption of lifeline facilities or other impact concerns.
- Low Hazard: Dams where failure or disoperation results in no probable loss of life and low economic and/or environmental loss.

B. Hazard Profile: A review of the National Inventory of Dams reveals that there are 21 dams in Warren County. There has never been a reported dam failure event in Warren County to date. The committee felt that it was important to address dam failure since three of the 21 dams are classified high hazard. If one of these high hazard dams fails, there is the potential for loss of life and property and economic losses. The remaining 18 dams are low hazard where potential losses are limited to minimal property damage. The table below is an inventory of the dams located in Warren County.

DAM NAME	HAZARD	YEAR COMP.
ROCKY COMFORT CREEK W/S STR # 14	L	1963
ROCKY COMFORT CREEK W/S STR # 45	H	1964
ROCKY COMFORT CREEK W/S STR # 50	H	1968
ROCKY COMFORT CREEK W/S STR # 46	H	1966
LANGHAM DAM	L	1959
RAY DAM	L	1959
SHIVERS DAM 2	L	1954
SHIVERS DAM NO 1	L	1955
CHAFIN DAM	L	1948

DAM NAME	HAZARD	YEAR COMP.
REESE LAKE DAM	L	
NELSON DAM	L	1952
JOHNSON DAM	L	1952
MARTIN MARIETTA QUARRY WASTE POND	L	1968
ENGLISH LAKE DAM	L	1944
KAOLIN MINES LAKE DAM	L	1963
JOHNSONS LAKE DAM	L	1955
SHIVERS LAKE DAM	L	
SOUTH SEWAGE DISPOSAL POND DAM	L	1969
NEAL LAKE DAM	L	
COTTON RIDGE FARM LAKE DAM	L	
RICHMOND FARM LAKE DAM	L	
NEWSOME MILLPOND DAM	L	

Source: National Inventory of Dams, Army Corp of Engineers

A map of dams with rivers and streams is provided in Appendix A. The map shows if a high hazard dam were to fail it would not have an impact on the cities. Dam failure would most likely occur in the unincorporated areas of the County. Based on interviews and best available data, a dam failure has not occurred within the last 67 years therefore the estimated annual probability of a future event is less than one percent. Due to the lack of available data a precise calculation to determine the probability of an annual dam failure event cannot be determined without further study (*See Appendix A, Section II, and Appendix D).*

C. Assets Exposed to Hazard and Estimates of Potential Loss: Based on the FEMA worksheet #3A, the location of the high hazard dams and parcel data all or a portion of 85 structures/properties are at risk of loss due to dam failure with an estimated loss of $4.9 million with a population of 53. There is little or no threat to assets located in the incorporated cities of Warren County. Projected changes in land use based on the county's multi-jurisdictional 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. Because 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 efforts must be made to ensure that new homes are not built downstream where a dam break may occur. Land use tables and projections can be found in Appendix A. A dam break analysis study is recommended in Chapter III., Section VI to determine the exact assets exposed to risk because of a dam failure.

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Based on FEMA worksheet #3a and using a straight-line method there are 85 structures/properties at risk of loss due to dam failure with an estimated loss of $4.9 million. These numbers are best guess estimates. Without further study, the extent of potential loss due to dam failure is unknown. No critical facilities are downstream of a dam and appear not to be at risk from a dam failure. (*See Appendix A, Section II, and Appendix D).*

D. Land Use and Development Trends: Currently the county has no guidelines that address development in areas surrounding dams. No development has taken place or is planned in the areas surrounding dams. Section I. Flood D, provides a synopsis of land use and development trends. A copy of the comprehensive plan on land use can be found in Appendix B.

E. Multi-Jurisdictional Concerns: The unincorporated areas of Warren County are most likely to be affected by a dam failure event. The Cities of Warrenton and Norwood and the Town of Camak appear to be at little or no risk of loss due to a dam failure. Any mitigation steps taken related to dam failure should be undertaken on a countywide basis and include all incorporated jurisdictions. A concern is the lack of available data for the county and its incorporated jurisdictions. A database needs to be created and maintained that provides information on past and future occurring dam failure events.

F. Hazard Summary: Dam failures and incidents involve unintended release or surges of impounded water. They can destroy property and cause injury and death downstream. While they may involve total collapse of a dam, that is not always the case. Dam failure has never occurred in Warren County, but because there are three high hazard dams it is imperative to address the potential for this hazard. The Warren County Pre-Disaster Hazard Mitigation Committee recognized the potential for losses caused by dam failure and identified it as a hazard requiring mitigation measures. Located in the unincorporated areas of Warren County, it is estimated that all or a portion of 85 structures/properties are at risk of loss due to dam failure with an estimated loss of $4.9 million and a population of 53. The committee identified specific mitigation goals, objectives and action items related to dam failure, which can be found in Chapter III., Section II.

SECTION III. DROUGHT

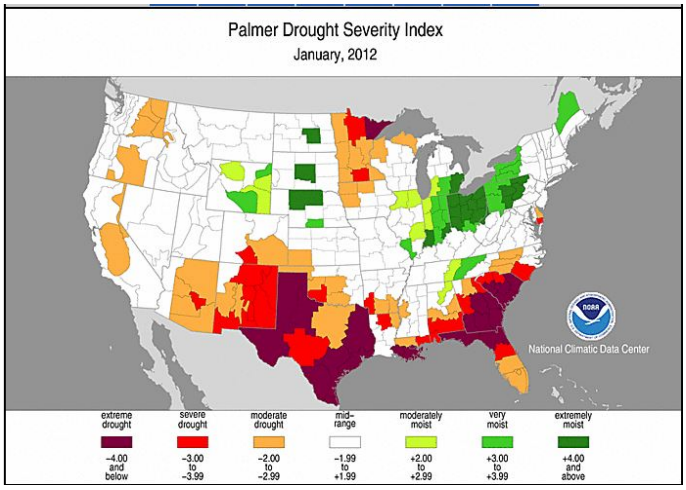
A. Hazard Identification: The committee reviewed historical data from the Palmer Drought Index, NCEI, DNR, USDA and GFC in researching drought conditions. Drought conditions are identified by a prolonged period of moisture deficiency. Climatologists and hydrologists use five indicators of drought: rainfall,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

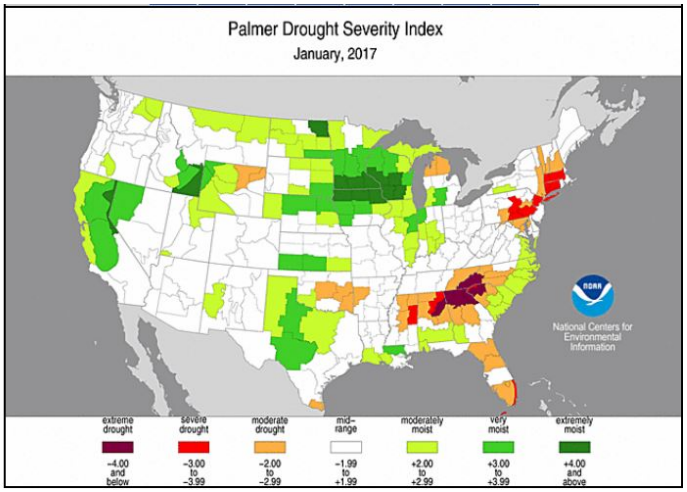
B. Hazard Profile: Drought is not spatially defined and has the potential to affect the entire planning area equally. Warren County's consist of 287 square miles with 2.4 of these miles being water. The county is comprised of 183,680 acres with 94.1 percent dedicated to agricultural and forestry. According to the USDA 2012 Census of Agriculture 4,158 heads of livestock. 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 and SHELDUS™, there have been 29 reported drought events in Warren 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 abnormally dry, and drought is shown in terms of minus

numbers; for example, minus two is severe drought, minus three is extreme drought, and minus four is exceptional drought.

NCEI data for surrounding counties and a review of The Palmer Index (from https://www.NCEI.noaa.gov/temp-and-precip/drought/historical-palmers/) reveals there have been 29 drought events. One of the longest running droughts in recent history began in January 2012 and ended in January 2013. The County was in extreme drought conditions from January to July of 2012 and exceptional drought conditions from Augusta 2012 to January 2013. The last drought ran from August 2016 to January 2017. The drought of 2016 the county ranged between a -2.00 (severe drought) and a -4.00 (exceptional drought) on the Palmer Index. The average based on historical data is a -3.00 on the Palmer Index. The maps below show drought conditions for January 2012 and January 2017.

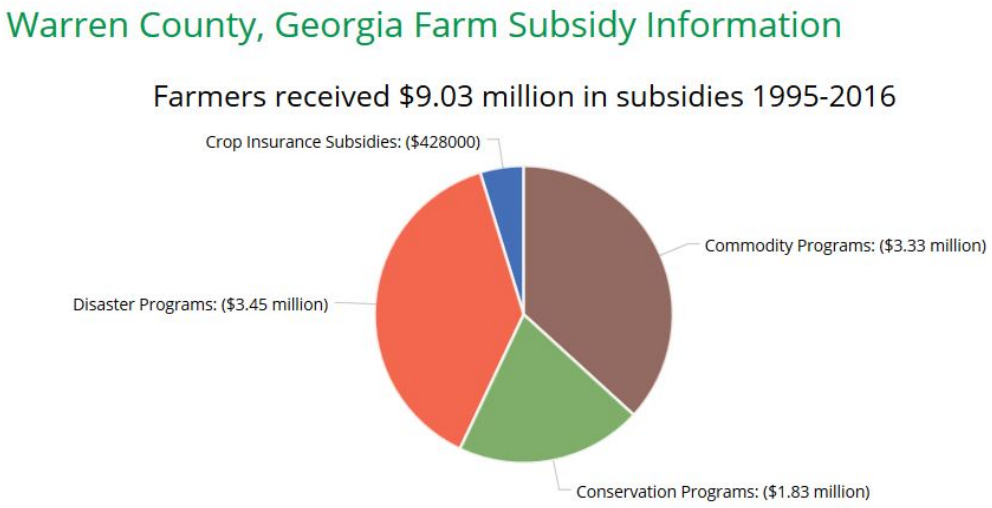




Based on the weekly data from the US Drought Monitor (http://droughtmonitor.unl.edu/MapsAndData/MapsandDataServices/StatisticalData.aspx) from January 2000 to January 2017 the county has experienced the following drought conditions:

- 218 weeks where all or a portion of the county has experienced of D0 - Abnormally Dry;
- 204 weeks where all or a portion of the county has experienced of D1 - Moderate Drought;
- 166 weeks where all or a portion of the county has experienced levels of D2 - Severe Drought;
- 165 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.)

According to the USDA Farm Subsidies Database, there has been a total of $ $9.03 million in disaster assistance from 1995-2016. The pie chart below depicts amounts and type of assistance.



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

Historical data is only for the county. A severe, prolonged drought would mainly affect the 94.1 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 145 percent chance of an annual drought event for the county as well as Camak *(See Appendix A, Section III, for Worksheet 3a and Appendix D.)*

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

- Camak has 21 agricultural/forestry structures/properties valued at approximately $350,530 with an estimated population of thirty-two (32).
- Norwood has 20 agricultural/forestry structures/properties valued at approximately $563,307 with an estimated population of twenty-six (26).
- Warrenton has 8 agricultural/forestry structures/properties valued at approximately $400,012.50 with an estimated population of eighteen (18).

- Unincorporated Warren County has 4,267 agricultural/forestry structures/properties valued at approximately $222 million with an estimated population of one hundred and eighty-four (184).

There are 4,316 agricultural/forestry properties in Warren County valued at approximately $223 million with a population of 260 that are at the greatest risk due to a drought event *(See Appendix A, Section III for Worksheet 3A, Historical Event Tables, Drought Extent Tables and Drought Maps and Appendix D for Hazard Frequency Tables).*

D. Land Use and Development Trends: Warren 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 uses 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 Camak, Norwood, and

Warrenton 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 Warren 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 145 percent chance of an annual drought event in Warren 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 Warren County as a whole, there are 4,316 agricultural/forestry properties valued at approximately $223 million and include 4,158 heads of livestock and an estimated population of 260 that have the greatest potential to be damaged by drought. There is a population of 5,834 and approximately 14,136 structures/properties valued at nearly $528 million, which could be affected if wildfires break out due to drought conditions. Drought mitigation goals and objectives are in Chapter III, Section III.

SECTION IV. WILDFIRE

A. Hazard Identification: A wildfire is any uncontrolled fire occurring on undeveloped land that needs fire suppression. The potential for wildfire is influenced by three factors: the presence of fuel, the area's topography and air mass. There are three different classes of wildland fires. A surface fire is the most common type and burns along the floor of a forest, moving slowly and killing or damaging trees. A ground fire is usually started by lightning and burns on or below the forest floor. Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees. Wildfires are usually signaled by dense smoke that fills the area for miles around. Wildfires by lightning have a very strong probability of occurring during drought conditions. Drought conditions make natural fuels (grass, brush, trees, dead vegetation) more fire-prone.

B. Hazard Profile: Warren County's consist of 287 square miles with 2.4 of these miles being water. The county is comprised of 183,680 acres with 172,843 (94.1 percent) acres dedicated to agricultural and 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 Warren 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 2017, there have been 1,298 fire events burning a total of 6,581 acres for an average extent of 5.07 acres. Of these 1,298 fire events, only 67 were a result of a natural hazard event that burned 661 acres for an average extent of 9.87 acres. There is no data is available for largest fire because of lightning. Data provided by GFC is cumulative on an annual basis. The data shows 147.26 acres burnt by the nine lighting wildfire events occurring in 2011. Based on best available data, the 67-wildfire events due to the natural hazard of lightning all occurred in the unincorporated areas of the county. There is no data available for the Camak, Norwood or Warrenton.

While data was collected looking at 61 years of data, frequency rate was calculated using a 20-year hazard cycle per guidance from GEMA. There were 37 wildfire events during the 20-year hazard cycle predicting a 185 percent chance of an annual wildfire due to a natural hazard event or statistically the county can expect 1.9 wildfires because of a natural hazard annually. The drier the condition the more susceptible the county is to wildfire (*See Appendix D)*. GEMA Wildfire Risk Maps, found in Appendix A, assigns the following wildfire hazard score showing areas with different levels of fire potential for each jurisdiction as follows:

- Hazard score of two (low wildfire risk)
  - Unincorporated areas of the county – approximately 4%
  - Norwood - approximately 5%
- Hazard score of one (very low wildfire risk)
  - Unincorporated areas of the county – approximately 92%
  - Camak – 100 %
  - Norwood – approximately 95%
  - City of Warrenton - approximately 85%
- Hazard score of zero (no houses, agriculture, water, or city)
  - Unincorporated areas of the county – approximately 4%
  - Warrenton - approximately 15%

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

Jurisdiction	Number of Structure/Properties	Value $	Population
Warren County (Unincorporated)	10,147	446,575,993.00	3,520
Camak	451	5,595,803.00	138
Norwood	512	6,129,138	239
Warrenton	2,634	69,644,065	1,937
TOTAL FOR COUNTY	14,136	527,944,998	5,834

Source: Warren County Tax Assessor

The following table 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.

Jurisdiction	Wildfire Hazard Score	# of Critical Facilities	Replacement Value $	Content Value $	Occupancy	
					Day	Night
Warren County	0	1	$1,150,000.00	$750,000.00	0	0
Warren County	1	14	$16,263,500.00	$3,102,500.00	946	4
Camak	0	1	$200,000.00	$15,000.00	1	0
Camak	1	3	$1,200,000.00	$407,500.00	12	2
Norwood	0	1	$650,000.00	$550,000.00	20	0
Norwood	1	6	$799,870.00	$584,250.00	23	2
Norwood	2	2	$817,506.00	$4,000.00	75	30
Warrenton	1	8	$14,790,000.00	$730,000.00	978	126
TOTAL		36	$35,870,876.00	$6,143,250.00	2,055	164

According to FEMA Worksheet #3a, there are 14,136 structures/properties with a population of 5,834 and assets valued at nearly $528 million. If a wildfire started, it is not likely that all of these structures/properties would be affected. *(See Appendix A, Section IV, for Worksheet 3A, Historical Event Tables, Critical Facilities Reports and Wildfire Risk Maps, and Appendix D for Hazard Frequency Tables).*

D. Land Use and Development Trends: Warren 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 Warren 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 Warren County, Camak, Norwood, and Warrenton. Also, during a natural hazard, it is imperative that all emergency personal can communicate with each other throughout the entire planning area. Another concern is the lack of available data for the county and individual jurisdictions. A database needs to be created and maintained that provides information on all past and future occurring wildfire events.

F. Hazard Summary: Warren County's consist of 287 square miles with 2.4 of these miles being water. The county is comprised of 183,680 acres with 94.1 percent dedicated to agricultural and forestry. Given the right weather conditions and variables, wildfire, due to natural causes, creates a potential threat to the lives of residents and property in the planning area.

According to Georgia Forestry data, from 1957 to 2017, there have been 1,298 fire events burning a total of 6,581 acres for an average extent of 5.07 acres. Of these 1,298 fire events, only 67 were a result of a natural hazard event that burned 661acres for an average extent of 9.87 acres. Based on best available data, the 67-wildfire events due to the natural hazard of lightning all occurred in the unincorporated areas of the county. There is no data available for the Camak, Norwood or Warrenton.

According to FEMA Worksheet #3a, there are 14,136 structures/properties with a population of 5,834 and assets valued at nearly $528 million countywide. Mitigation Goals and Objectives concerning wildfires are in Chapter III, Section IV.

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

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

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm or the result of a hurricane and is produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. Tornados are among the most unpredictable and destructive of weather phenomena and can strike at any time of the year if the essential conditions are present. The damage from a tornado is a result of the high wind velocity and wind-blown debris. The positions of the subtropical and polar jet streams often are conducive to the formation of storms in the Gulf region. The table below 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.

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

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

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

Thunderstorm winds are winds that arise from convection (with or without lightning), with speeds of at least 50 knots (58 mph), or winds of any speed producing a fatality, injury, or damage. Severe thunderstorms develop powerful updrafts and downdrafts. An updraft of warm, moist air helps to fuel a towering cumulonimbus cloud reaching tens of thousands of feet into the atmosphere. A downdraft of relatively cool, dense air develops as precipitation begins to fall through the cloud. Winds in the downdraft can reach in excess of 100 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 fourth severe weather event is lightning. Lightning results from the buildup and discharge of electrical energy between positively and negatively charged areas. Rising and descending air within a thunderstorm separates these positive and negative charges. Water and ice particles also affect charge distribution. A cloud-to-ground lightning strike begins as an invisible channel of electrically charged air moving from the cloud toward the ground. When one channel nears an object on the ground, a powerful surge of electricity from the ground moves upward to the clouds and produces the visible lightning strike. Lightning often strikes outside of heavy rain and may occur as far as 10 miles away from any rainfall.

The final 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. Then they are carried back up high within the storm where they refreeze into larger frozen drops. This cycle may repeat itself several times until the frozen water droplets become so large and heavy that the updraft can no longer support their weight. Eventually, the frozen water droplets fall back to earth as hailstones.

Hail can also be a destructive aspect of severe thunderstorms. Hail causes more monetary loss than any other type of thunderstorm-spawned severe weather in the United States, annually producing about one billion dollars in crop damage. Storms that produce hailstones

only the size of a dime can produce dents in the tops of vehicles, damage roofs, break windows and cause significant injury or even death.

B. Hazard Profile: Tornados, tropical storms, thunderstorm winds, lightning and hail can affect the entire county given the right conditions. Since the exact time and location of a severe weather event is not always predictable, all of Warren County is vulnerable to the threats of severe weather. Based on historic data, there have been eight reported tornados in the planning area: all eight traveled over parts of unincorporated areas of the county and one touchdown in Norwood and one in Warrenton. The highest magnitude reported was an F2. The longest path was 15 miles. There is no record of a tornado in Camak. A total of 44 injuries and three deaths were reported with $1,781,000 in damages reported. 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:

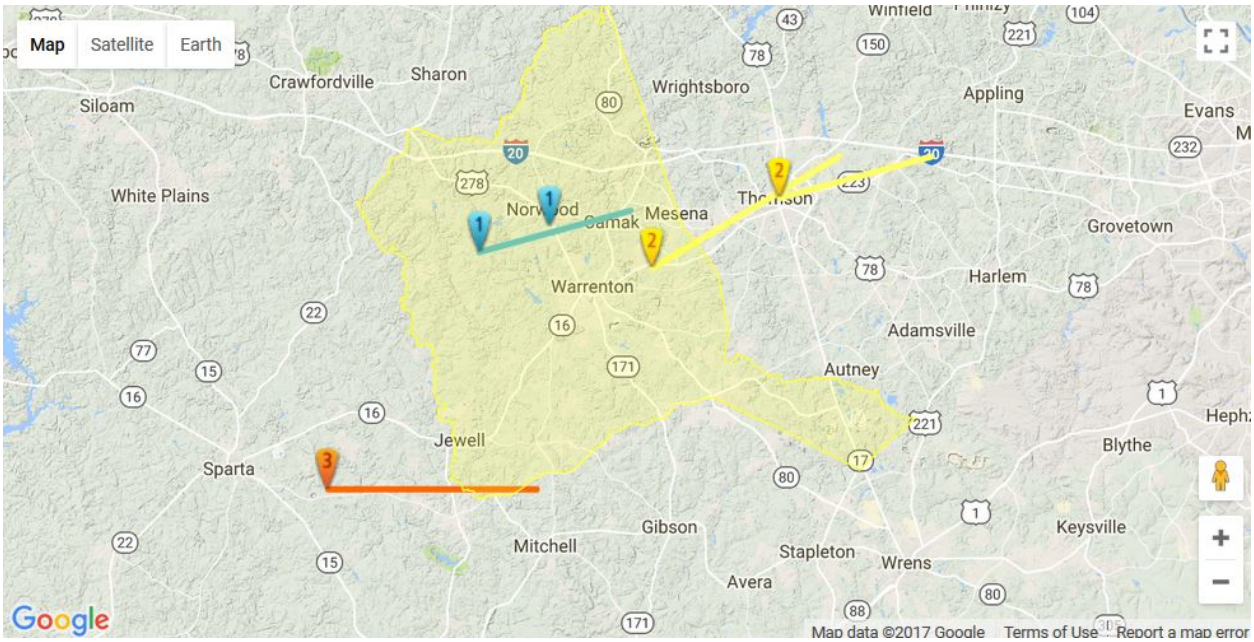
- 20% for Warren County and the unincorporated areas of the county;
- 5% for Warrenton and Norwood; and
- No data is available for Camak.

The following table shows the event, severity and estimated cost of damages reported. The map from the Georgia Tornado Projects shows the paths taken by the storms (*See Appendix A, Section I and Appendix D).*

Location	Date	Damage Reported	Time	Mag	$
Warren County	1875	The tornado damaged multiple properties, overturned railroad cards; 3 people were killed and 41 injured.		unknown	unknown
Warren County	04/15/1957	No description available of damages.		F2	25K
Warren County	02/02/1973	The tornado damaged several houses and knocked trees over onto Hwy 278 east of Norwood.		F1	3K
Warren County	05/23/1978	At Cason's Cabins, several building damaged and trees uprooted.		unknown	28K
Warrenton	03/01/2007	An EF2 tornado tracked across eastern Warren county, touching down about four miles east-northeast of Warrenton, and continued into Warren county, terminating about 6 miles northeast of Thomson near Interstate-20. The overall tornado path length was 15 miles, but only about 2.5 miles of the path occurred within Warren county. In addition, a number of homes, mostly double-wide mobile homes, especially on the northeast side of Warrenton. Most of the damage was in the Camak Road and Thomson Highway area. One double-wide mobile home was completely destroyed with only the base slab left standing. There were eight homes with major damage, 13 with moderate damage, and 17 with minor damage. Three individuals sustained minor injuries from flying glass and debris. Dozens of trees and power lines were down along the path of the	20:08	F2	700K

Location	Date	Damage Reported	Time	Mag	$
		tornado.			
Warren County (Four Points)	12/18/2009	EF1 as it crossed into Warren county with a maximum path width of 100 yards. While the total path length of the tornado was nearly 11 miles, just a little over one mile of this path was within Warren county. Since the tornado traveled through an extremely rural part of Warren county, damage was confined to around 100 downed trees.	22:54	F1	25K
Warren County (Jewell)	03/28/2010	The public observed a funnel cloud in the Beall Springs area in far southwestern Warren county. A tornado warning was in effect at the time and there was clear indication of a strong circulation on the Doppler radar.	20:22		0K
Norwood	04/28/2011	The tornado touched down four miles southwest of Norwood and tracked nearly eight miles on an east-northeastward path across northern Warren county lifting one mile northeast of Camak. Eight homes sustained moderate to major damage along the path of the tornado, mostly from large fallen trees on the structures. Hundreds of trees and several power lines were down. There were no fatalities or injuries.	02:39		1.0M

Sources: Interviews, The Warrenton Clipper, Georgia Tornado History Project, NCEI and SHELDUS™



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

There have been 13 tropical storms reported by the NCEI and SHELDUS™ with 75,000 reported property and crop damages. These storms produced winds from 35-45 mph with gust up to 55 mph. Damages because of the storms were due to power outages, downed trees and flash flooding. The tropical storms affected the entire planning area. Data for each jurisdiction is not available. Using a 20-year hazard cycle there is a 65 percent chance of an annual tropical storm event for county as a whole (*See Appendix D).*

Details	Date	PrD	CrD
Result of Tropical Storm Hannah	09/14/2002	0.00K	0.00K
Result of Tropical Depression 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
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	75.00K	0.00K

Source: NCEI and SHELDUS

Thunderstorms are much more prevalent during the spring and summer months. There have been 61 events reported by the NCEI and SHELDUS™ in the last 67 years with highest winds reported at 50 knots. These storms reported more than $317,000 in property and crop damages. The table below breaks down the thunderstorm events by jurisdiction. A complete table of thunderstorm wind events can be found in Appendix A.

Location	# of Events	County-Wide Events*	Total # of events per jurisdiction
Warren County(Unincorporated)	8	31	39
Camak	4	31	35
Norwood	6	31	37
Warrenton	12	31	43
TOTAL FOR COUNTY	30	31	61

** It is assumed that all 31 countywide events reported occurred in each jurisdiction. Source: NCEI and SHELDUS*

While data was collected looking at 67 years, frequency rate was calculated using a 20-year hazard cycle per guidance from GEMA. Using a 20-year hazard cycle, the frequency table calculates an annual chance for a thunderstorm event producing high winds is:

- 140 percent for Warren County as a whole;
- 50 percent for Unincorporated Warren County;
- 35 percent for Camak;
- 45 percent for Norwood; and
- 55 percent for Warrenton

Hazard frequency tables for individual jurisdictions are in Appendix D.

The fourth weather event is lightning. During the spring and summer months the county experiences numerous storms that can often produce lightning. The VAISALA National Lightning Detection Network has the average flash density per square mile between 6 and 12 from 2007-2016. A search of storm data on NCEI and SHELDUS™ has reported 17 lightning events in the past 67 years with slightly more than $103,000 in property damages with three injuries. Since 1950 there have been 67 lightning strikes recorded resulting in wildfires. When these datasets are combined there has been 84 lightning strikes recorded.

While data was collected looking at 67 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:

- 205 percent for Warren County as a whole;
- 160 percent for Unincorporated Warren County;
- 20 percent for Warrenton; and
- No data is available for Camak or Norwood.

The fifth weather event is hail. A combination of SHELDUS™ and NCEI data reports 28 hail events in the last 67 years with slightly more than $122,000 in property and crop damages and no injuries. Hailstones ranged in size from .75 to 2.75 inches.

Location	# of Events	County-Wide Events*	Total # of events per jurisdiction
Warren County(Unincorporated)	4	14	18
Camak	1	14	15
Norwood	2	14	16
Warrenton	7	14	21
TOTAL FOR COUNTY	14	14	**28**

** It is assumed that all 14 countywide events occurred in all jurisdiction. Source: NCEI and SHELDUS™*

While data was collected looking at 67 years of data, frequency rate was calculated using a 20-year hazard cycle per guidance from GEMA. Using a 20-year hazard cycle, the annual chance for a hail event is:

- 65 percent for Warren County as a whole;
- 20 percent for Unincorporated Warren County;
- 0 percent for Camak;
- 10 percent for Norwood; and

- 35 percent for Warrenton.

Hazard frequency tables for individual jurisdictions are in Appendix D.

C. Assets Exposed to Hazard and Estimate of Potential Losses: In evaluating assets exposed to the natural hazard, the committee determined that all critical facilities, as well as all public, private and commercial property, are susceptible to tornados, tropical storms, thunderstorm winds, lightning and hail events. The GMIS has the 50 percent of the county with a wind hazard score of two, where wind speed is between 90 to 99 mph. The remaining 50 percent with a hazard score of one, where wind speed is less than 90 mph. The table below provides data from FEMA Worksheet #3a that estimates the potential loss for each jurisdiction.

Jurisdiction	Number of Structure/Properties	Value $	Population
Warren County (Unincorporated)	10,147	$446,575,993	3,520
Camak	451	$5,595,803	138
Norwood	512	$6,129,138	239
Warrenton	2,634	$69,644,065	1,937
TOTAL FOR COUNTY	14,136	$527,944,998.00	5,834

Source: Warren County Tax Assessor

Of the 36 critical facilities, 23 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 13 have a hazard score of one or zero. GMIS critical facility reports for wind and FEMA Worksheet #3a are located in Appendix A for each individual jurisdiction and the county as a whole. The table below shows the number of critical facilities by jurisdictions, hazard score, replacement value, content value, and daily occupancy.

Jurisdiction	Wind Hazard Score	# of Critical Facilities	Replacement Value $	Content Value $	Daily Occupancy	
					Day	Night
Warren County	1	1	$980,000.00	$20,000.00	10	0
Warren County	2	14	$16,433,500.00	$3,832,500.00	936	4
Camak	0	1	$200,000.00	$15,000.00	1	0
Camak	1	3	$1,200,000.00	$407,500.00	12	2
Norwood	1	8	$1,617,376.00	$588,250.00	98	32
Norwood	2	1	$650,000.00	$550,000.00	20	0
Warrenton	2	8	$14,790,000.00	$730,000.00	978	126
TOTAL		36	$35,870,876.00	$6,143,250.00	2,055	164

FEMA Hazus-MH Version 2.2 SP1 ran a hurricane scenario for probabilistic wind-damage risk assessment modeling a Category 1 storm with maximum winds of 74 mph. There were now shelter requirements for this scenario. Hurricane-wind building damage is shown in the table below:

Storm Classification	Number of Damaged Buildings	Building Damages	Total Economic Loss	Loss Ratio
Category 1	35	$2,513,710	$4,000	0.10

Hazus-MH estimates the amount of debris that will be generated by high velocity hurricane winds by tons is:

- Reinforced Concrete and Steel Debris (none)
- Brick and Wood and Other Building Debris 116 tons
- Tree Debris 1,108 ton
- Other Tree Debris 15,676 tons

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. The analysis estimated that approximately 421 buildings could be damaged, with estimated building losses of $35 million dollars. The building losses are an estimate of building replacement costs multiplied by the percentages of damage. The table below shows estimated building losses by occupancy type.

Occupancy Classification	Buildings Damaged	Building Losses
Residential	388	$26741771
Commercial	29	$4,225,446
Education	2	$3,750,231
Religious	1	$355,902
Total	**421**	$35,259,387

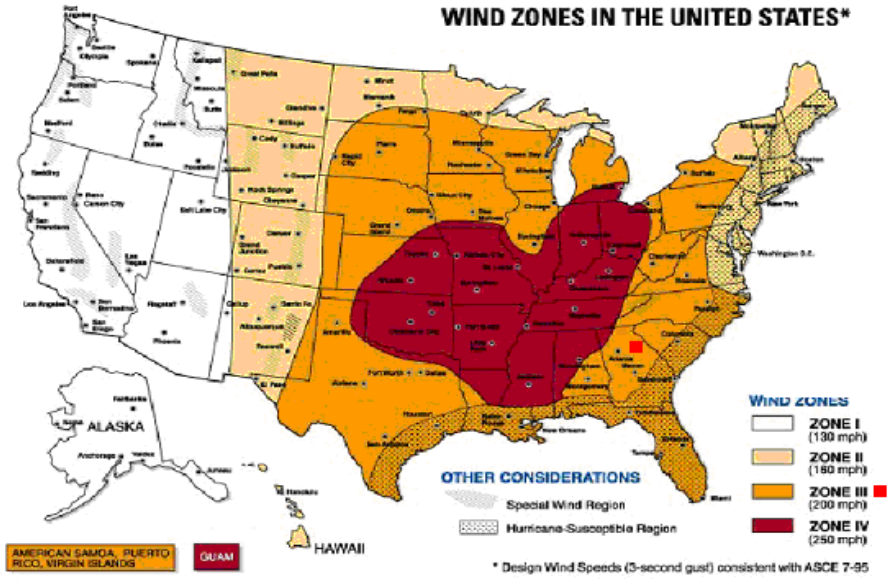
Essential facilities are also vulnerable to storm events, and the potential loss of functionality may have significant consequences to the community. Hazus-MH identified the essential facilities that may be moderately or severely damaged by winds.

Classification	Number
EOCs	1
Fire Stations	7
Care Facilities	3
Police Stations	2
Schools	3

Wind-Damaged Essential Facility Losses Classification	Facilities At Least Moderately Damaged > 50%	Facilities Completely Damaged > 50%	Facilities with Expected Loss of Use (< 1 day)
Tropical Storm	0	0	16

D. Land Use & Development Trends: Warren County is located in FEMA wind zone III, which is associated with 200-mph wind speeds. Currently, the county has no land use or development trends related to tornados, tropical storm, thunderstorm winds, lightning, or hail events. Information on current and future land use projections can be found in Appendix B.

E. Multi-Jurisdictional Concerns – All of Warren 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

NUMBER OF TORNADOES PER 1,000 SQUARE MILES	WIND ZONE I	II	III	IV
<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, tropical storms, thunderstorm winds, lightning and hail. As a result, any mitigation steps taken related for these five severe weather events should be considered on a countywide basis to include Camak, Norwood and Warrenton. 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 for the four 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.

Overall, severe weather in the form of thunderstorm winds, poses one of the greatest threats to Warren 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. Tornados do not touch down as 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.

Weather Event	#	Fatalities	Injuries	Approximate Property/Crop Damage
Tornados	8	3	41	$1,781,000
Tropical Storms	13	0	0	$75,000
Thunderstorm Winds	61	0	0	$317,000
Lightning	84	0	0	$103,000
Hail	28	0	0	$122,000

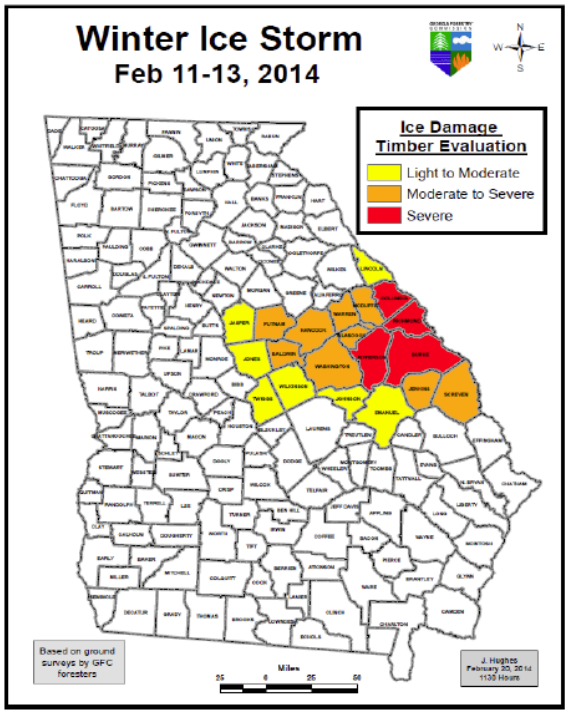
To summarize, there are approximately 14,136 structures/properties in the county valued at nearly $528 million with a population of 5,834. A breakdown of information for individual jurisdictions can be found in Appendix A and Appendix D. Specific mitigation actions for tornados, tropical storms, thunderstorm winds, lightning and hail events are identified in Chapter III, Section V.

SECTION VI. WINTER STORMS

A. Hazard Identification: Southeastern snow or ice storms often form when an area of low pressure moves eastward across the northern Gulf of Mexico. To produce a significant winter storm in the south, not only must temperatures be cold enough, but there must also be enough

moisture in the atmosphere to produce adequate precipitation. A major winter storm can last for several days and be accompanied by 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 23 winter storm events recorded in the county over the last 67 years with no estimated property damage or crop 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 Warren County, customers were without power 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. Warren 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. The table below shows assets by jurisdiction that could be at potential risk of damage from a winter storm event.

Jurisdiction	Number of Structure/Properties	Value	Population
Warren County (Unincorporated)	10,147	$446,575,993.00	3,520
Camak	451	$5,595,803.00	138
Norwood	512	$6,129,138.00	239
Warrenton	2,634	$69,644,065.00	1,937
TOTAL FOR COUNTY	14,136	$527,944,998.00	5,834

Source: Warren County Tax Assessor

The GMIS does not provide a report for winter storm damage but there are assets valued at nearly $528 million at risk to potential loss from a winter storm hazards countywide. The table below shows the number of critical facilities by jurisdiction, hazard score, replacement value, content value, and daily occupancy (*See Appendix A, Section VI for Historical Event Tables, Worksheet 3A, Winter Storm Maps and Appendix D for Hazard Frequency Tables).*

Jurisdiction	# of Critical Facilities	Replacement Value $	Content Value $	Daily Occupancy	
				Day	Night
Warren County	15	$17,413,500.00	$3,852,500.00	946	4
Camak	4	$1,400,000.00	$422,500.00	13	2
Norwood	9	$2,267,376.00	$1,138,250.00	118	32
Warrenton	8	$14,790,000.00	$1,465,000.00	978	126
TOTAL	36	$35,870,876.00	$6,143,250.00	2,055	164

D. Land Use & Development Trends: Warren County currently has no land use or development trends related to winter storms. Section I. Flood D, provides a synopsis of land use and development trends. A copy of the comprehensive plan on land use can be found in Appendix B.

E. Multi-Jurisdictional Concerns: Warren County currently has no land use or development trends related to winter storms. All of the county can potentially be negatively impacted by winter storms. As a result, any mitigation steps taken related to winter storms should be undertaken on a countywide basis to include Camak, Norwood, and Warrenton.

Another major issue is countywide communications capabilities. 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 removed, the county will be without any adequate means to bounce signals. The County, Camak, Norwood, and Warrenton 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 26 winter storm events recorded in the county over the last 67 years with no 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 14,136 structures/properties in the county valued at nearly $528 million with a population of 5,834. 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 2013 update plan.

Chapter III. Section	Updates to Section
I. Flooding	Completed action steps were removed. Action Steps that apply to all jurisdictions were combined. New goals were added where necessary along with any existing or new multijurisdictional concerns. Goals, Objective, and Actions Steps were updated to new format.
II. Dam Failure	Completed action steps were removed. Action Steps that apply to all jurisdictions were combined. New goals were added where necessary along with any existing or new multijurisdictional concerns. Goals, Objective, and Actions Steps were updated to new format.
III. Drought	Completed action steps were removed. Action Steps that apply to all jurisdictions were combined. New goals were added where necessary along with any existing or new multijurisdictional concerns. Goals, Objective, and Actions Steps were updated to new format.
IV. Wildfire	Completed action steps were removed. Action Steps that apply to all jurisdictions were combined. New goals were added where necessary along with any existing or new multijurisdictional concerns. Goals, Objective, and Actions Steps were updated to new format.
V. Severe Weather	Completed action steps were removed. Action Steps that apply to all jurisdictions were combined. New goals were added where necessary along with any existing or new multijurisdictional concerns. Goals, Objective, and Actions Steps were updated to new format. Added Lightning and Hail Events
VI. Winter	Completed action steps were removed. Action Steps that apply to all jurisdictions were combined. New goals were added where necessary along with any existing or new multijurisdictional concerns. Goals, Objective, and Actions Steps were updated to new format.
VII. 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 Warren County, Camak, Norwood, and Warrenton, 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

Warren County, Camak, Norwood, and Warrenton 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. Warren County has an annual budget of approximately $4 million, Camak's budget is $96,100 Norwood's budget is $85,000 and Warrenton's 2016 budget is $2.2 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)	Warren County	Camak	Norwood	Warrenton	Does State Prohibit
Building codes	Y	Y	Y	Y	N
Zoning ordinance	Y	Y	Y	Y	N
Subdivision ordinance or regulations	N	N	N	N	N
Special purpose ordinances (floodplain management, storm water management, soil erosion)	Y	Y	Y	Y	N
Growth management ordinances (also called "smart growth" or anti-sprawl programs)	N	N	N	N	N
Site plan review requirements	Y	N	N	N	N
General or comprehensive plan	Y	Y	Y	Y	N
A capital improvements plan	Y	N	N	N	N
An economic development plan	Y	N	N	N	N
An emergency response plan	Y	Y	Y	Y	N
A post-disaster recovery plan	N	N	N	N	N
A post-disaster recovery ordinance	N	N	N	N	N
Real estate disclosure requirements	N	N	N	N	N

Table 3. 3 Fiscal Capability

Financial Resources	Warren County	Camak	Norwood	Warrenton	Accessible or Eligible to Use (Yes/No)
Community Development Block Grants (CDBG)	Y	Y	Y	Y	Y
Capital improvements project funding	Y	Y	Y	Y	Y
Authority to levy taxes for specific purposes	Y	Y	Y	Y	Y – Vote required
Fees for water, sewer, gas, or electric service	Y	Y	N	Y	Y
Impact fees for homebuyers or developers for new developments/homes	N	N	N	N	Y

Financial Resources	Warren County	Camak	Norwood	Warrenton	Accessible or Eligible to Use (Yes/No)
Incur debt through general obligation bonds	Y	Y	Y	Y	Y
Incur debt through special tax and revenue bonds	Y	Y	Y	Y	Y – Vote required
Withhold spending in hazard-prone areas	N	N	N	N	Y
Other Grants	Y	Y	Y	Y	Y

Table 3.4 Administrative and Technical Capacity

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

Warren County, Camak, Norwood, and Warrenton 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 *Warren County Joint Comprehensive Plan 2014-2024* was adopted by resolution by the Warren County Board of Commissioners, Camak Town Council, Norwood City Council, and the Warrenton 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 Camak, Norwood and Warrenton. 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: Warren County has one districts listed on the National Register of Historic Places, as well as several individual sites.

- The Warrenton Downtown Historic District was listed in 2002. Period of significance is from 1850 to 1974. Significant years include 1908, 1910, and 1932. The district includes 31 buildings, 1 structure, and 1 object.
- The Roberts-McGregor House circa 1835 and was listed in 1979. Architectural style is Greek Revival and Federal.
- The Warren County Courthouse circa 1909-1910 and was listed in 1980. Architectural style is Classical Revival. The architect was Walter Chamberlain.
- The Warrenton Gymnasium Auditorium circa 1937 and was listed in 2002. Location 304 South Gibson Street Warrenton, GA. Architectural style is Classical Revival. The architectural firm was Merry and Parsons.

Warren County Courthouse circa 1909-1910

Warrenton Downtown Historic District

Recreation: Public parks and recreation facilities are located in Warrenton, Camak, and Norwood. These municipalities contain a total of 20 acres of active and passive parks. Warren County in currently working with the Warren County School Board to improve recreational facilities and provide additional venues. The City of Warrenton contains multiple recreational areas including a downtown park that contains playground equipment and tennis courts. The Memorial Park located in Camak is an excellent example of a passive park and should be replicated in other areas.

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 jurisdictions 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 Warren County together with Camak, Norwood, and Warrenton 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. Dam Failure Action Plan

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

Objective B1. Identify at risk population and properties.

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

C. Drought Action Plan

As indicated in Chapter II, Section III, drought conditions can cause costly damage to crops. However, from a danger or hazard perspective, the greatest threat posed by drought conditions is from potential wildfires. As 46 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.

D. Wildfire Action Plan

As indicated in Chapter II, Section III, wildfires have the potential to cause costly damage in Warren 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.

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

As with many Georgia communities, if a tornado or tropical storm were to strike Warren 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 Warren County because of a severe weather event. 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 while thunderstorm winds are the most frequently occurring natural hazard in the county and have the greatest chance of affecting the county each year. The committee has identified several courses of action that both local officials and citizens can use in their mitigation

efforts against the effects of tornados, tropical storms, thunderstorm winds, lightning and hail to both new and existing structures.

Objective D1. Minimize damage to property from severe weather events.

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.

F. Winter Storms Action Plan

Within Warren 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, Warren County and other southeastern communities must be prepared for the damage caused by winter storms. The fact that winter storms hit Warren County infrequently results in other problems, such as lack of equipment and supplies to combat treacherous winter storm conditions. In Warren 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 E1. Educate the public on preparedness and safety issues for winter storm events.

Objective E2. Prevent property damage because of a winter storm event.

Objective E3. Minimize power outages during winter storms.

G. All Hazard Action Steps

The purpose of this section is to allow the committee to recommend mitigation measures within this plan that transcend individual hazards. Certain common mitigation measures are needed regardless of the specific hazard event. Rather than list these multiple times within each different hazard category, the committee decided to list these "all-hazards" mitigation measures within a separate section of the plan. The goal with these mitigation measures is again to minimize the loss of life and property, and to prevent disruption of services to the public to the greatest extent possible.

Objective F1. Ensure communication capabilities exist between all Emergency Service Personnel and Agencies.

Objective F2. 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 F3. Protect critical facilities from the effects due to power outages because of a hazard event to ensure a continuation of all vital services.

Objective F4. Provide adequate notification to citizens of Warren County pertaining to hazard event.

Objective F5. Guarantee all evacuation plans are up to date and adequate to meet the needs of the citizens of Warren County.

Objective F6. Guarantee that all Emergency Response Plans are up to date and adequate to meet the needs of citizens of Warren County.

Objective F7. Ensure all emergency shelters are ready to meet the needs of the population of Warren County, town of Camak, the city of Norwood, and the city of Warrenton.

Objective F8. Provide the citizens of Warren County educational information on Emergency Preparedness.

Objective F9. Provide the citizens of Warren County with accurate and timely information pertaining to Emergency Preparedness.

Objective F10. Collect accurate and complete data pertaining to hazard events within Warren County, Camak, Norwood, and Warrenton.

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.	Investigate greater participation Level in the CRS	Warren/Camak/ Norwood/ Warrenton	BOC/City Councils	Flood	A1, A2	1, 2, 4, 5	Non-Structural	Staff Time	General Funds	3 years	Stalled due to funding	Low
2.	Continue to assess storm water runoff.	Warren/Camak/ Norwood/ Warrenton	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.	Warren/Camak/ Norwood/ Warrenton	BOC/City Council/ Public Works	Flood/ Drought	A3,	2, 6	Structural	1,000,000	CDBG, USDA, EPA, DNR, General Fund,	2 years and Continual	Ongoing	High
4.	Clear run-off and water retention ditches.	Warren/Camak/ Norwood/ Warrenton	Public Works/Road Dept.	Flood	A5	2, 1	Structural	Staff Time	General Fund,	1 year and Continual	Ongoing	High
5.	Seek funding for communication towers and voice repeater systems.	Warren/Camak/ Norwood/ Warrenton	EMA/Police/ Sheriff	All hazards	F1, F9	1	Structural	$750,000	General Fund, FEMA, CJCC, JAG, USDA, DOJ	2 years and Continual	Ongoing	High
6.	A Storm drainage project has been identified along Pates Mill Rd.	Warren County	Public Works	Flood	A5	2, 1	Structural	1,000,000	CDBG, USDA, EPA, DNR, General Fund,	3 years	This project will be completed if and when funding is available	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
7.	A Storm drainage project has been identified along Prospect Church Rd.	Warren County	Public Works	Flood	A5	2, 1	Structural	1,000,000	CDBG, USDA, EPA, DNR, General Fund,	5 years	This project will be completed if and when funding is available	High
8.	A Storm drainage project has been identified along east side of Hwy 278	Warren County	Public Works	Flood	A5	2, 1	Structural	2,000,000	CDBG, USDA, EPA, DNR, General Fund,	5 years	This project will be completed if and when funding is available	High
9.	A Storm drainage project has been identified along Shoals Rd.	Warrenton	Public Works	Flood	A5	2, 1	Structural	500,000	CDBG, USDA, EPA, DNR, General Fund,	3 years	This project will be completed if and when funding is available the city will apply for funds through CDBG in 2019	High
10.	A Storm drainage project has been identified along Cronin Rd	Warren County	Public Works	Flood	A5	2, 1	Structural	1,000,000	CDBG, USDA, EPA, DNR, General Fund,	3 years	This project will be completed if and when funding	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
											is available	
11.	A Storm drainage project has been identified along Tucker Rd	Warren County	Public Works	Flood	A5	2, 1	Structural	1,000,000	CDBG, USDA, EPA, DNR, General Fund,	5 years	This project will be completed if and when funding is available	High
12.	Identify flood prone properties and seek funding to acquire and convert to low impact uses.	Warren/ Warrenton/ Camak/ Norwood	BOC/City Councils	Flood	A6	1, 2, 4, 5	Non-Structural	Staff time	CDBG, USDA, EPA, DNR	2 years	Ongoing	Medium
13.	Identify and move property owners who are in areas continually subject to flooding.	Warren/ Warrenton/ Camak/ Norwood	BOC/City Councils	Flood	A6	1, 2, 4, 5	Non-Structural	Staff time	CDBG, USDA, EPA, DNR	2 years	Stalled due to lack of funding	Medium
14.	Promote the preservation of areas in and around watercourses.	Warren	BOC/Public Works	Flood	A6	1, 2, 4, 5	Non-Structural	Staff time	CDBG, USDA, EPA, DNR	2 years and continual	Ongoing	High
15.	Add greenspace to known flood prone areas.	Warren/Camak/ Norwood/ Warrenton	BOC/City Councils	Flood	A6	1, 2, 4, 5	Non-Structural	Staff time	CDBG, USDA, EPA, DNR	2 years and continual	Ongoing	Medium
16.	Evaluate existing water system upgrade as needed	Warren/Camak/ Norwood/ Warrenton	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
17.	Investigate methods to reduce	Warren/Camak/ Norwood/	BOC/City Council	Flood	A1	1, 2, 5	Non-Structural	100,000	USDA, EPA, DNR	2 years	Ongoing	Medium

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
	non-point source pollution.	Warrenton										
18.	Conduct dam breach analysis to identify assets and population at risk in the event of a failure.	Warren County, Wadley	BOC	Dam Failure	B1, B2	1, 2,	Non-Structural	100,000	General Funds, DNR	3 years	Stalled due to funding	Medium
19.	Install dam failure alert systems.	Warren	BOC	Dam Failure	G4	1, 2, 6	Structural	50,000	General Funds, DNR	4 years	Ongoing As funding becomes available	Medium
20.	Enact a program to educate the residents about water conservation issues	Warren/Camak/ Norwood/ Warrenton	BOC/City Councils/ Water Dept.	Drought	B1, B2	1, 3	Non-Structural	$2,000.00	USDA, EPA, DNR, General Funds	1year and Continual	Ongoing	High
21.	Increase public awareness of watering restrictions and bans.	Warren/Camak/ Norwood/ Warrenton	BOC/City Councils/ Water Dept.	Drought	B1, B2	1, 3	Non-Structural	Staff Time	General Funds	1year and Continual	Ongoing	High
22.	Develop a public awareness campaign to promote water-saving campaigns (i.e. low-flow water saving devices)	Warren/Camak/ Norwood/ Warrenton	BOC/City Councils/ Public Works	Drought	B1, B2	1, 3	Non-Structural	Staff Time	General Funds	1year and Continual	Ongoing	High
23.	Promote increased surface water usage for irrigation.	Warren/Camak/ Norwood/ Warrenton	BOC/City Councils/ Public Works	Drought	B1, B2	1, 3	Non-Structural	Staff Time	General Funds	1year and Continual	Ongoing	High
24.	Promote usage of surface artesian flow for irrigation.	Warren/Camak/ Norwood/ Warrenton	BOC/City Councils/ Public Works	Drought	B1, B2	1, 3	Non-Structural	Staff Time	General Funds	1year 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
25.	Continue training of firefighters to include wildland fire training.	Warren/Camak/ Norwood/ Warrenton	EMA/Fire Depts.	Wildfire	C1	1, 2	Non-Structural	100,000	General Funds, FEMA	1year and Continual	Ongoing	High
26.	Seek funding for more paid firefighters	Warren/Camak/ Norwood/ Warrenton	EMA/Fire Depts.	Wildfire	C1	1, 2	Non-Structural	$200,000	General Funds, FEMA	1year and Continual	Ongoing As funding becomes available	High
27.	Seek funding for needed firefighting equipment	Warren/Camak/ Norwood/ Warrenton	EMA/Fire Depts.	Wildfire	C1	1, 2	Non-Structural	1,500,000	General Funds, FEMA	1 year and Continual	Ongoing As funding becomes available	High
28.	Inventory and replace or install more fire hydrants as needed.	Warren/Camak/ Norwood/ Warrenton	Public Works/ Fire Depts.	Wildfire	C1	1, 2	Structural	$100,000	General Funds, FEMA	1year and Continual	Ongoing As funding becomes available	High
29.	Seek funding fire engines, burhs trucks, equipment trucks and tankers for local fire departments.	Warren/Camak/ Norwood/ Warrenton	EMA/Fire Depts.	Wildfire	C1	1, 2	Non-Structural	$500,000	General Funds, FEMA	1year and Continual	Ongoing As funding becomes available	High
30.	Relocate fire station in Camak to ensure response capabilities 100% of the time	Warren/Camak/	EMA/City Council	Wildfire	C1	1, 2	Structural	$500,000	General Funds, FEMA	2 years	Stalled due to funding	High
31.	Enforce defensible space (30-ft minimum setbacks) between buildings and flammable brush and forestland where possible.	Warren/Camak/ Norwood/ Warrenton	BOC/City Councils/	Wildfire	C2, C3	1, 2, 3	Structural	Staff time	General Funds, FEMA	1 year and Continual	Ongoing	Medium

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.	Continue following GFC service of construction and maintenance of firebreaks around forests and structures, along abandoned roadbeds.	Warren/Camak/ Norwood/ Warrenton	BOC/City Councils/ Planning and Zoning	Wildfire	C2, C3	1, 2, 3	Non-Structural	Staff Time	General Fund	1 year and Continual	Ongoing	High
33.	Strictly follow GFC's guidelines for control burns and permits.	Warren/Camak/ Norwood/ Warrenton	BOC/City Councils/ GFC	Wildfire	C2, C3	1, 2, 3	Non-Structural	Staff Time	General Funds,	1 year and Continual	Ongoing	High
34.	Investigate the feasibility of Implementing the Firewise Community Initiative where appropriate	Warren/Camak/ Norwood/ Warrenton	BOC/City Councils/	Wildfire	C2, C3	1, 2, 3	Non-Structural	$25,000	General Funds, GFC	3 years	Deferred due to lack of staff and coordination	Medium
35.	Improve public awareness of wildfire techniques and awareness of wildfire dangers.	Warren/Camak/ Norwood/Warrenton	EMA/ Fire Depts.	Wildfire	C2, C3	1, 2, 3	Non-Structural	$25,000	General Funds	2 years and Continual	Ongoing	High
36.	Equip all county and city recreation parks with adequate early severe weather warning and lightning detection devices.	Warren/Camak/ Norwood/ Warrenton	BOC/City Councils/ Recreation Dept.	Severe Weather	D1, D2. D3	1, 2, 6	Structural	75,0000	General Funds, FEMA	2 years	Ongoing As funding becomes available	Low
37.	Inspects public buildings and critical facilities and retrofit to reinforce windows, doors, and roofs as needed	Warren/Camak/ Norwood/ Warrenton	EMA/ Fire Code Enforcement and Building Inspection	Severe Weather, Winter Storms	D1, D2, D3	1, 2, 6	Structural	250,000	General Funds, FEMA	3 years	Ongoing No structure has been identified to date for retrofit.	Medium

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.	Enforce building codes for all new buildings and critical facilities.	Warren/Camak/ Norwood/ Warrenton	Code Enforcement and Building Inspection	Flood, Severe Weather, Winter Storm	A5, A6, D1, D2	1, 2, 6	Structural/Non-Structural	Staff Time	General Funds, FEMA	1 year and Continual	Ongoing	High
39.	Install lightning rods in high value critical facilities.	Warren/Camak/ Norwood/ Warrenton	EMA/ Code Enforcement and Building Inspection	Severe Weather, Lightning	D1, D2. D3	1, 2, 6	Structural	100,000	General Funds, FEMA	1 year and continual	Ongoing	Medium
40.	Review current Emergency Response Plan and update when needed.	Warren County EMA	EMA	All hazards	F6, F8	1, 2, 3	Non-Structural	Staff Time	General Funds	2 years and continual	Ongoing	High
41.	Review current evacuation plans paying particular attention to vulnerable populations and update as needed.	Warren County EMA	EMA/BOE	Flood, Wildfire, Severe Weather, Winter Storm	F5, F8	1, 2, 3	Non-Structural	Staff Time	General Funds	2 years and continual	Ongoing	High
42.	Develop a public awareness program about the installation of lightning grounding systems on critical infrastructure, residential and business properties.	Warren/Camak/ Norwood/ Warrenton	BOC/ City Councils/ EMA	Severe Weather, Lightning	D4	1, 2, 3	Non-Structural	Staff Time	General Funds	2 years	Stalled due to lack of staff	High
43.	Inventory all critical facilities and assess generator needs. Install generators where needed.	Warren/Camak/ Norwood/ Warrenton	EMA	All hazards	F3	1, 2, 3, 6	Structural/Non-Structural	300,000	General Funds, FEMA	1 year and continual	Ongoing As funding becomes available	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
44.	Seek funding to ensure all current and future emergency shelters have back-up generators.	Warren/Camak/ Norwood/ Warrenton	EMA	All hazards	F7	1, 2, 3, 6	Structural/Non-Structural	250,000	General Funds, FEMA	3 years	Ongoing As funding becomes available	High
45.	Educate the public on shelter locations and evacuation routes	Warren/Camak/ Norwood/ Warrenton	BOC/ City Councils/ EMA/BOE	Flood, Wildfire, Severe Weather, Winter Storm	F8, F9	3	Non-Structural	Staff Time	General Funds	1 year and continual	Ongoing	High
46.	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.	Warren/Camak/ Norwood/ Warrenton	BOC/ City Councils/ EMA	Flood, Wildfire, Severe Weather, Winter Storm	F8, F9	3	Non-Structural	$10,000	General Funds, FEMA	2year and continual	Ongoing	High
47.	Implement a winter storm education program to include winterization of home and/or business and what to do before, during and after.	Warren/Camak/ Norwood/ Warrenton	BOC/ City Councils/ EMA	Winter Storm	E1	3	Non-Structural	$25,000	General Funds	2 year and continual	Ongoing	High
48.	Review current codes to comply with and enforce the State building code with criteria for design snow	Warren/Camak/ Norwood/ Warrenton	BOC/ City Councils/ Planning and Zoning	Winter Storm	E2	1, 2, 3,	Non-Structural	Staff Time	General Funds	Continual	Ongoing	Medium

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
	load for buildings and structures.											
49.	Create a database to record hazard event information.	Warren/Camak/ Norwood/ Warrenton	EMA	All hazards	F10	1, 2, 3,	Non-Structural	Staff Time	General Funds	3 years	Stalled due to lack of staff	Low
50.	Inventory existing road equipment and purchase needed equipment to maintain roads before, during and after a hazard event.	Warren/Camak/ Norwood/ Warrenton	BOC/ City Councils/ Road Dept.	Flood, Severe Weather, Winter Storm	F2	1, 2	Non-Structural	200,000	General Funds, FEMA	2 years	Ongoing As funding becomes available	Medium
51.	Develop coordinated management strategies for deicing, snow plowing, and clearing roads of fallen trees and debris	Warren/Camak/ Norwood/ Warrenton	BOC/ City Councils/ Road Dept./EMA	Flood, Severe Weather, Winter Storm	F2	1, 2	Non-Structural	Staff Time	General Funds	2 years	Ongoing	Medium
52.	Promote the construction of safe rooms in shelter areas and in public buildings.	Warren/Camak/ Norwood/ Warrenton	BOC/ City Councils/ EMA	Flood, Wildfire, Severe Weather, Winter	F3	1, 2, 6	Structural	2,500,000	General Funds, FEMA	3 years	Ongoing	Medium
53.	Update 911 equipment as needed.	Warren	EMA/ Sheriff	All hazards	F1, F3	1, 2, 6	Structural	150,000	General Funds, FEMA	1 year and Continual	Ongoing As funding becomes available	High
54.	Install weather Service Radio Transmitter on existing towers to provide coverage	Warren/ EMA/	EMA/	All Hazards	F4, F8, F9	1, 2	Structural	150,000	General Funds, FEMA	2 years and continual	Ongoing As funding becomes available	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
	of NWS transmissions											
55.	Request that all new education facilities be designed to serve as public shelters for emergency purposes.	Warren/Camak/ Norwood/ Warrenton	BOC/ City Councils/ BOE	All hazards	F7	1, 2, 6	Non-Structural	Staff Time	General Funds	1 year and Continual	Ongoing	High
56.	Promote and participate in the following American Red Cross Programs • Disaster Resistant Neighborhoods Program • Business and Industry Preparedness Seminar • Community Disaster Education Preparedness presentations	Warren/Camak/ Norwood/ Warrenton	BOC/ City Councils/	All hazards	F4, F8, F9	1, 2 ,3	Non-Structural	10,000	General Funds, FEMA	2 years and Continual	Ongoing	Medium
57.	Work with local cable and radio providers to enhance and broadcast public education on Emergency Preparedness.	Warren/Camak/ Norwood/ Warrenton	BOC/ City Councils/	All hazards	F8, F9	1, 2 ,3	Non-Structural	Staff Time	General Funds	1 year and Continual	Ongoing	High
58.	Implement GIS technology on fire and emergency management vehicles so data can be readily available in the	Warren/Camak/ Norwood/ Warrenton	BOC/ City Councils/	Flood, Wildfire, Severe Weather, Winter Storm	F9, F10	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
	field so more accurate, timely assessments for future mitigation planning activities.											
59.	Seek funding to purchase ambulance	Warren/ EMA/EMS	EMA/EMS	All Hazards	F4, F8, F9	1, 2	Non-Structural	500,000	General Funds, FEMA	2 years and continual	Ongoing Applied in 2016 but did not receive funding. Will apply again.	High
60.	Pave Roads in county that are unpassable due to flooding	Warren County	BOC/ Road Dept.	Flood, Severe Weather,	A1, A2	1, 2, 4, 5	Structural	$1,500,000	General Funds T-SPLOST FEMA, DOT	2 years And continual	Ongoing paving will be performed as funds are available.	Medium
61.	Provide NOAA weather radios to elderly and handicap populations (moved to all hazards).	Warren/Camak/ Norwood/ Warrenton	EMA	Flood, Wildfire, Severe Weather, Winter Storm	F4, F8, F9	1, 2,3	Non-Structural	$50,000	General Funds, FEMA	2 years	Stalled due to no funding	Medium
62.	Review existing comprehensive, development and land use plans to address flood prone areas.	Warren/Camak/ Norwood/ Warrenton	BOC/ City Councils/	Flood	A1, A2	1, 2, 4, 5	Non-Structural	Staff Time	General Funds	3 years and continual	Ongoing	Medium
63.	Preform procurement to contract with debris removal firm to have	Warren/ Warrenton	BOC/ City Councils/	Winter Storm, Severe Weather, Flood,	A4, F2	1, 2	Non-Structural	Staff Time	General Funds	3 months	New	Low

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
	contract in place before hazards to ensure firm can move in immediately.			Wildfire,								

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 from Original Plan:

Flood

- All jurisdiction participate in the NFIP.
- Review existing floodplain zoning/ordinances update and adopt floodplain ordinances as needed. Completed.
- Adopt ordinances to control building and development in known flood prone areas. Completed
- Cap wells not in use and increase wellhead waterproofing. Deleted deals with private property. Added back as an education component.
- Ensure wellhead elevations are above known flooding levels. Handled by Health Dept.
- Review set back requirements from top of banks of creeks and from top of banks of major rivers. Completed set back requirements are consistent with the DNR guidelines.

Dam Failure

- Perform Field Survey including dams, spillways, downstream cross section, and downstream structures with breach zone. Removed due to funding constraints.

Drought

- Identify and inventory all vulnerable agricultural properties to include livestock and develops a protective action plan. Removed, as this is private property.

- Study the range of federal support programs available to assist Warren County's agriculture community. Removed as this is private property and all farmers know about assistance.
- Water Use Ordinances was removed from the plan. All jurisdictions have adopted GA EPD guidelines.
- Map all wells with a flow of 100 gallons per minute or more for use by Emergency management during a drought. These are private wells. Action step removed.
- Conduct a study of proactive measures for Warren County agriculture to include livestock watering ponds and capturing storm water runoff. Removed since this is private property.
- Seek funding for wells that have gone dry and been removed. Funding does not exist for this activity as a grant. It is a loan and must be applied for by private citizens.

Severe Weather

- Inspect all county and municipal critical facilities for proper grounding. Completed.
- Review building codes for proper wind strength and safety regulations and for consistency with state and federal regulations. Completed
- To the greatest extent possible, identify all owners of inadequately installed manufactured homes offer a financial incentive to retrofit them with an appropriate level of anchoring and support. Removed.
- Install surge protectors on critical facilities' electronic equipment in essential county and city facilities. Completed.

Winter Storm

- Encourage harvesting of trees along utility and road corridors, preventing potential winter storm damage. Removed. This is done by electric companies.
- Place all utility lines underground in new subdivisions. There are no subdivision regulations in Warren County. This was removed.

All Hazards

- Upgrade E-911 system. Completed
- County has implemented CODE RED.
- Equip school buses with Automated Vehicle Location. Removed this decision will be made by the Board of Education.
- Provide boat owners with safety tie down procedures with boat registration. Removed. Information will be posted on EMA site as needed.
- Create an EMA website with information pertaining to Emergency Preparedness. Created a Facebook page to promote preparedness

E. Unchanged and/or Ongoing Action Steps: The following mitigation steps remain in the plan. It should be noted that several action steps listed as ongoing will be implemented when funding becomes available. Based on the STAPLEE Criteria these unchanged action steps were found to be relevant in limiting the damage to people and property from a

natural hazard. All action steps have been reformatted to meet the action step criteria established by GEMA and FEMA after the original plan was approved. The new table format from GEMA Plan Update Guidance Template 2013 has been used to organize action steps. STAPLEE worksheet can be found in Appendix D for each action step.

Flood:

- Investigate greater participation Level in the CRS. This step is stalled due to funding and lack of resources.
- Continue to assess storm water run-off.
- Seek funding to construct more storm-water retention facilities, storm-drain improvements and channel improvements to protect existing and new developments.
- Recommend that run-off and water retention ditches be cleared.
    - This is being done by the Warren County Road Department and is a continual goal.
- Promote the preservation of areas in and around watercourses.
- Add greenspace to known flood prone areas.
- Review existing comprehensive, development and land use plans to address flood prone areas. This was done during the 2004-2024 Comprehensive Plan Update but will be a continual action step.

Dam Failure:

- Conduct dam breach analysis to identify assets and population at risk in the event of a failure.
- Draft ordinance-prohibiting development in dam breach zone.
- Install dam failure alert systems.

Drought

- Evaluate existing water system.
- Increase public awareness of watering restrictions.
    - Adopted 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.
- Educate citizens on water conservation.
- Promote increased surface water usage for irrigation.
- Promote usage of surface artesian flow for irrigation.

Wildfire

- Seek funding to install more fire hydrants.
- Review previous firefighter training and implements a schedule for the ongoing training of all firefighters to include wildland fire training.
- Seek funding for more paid firefighters
- Seek funding for needed firefighting equipment. Over the last five years 8 sets of firefighter protective clothing have been purchased for approximately$ 16,000

- Seek funding for more fire tankers (2000 to 3000 gallons) for local fire departments.
- Increase public awareness of wildfire dangers by publishing articles in the local newspaper and providing bulletins to local churches and the schools.
- Recommend a defensible space (30-ft minimum setbacks) between buildings and strictly follow GFC guidelines for control burns and permits.
- Increase public awareness of wildfire dangers around the home and community, such as lighted matches, cigarettes, trash, and the process for obtaining burn permits by publishing articles in the local newspaper and providing bulletins to local schools.
- Participate in the Firewise Community Initiative where appropriate.

Severe Weather

- Inspect public buildings and critical facilities and retrofit to reinforce windows, doors, and roofs as needed.
- Provide NOAA weather radios to elderly and handicap populations.
- Review current evacuation plans paying attention to vulnerable populations and update as needed.
- Review and current Emergency Response Plan and update when needed.
- Install weather Service Radio Transmitter on existing towers to provide coverage of NWS transmissions
- Install generators where needed. Moved to all hazards
- Install generators on all new critical facilities. Moved to all hazards generators.
- Seek funding to ensure all current and future emergency shelters have back-up. Moved to all hazards generators.
- Educate the public on shelter locations and evacuation routes.
- 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 severe event weather.
- Promote the construction of safe rooms in shelter areas and in public buildings
- Promote and participate in the following American Red Cross Programs
  i. Disaster Resistant Neighborhoods Program (educating communities)
  ii. Business and Industry Preparedness Seminar (educating businesses on business continuity planning)
  iii. Community Disaster Education Preparedness presentations

Winter Weather

- Implement a winter-storm education program to include winterization of home and/or business and what to do before, during and after the winter storm event.
- Install generators where needed. Moved to all hazards generators.
- Moved to all hazards generators.
- Develop coordinated management strategies for deicing, snow plowing, and clearing roads of fallen trees and debris

CHAPTER IV. PLAN INTEGRATION AND MAINTENANCE

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

Chapter 1 Section	Updates to Section
I. Implementation Action Plan	Revised to follow New GEMA planning template
II. Evaluation, Monitoring, Updating Note whether the original method and schedule worked	Revised to follow New GEMA planning template
III. Plan update and maintenance	Regulated update and maintenance schedule and public involvement

SECTION I. Implementation Action Plan

A. Administrative Actions: Warren 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 Warren County Board of Commissioners has authorized the submission of this plan to both GEMA and FEMA for their respective approvals. The Warren County Board of Commissioners, Town Council of Camak, City Council of Norwood, and the City Council of Warrenton 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 Warren 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.

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 jurisdictions completed and update to their Joint Comprehensive plan and updated their STWP in 2014. The 2013 PDM plan was reviewed to determine if any of the mitigation activities need to be added to the above-mentioned documents. Warren County, Camak, Norwood, and Warrenton work jointly to produce these planning documents.

The STWP will be updated in 2019 and the Joint Comprehensive Plan is due for an update in 2024. The RC facilities the planning process for both documents and updates both plans. Warren County takes the lead and all jurisdictions must participate to complete the comp plan and STWP. This Plan will be reviewed by Warren County, Camak, Norwood and Warrenton. The requirements of this Hazard Mitigation Plan will be taken into consideration and will be incorporated into Comprehensive Plans, Five-Year Short-Term Work Program, Local Emergency Operations Plans, and all other such Plans as appropriate. This hazard plan will be reviewed and incorporated into the Joint Comprehensive plan and STWP update as needed. In addition, relevant sections of the 2013 plan were included in the revision of the Warren Local Emergency Operations Plan in 2018. This hazard plan update will also be reviewed in the next update of the LEOP.

Once this plan is approved, it will be used by the consultants and planning committees responsible for the update process for the Joint Comprehensive Plan, Short-Term Work Programs, and all other plans that could incorporate the requirements of this plan.

To facilitate inclusion of this Plan, the Warren County Commission and all cities 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, Warren 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. Warren 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
Warren County	Emergency Management Director	Annually
Camak	Mayor	Annually
Norwood	Mayor	Annually
Warrenton	Mayor	

D. Timeframe: The committee has set the second Thursday of every October 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: Warren 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 of posting notices at the government office and posting twice in the paper 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 Warren 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 flyer will also be given to community organizations. The process of providing information to community organizations and gathering places will

ensure that the public is aware of the planning 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 Thursday of every October. The EMA Director will ensure the revised plan is presented to the Warren 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, Warren 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, Warren 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 Warrenton Clipper*, providing Warren 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 Warren 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 Warren County Pre-Disaster Hazard Mitigation Planning Committee is to "*Make the citizens, businesses, communities and local governments of Warren 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 Warren 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 Warrenton Clipper
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/subjec/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
https://www.anyplaceamerica.com/directory/ga/glascock-county-13125/
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/subjec/ad/desc
United States Census Bureau http://www.census.gov/
USDA, NASS, 2012 CENSUS OF AGRICULTURE
http://www.nass.usda.gov/Census_of_Agriculture/index.asp
http://www.sercc.com/ The Southeast Regional Climate Center (SERCC)
http://www.tornadohistoryproject.com/tornado/Georgia Tornado History Project

Other Sources:

American Red Cross
CSRA Regional Commission
Georgia Department of Natural Resources
Georgia Forestry Commission
Warren County
Warren County, Camak
Warren County, Norwood
Warren County, Warrenton
Warren County Board of Education
Warren County Tax Assessor

APPENDICES

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

I. Hazard A - Flood
   a. Description
   b. Data – GEMA Critical Facility Inventory Report
   c. Maps

II. Hazard A – Dam Failure
   a. Description
   b. Data – GEMA Critical Facility Inventory Report
   c. Maps

III. Hazard C - Drought
   a. Description
   b. Data– GEMA Critical Facility Inventory Report
   c. Maps

IV. Hazard D - Wildfire
   a. Description
   b. Data– GEMA Critical Facility Inventory Report
   c. Maps

V. Hazard E – Severe Weather, Including Tornados, Tropical Storms, and Thunder Storms
   a. Description
   b. Data– GEMA Critical Facility Inventory Report
   c. Maps

VI. Hazard F – Winter Storm
   a. Description
   b. Data– GEMA Critical Facility Inventory Report
   c. Maps

Appendix B – Growth and Development Trends / Community Information

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

Appendix C –Planning documents

I. Executive Summary Local Emergency Operations
II. Hazard Risk Analysis
III. Flood Insurance Study
IV. Community Wildfire Protection Plan
V. Timber Impact Assessment GFC
VI. Soil Survey Columbia, McDuffie, and Warren Counties
VII. Executive Summary CSRA Regional Commission Regional Plan

Appendix D – Worksheets used in planning process

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

Appendix E – Copies of Required Planning Documentation

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