

Draft

Ware County, Georgia



Hazard Mitigation Plan 2023-2028

Including the City of Waycross

This Plan produced for the Ware County Board of Commissioners
by the Southern Georgia Regional Commission
through funding provided by the Federal Emergency Management Agency
and the Georgia Emergency Management Agency

**Adopted by Ware County March 13, 2023
And by the City of Waycross March 7, 2023**

Approved by FEMA – Effective --/--/2023 through --/--/2028

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Chapter 1: **Introduction to the Planning Process**

Section I -Purpose, Need, and Authority

This document is the official plan update to the original Ware County Pre-Disaster Mitigation Plan, which was approved by the Georgia Emergency Management Agency (GEMA-HS) and the Federal Emergency Management Agency (FEMA) on September 22, 2006 and expired on September 22, 2011. The subsequent Plan Update took effect on December 9, 2013 and expired on December 9, 2018. The current plan is an update to the 2018 plan and took effect on December 10, 2023 and expires on December 9, 2028.

Purpose:

The purpose of this document is to provide a plan for reducing the devastating impacts that natural disaster events have on the citizens of Waycross and Ware County, Georgia. The plan reviews nine locally identified natural hazards unique to Waycross and Ware County and provides an outline of mitigating factors that can be applied when natural disasters occur.

Nine potential natural hazards have been identified and included in the Ware County Hazard Mitigation Plan by Ware County and Waycross and are as follows: 1. Wildfire; 2. Drought; 3. Thunderstorms/Wind; 4. Flood; 5. Extreme Heat; 6. Tornado; 7. Hailstorm; 8. Hurricane; and 9. Severe Winter Storms.

Need:

In recent years there has been a trend of increased occurrences of natural disasters across Georgia which may be attributed to climate change. Climate change refers to long-term shifts in temperature and weather patterns caused by burning fossil fuels generating greenhouse gas emissions that gather in the earth's atmosphere and act like a blanket wrapped around the Earth, trapping the sun's heat and raising temperatures. Waycross and Ware County are not exempted from the effects of climate change and the increased natural disaster occurrences and the Hazard Mitigation Plan forms the foundation for the community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction and repeated damage. The planning process is as important as the plan itself. It creates a framework for risk-based decision making to reduce damages to lives, property, and the economy from future disasters.

Authority and Administration:

Developing, maintaining, and updating a Hazard Mitigation Plan in Georgia is a must. State and local governments must have an updated plan in place at all times as a condition of receiving certain types of hazard mitigation disaster assistance, emergency and non-emergency. The requirements and procedures for state and local mitigation plans are found in the Code of Federal Regulations (CFR) at Title 44, Chapter 1, part 201 (44 CFR Part 201).

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Ware County authorized the development of the Hazard Mitigation Plan through the execution of the Grantee-Subgrantee Agreement between Ware County and the Georgia Emergency Management and Homeland Security Agency (GEMA-HS-HS). Waycross, the only incorporated city within Ware County, was involved in the plan through the planning and development process.

Ware County Emergency Management Agency (EMA) was the lead agency in the development of the Ware County Hazard Mitigation Plan. Ware EMA was assisted by Southern Georgia Regional Commission for plan process and development. Ware County and Waycross governments also participated along with many city and county related agencies as well as neighboring counties and the general public. Those involved in the plan update from Waycross included: Public Works Director, Wastewater Management, Police Chief and other Officers, Waycross Fire Chief, Mayor of Waycross, and the Waycross EMS Director plus other officers and employees of the City. Ware County was represented by the Ware County EMA Director, Ware County Fire Chief, Ware County EMS Director, Ware County Sheriff, and other officers and employees.

Outreach for this project was accomplished through public hearing advertisements being published in the legal local newspaper and through social media and telephone calls. A master email list of participants was kept and utilized for publishing meeting dates, times and locations. EMA Directors from surrounding counties were notified and invited to participate in the process through email contact.

Southern Georgia Regional Commission provided Planning Staff to attend and conduct workshops for information gathering for assistance with updating the plan to completion. The end result is the multi-jurisdictional Ware County/City of Waycross Hazard Mitigation Plan that was updated, including a comprehensive list of Mitigation Goals, Objectives, and Action steps to assist the local governments in emphasizing a more direct approach to Hazard Mitigation at the local level.

Summary of changes:

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

CHAPTER 1 Section	Updates to Section
I. Purpose, Need, and Authority	<ul style="list-style-type: none"> • Sections were re-written for more organization and readability.
II. Local Methodology, Brief Description of the Plan Update Process and Participants in the Update Process	<ul style="list-style-type: none"> • All participating jurisdictions are the same as in the original plan. Members of the Hazard Mitigation Plan Update Committee (HMPUC) were updated.
III. Description of How Each Section of the Original Plan Was Reviewed and Analyzed and Whether It Was Revised	<ul style="list-style-type: none"> • Planning Committee reviewed each section • Updates made using national, state, and local data
IV. Organization of Plan	<ul style="list-style-type: none"> • Consistent with original plan
V. Local Hazard, Risk and Vulnerability (HRV) Summary, Local Mitigation Goals and Objectives	<ul style="list-style-type: none"> • Updates made using national, state, and local data
VI. Multi-Jurisdictional Special Considerations (HRV, Goals, Special Needs)	<ul style="list-style-type: none"> • No major changes from original plan
VII. Adoption, Implementation, Monitoring and Evaluation (A General Description of the Processes)	<ul style="list-style-type: none"> • Public Hearing date updated
VIII. Community Data (Demographics, Census, Commerce, History, Etc.)	<ul style="list-style-type: none"> • Updates made using most recent available Census Bureau data

Table 1.1: Overview of updates to Chapter 1: Introduction to the Planning Process

Section II - Local Methodology, Plan Update Process, and Participants

Subsequent to the development of the original 2002 Ware Hazard Mitigation Plan, Ware County and Waycross have participated in updates to the 2002, 2006, 2013 and 2018 plans. Each time a Ware County Hazard Mitigation Plan Update Committee (Ware County HMPUC) was formed and a year-long update process was initiated resulting in an update to the previous plan.

Potential members of the Ware County HMPUC were contacted by telephone or by letter/e-mail concerning their participation on the Committee. Southern Georgia Regional Commission (SGRC) staff provided technical assistance to the Ware County HMPUC. The Ware County HMPUC was comprised of representatives from Ware County and the City of Waycross and also included representatives from other groups and individuals who attended meetings and/or conducted research as evidenced by the following list:

Ware County/Waycross Hazard Mitigation Plan Update Committee Members:

- Ware County Board of Commissioners – Scott Moye, Chairman
- Ware County Board of Education – Robert Benchoff, Facilities Director
- Ware County Emergency Management Agency – Jonathan Daniel, Director
- Ware County EMS – Bill Parham, Director
- Ware County Emergency Management – Jodi Osborne, Administrative Assistant
- Ware County Emergency Medical Services – Perry Blackburn, EMS Coordinator
- Ware County Facilities Manager – Brandon Wallace
- Ware County Planning and Zoning Department – James Shubert, Director
- Ware County Fire and Rescue – Dee Meadows, Chief
- Ware County Roads Department – Michael Brooks, Roads Superintendent
- Ware County Sheriff’s Department – Carl James, Major
- Ware County Sheriff’s Department -Captain
- Ware County Board of Education – Robert Benchoff, Director
- City of Waycross, Michael Angelo James, Mayor
- City of Waycross Community Improvement, Marc Hawkins, Director
- City of Waycross Engineering/Roads Inspection – Steve Pope
- City of Waycross Fire Department – David Eddins, Chief
- City of Waycross Police Department – Tommy Cox, Police Chief
- City of Waycross Police Department – Casey Caswell, Lieutenant
- City of Waycross Police Department – Josh Prall, Lieutenant
- City of Waycross Public Works – James Smart, Director
- Pierce County Fire Department – Santo Nino, Fire Chief & EMA Director
- Public Safety Training Center – Jesse Jordan, Director
- Memorial Satilla Health Hospital – Greg Burd, Emergency Management Coordinator
- Southern Georgia Regional Commission – James Horton, Planner

Ware County/Waycross Hazard Mitigation Plan Update Committee Process

The Ware County HMPUC reviewed all chapters and section of the prior mitigation plan and updated them as appropriate using national, state, and local data sources. The process was guided by SGRC staff and was conducted through three workshops. Emphasis was placed on the hazards unique to Ware/Waycross and on the goals, objectives, and action steps. The format was a presentation followed by open discussion and questions. A copy of the previous plan, 2018-2023) was always available at the meeting for reference or review. Sign-in sheets from the public hearings and workshops can be found in Appendix E.

Public Comment and Participation

The public was invited to attend and comment during two public hearings. The “kick-off” public hearing was held on December 7, 2021 and was advertised in *The Waycross Journal-Herald* (see Appendix E1, Section I).

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A second and final public hearing was held on **November 13, 2023 (TBD)** and was advertised in *The Waycross Journal-Herald* (see Appendix E1.5).

Public Hearing/Workshop Schedule:

- Kick-off public hearing –December 7, 2021
- First workshop – February 8, 2022
- Second workshop – March 8, 2022
- Third workshop – April 19, 2022
- **Final public hearing – November 13, 2023 (TBD)**

Ware County/City of Waycross Hazard Mitigation Plan Update Committee
Mission Statement

This committee’s mission is to make Ware County, The City of Waycross, its citizens, local governments, communities, residences, and businesses less vulnerable to the effects of natural hazards. This will be accomplished through the effective administration of Hazard Mitigation Programs, hazard risk assessments, wise floodplain management, and a coordinated approach to mitigation policy through state, regional, and local planning activities.

Ware County/City of Waycross Hazard Mitigation Plan Update Committee
Vision Statement

This committee’s vision is to institutionalize a local Hazard Mitigation ethic through leadership, professionalism, and excellence, thus leading the way to a safe, sustainable Ware County and City of Waycross.

Section III - Description of Review, Analysis, and Revision Method

For the plan update, the Ware County Hazard Mitigation Plan Update Committee (HMPUC) reviewed all chapters and sections of the original plan and updated them, as appropriate, using national, state, and local sources. Meetings were organized in a fashion where the Southern Georgia Regional Commission (SGRC) Planning Staff led the review of the previous plan and conducted an open discussion with participants in the meeting giving verbal feedback through asking and answering questions and suggesting changes and updates to the document. SGRC Staff noted changes, additions and updates at the workshops and added them into the updated document.

In particular, the Wildfire section(s) were updated using the Georgia Forestry Commission’s Ware County Community Wildfire Protection Plan; other chapters and sections were updated using the Ware County/City of Waycross Comprehensive Plan Five-Year Work Program, State of Georgia Hazard Mitigation Plan, and information from the National Climatic Data Center (NCDC). Ware County does not have a Flood Mitigation Assistance Plan. However, the County does have a Flood Insurance Study conducted by FEMA.

After organizing resources, an update of the risk assessment was performed. New forms, worksheets, and data (included in the Appendix) were also completed. Afterward, the Mitigation Goals, Objectives, and Action Steps were reviewed to determine if they were to remain the same, be added to, modified, or removed.

Section IV - Organization of the Plan

This Plan focuses on nine natural hazards chosen by the Ware County HMPUC that may affect and cause damage to Ware County and the City of Waycross. Chapter 2, Chapter 4, and Appendix A are each subdivided into Sections I through IX; these sections reflect the 9 natural hazards that were chosen. The natural hazards are as follows (in order of priority): I. Wildfire; II. Drought; III. Windstorm; IV. Flood; V. Extreme Heat; VI. Tornado; VII. Hailstorm; VIII. Hurricane; and IX. Severe Winter Storm.

The Ware County and City of Waycross Hazard Mitigation Plan exists in one bound volume appended with various papers and documents, as well as a single PDF that is available on the SGRC website. The planning efforts of Ware County and the City of Waycross are intended to be an ongoing process and the Plan is to be amended as appropriate.

Copies of the Plan are on file and may be examined at the Ware County Commission Offices, Waycross City Hall, Waycross-Ware County Emergency Management Agency, the Southern Georgia Regional Commission (as well as the SGRC website), and at the Georgia Emergency Management Agency (GEMA-HS).

Section V – Local Hazard, Risk, and Vulnerability (HRV) Summary, Local Mitigation Goals and Objectives

An Hazard, Risk, and Vulnerability (HRV) Assessment has been formulated through a variety of information obtained during the planning process. Information has been obtained from web sites, published sources, and personal accounts regarding hazards, their history in the community, and when and where they were active. These may be seen in Appendix A, Appendix D, Appendix F and the Hazard Risk Analysis found in Appendix G..

The vulnerability of Ware County and the City of Waycross to natural hazards (including types, numbers, and value of properties) is included in the GEMA-HS Worksheet #3A: Inventory of Assets (contained in Appendix A), the Hazard Risk Analysis (see Appendix F), and the GEMA-HS Worksheet: Ware County/City of Waycross PDM Hazard Frequencies Table (see Appendix D Section I). Chapter 2, Sections I-IX contain an overall summary of each hazard and its past and potential effect on the community.

The type and value of the various properties in the communities is obtained as a base value as reported on GEMA-HS Worksheet #3A: Inventory of Assets (contained in Appendix A I-IX Parts B and adjusted for the coverage of each possible selected hazard).

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Critical Facilities and Critical Infrastructure are also examined as to the present value and potential losses from natural hazards (see Appendix F). The following Essential Facility data was derived from the Georgia Mitigation Information System (GMIS) and includes Ware County and its only incorporated city – Waycross.

Ware County has 35 total Essential Facilities as follows:

- 1 EOC
- 3 Care Facilities
- 15 Fire Stations
- 3 Police Facilities
- 13 Schools

Waycross has 17 total Essential Facilities as follows:

- 0 EOC
- 3 Care Facilities
- 4 Fire Stations
- 2 Police Stations
- 8 Schools

A description that identifies and analyzes a comprehensive range of Mitigation Goals, Objectives, and Action Steps to reduce the effects of each hazard (based on risk assessment findings) is included in Chapter 4, Sections I-IX. In Chapter 6, Section I, there is a description related to prioritization of these Mitigation Goals, Objectives, and Action Steps through the use of cost/benefit analysis, STAPLEE (Social, Technical, Administrative, Political, Legal, Economic and Environmental), and other criteria.

In Chapter 6 there are sections on Implementing the Action Plan (see Section I), Evaluation, Monitoring, Updating (see Section II), and Plan Update and Maintenance (see Section III). Each jurisdiction has identifiable comprehensive ranges of Mitigation Goals, Objectives, and Action Steps related to them that are contained in Chapter 4, Sections I-IX.

Section VI - Multi-Jurisdictional Special Considerations

This plan has been developed for Ware County and its cities within. There is only one incorporated city in Ware County, the City of Waycross. The action steps contained in this plan are intended to be undertaken by both jurisdictions however when there are special considerations unique to a specific jurisdiction, it will be noted.

Section VII - Adoption, Implementation, Monitoring, and Evaluation

Prior to the final public hearing, the final draft plan was submitted to both local governments (Ware County and the City of Waycross) for their final review.

The final draft plan was submitted to GEMA-HS and FEMA for their approval. After their approval, and any recommended changes, resolutions adopting the Plan Update were passed by the local governments after a public hearing for comment and review on **November 13, 2023 (TBD)**. Copies of the resolutions are available in Appendix E.

The comprehensive range of Mitigation Goals, Objectives, and Action Steps (see Chapter 4 Sections I-IX), which contains items related to all local governments, will be implemented as soon as feasible and/or as funds become available to do so.

All sections of the Plan shall be monitored and evaluated annually by the Waycross-Ware County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission Meetings, etc.).

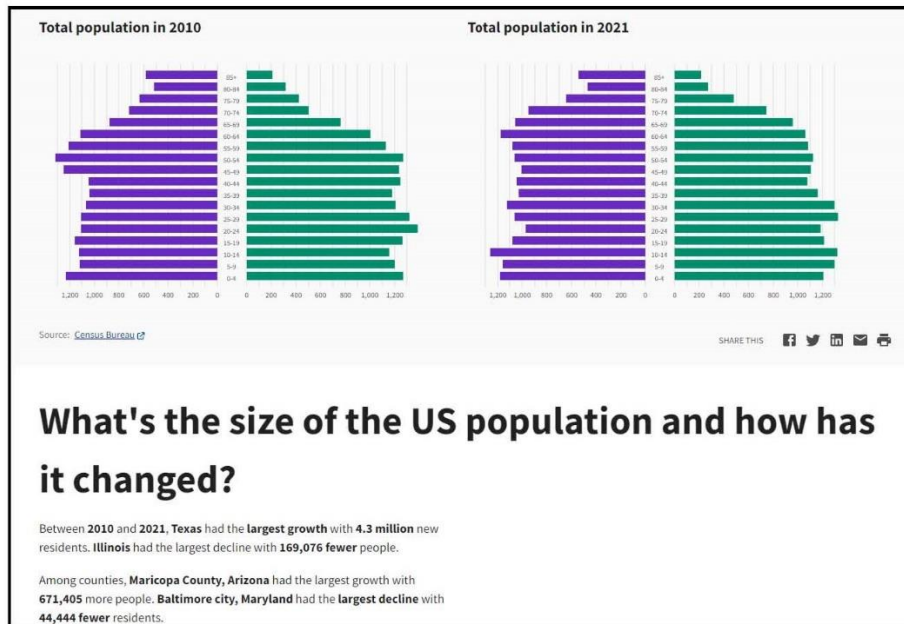
The Waycross-Ware County EMA Director will be charged with ensuring that this plan is implemented, monitored, and periodically updated in subsequent years. The EMA Director will oversee implementation, monitoring, and updates for both jurisdictions (Ware County and the City of Waycross). The method that the Waycross-Ware County EMA will use to monitor the plan and evaluate implementation progress will be the following:

- The Waycross-Ware County EMA will conduct quarterly telephone interviews with the local governments and various area agencies in order to chart their plan progress.
- The EMA Director will hold formal public meetings at least once a year to monitor the progress of the plan implementation and allow the public a forum for expressing concerns, opinions, and ideas.
- Throughout the year, a series of informal meetings will be held in which various aspects of the plan, including monitoring and evaluation, are discussed.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

Section VIII - Community Data

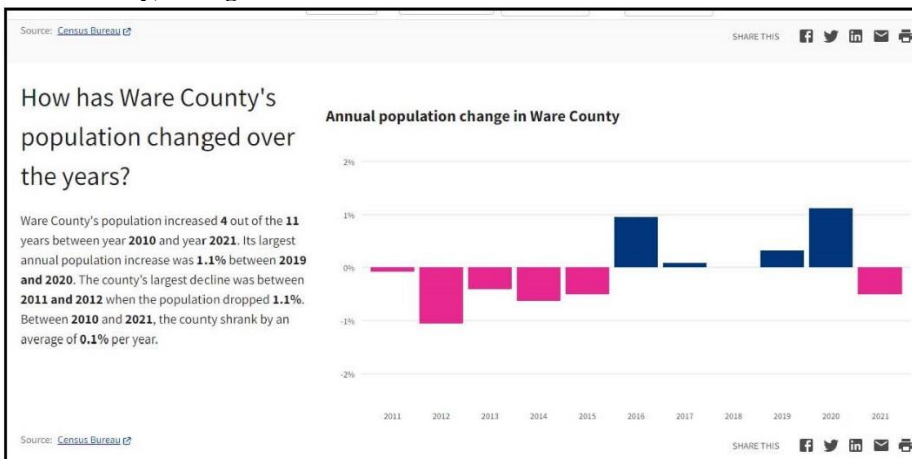
Ware County, Georgia 2010-2021



Source: Usafacts.org – U.S. Census Bureau – USA Facts Website

The population pyramids shown here break down Ware County’s population into male (green) and female (purple). The pyramid then breaks down the population into age brackets beginning with 0-4 age and ending with 85+ age. In 2010, the largest sector of females was in the age range of the middle 50’s and the largest for males was in the range of 20-25. In 2021, the largest group of females fell in the range of 10-15 years old and for the males it was almost dead even for the ranges of 10-15 and 25-29.

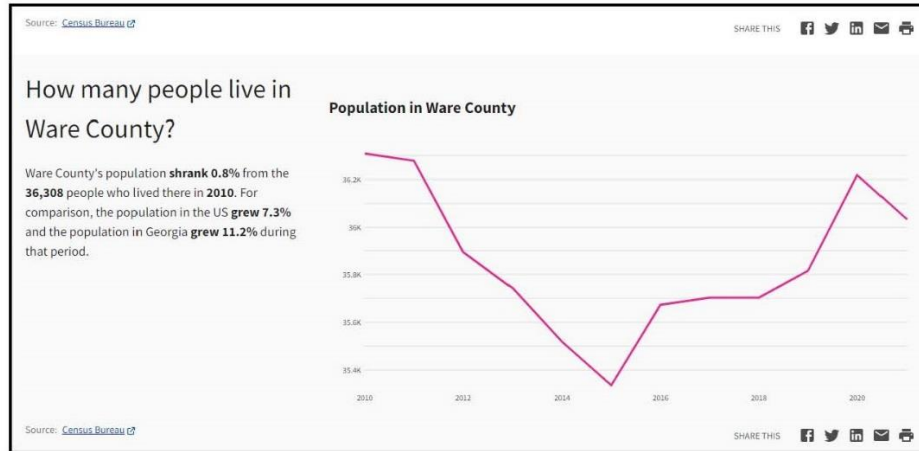
Ware County, Georgia 2010-2021



Source: Usafacts.org – U.S. Census Bureau – USA Facts Website

Ware County has seen a decline (pink) in population in six of the 11 years studied. Four of those years saw a population increase (blue). The largest increase was 1.1% between 2019 and 2020.

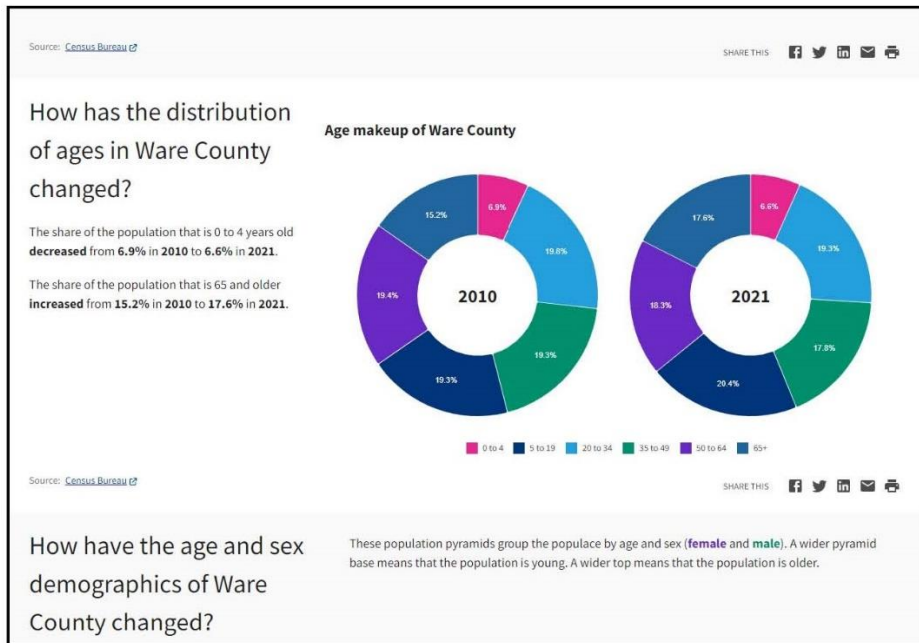
Ware County, Georgia 2010-2021



Source: Usafacts.org – U.S. Census Bureau – USA Facts Website

Ware County’s population was on a steady decline between 2010 and 2015 when it halted and began to go upward again. By 2020, the population was almost back to its high in 2010 when it began another decline as seen in the graph above.

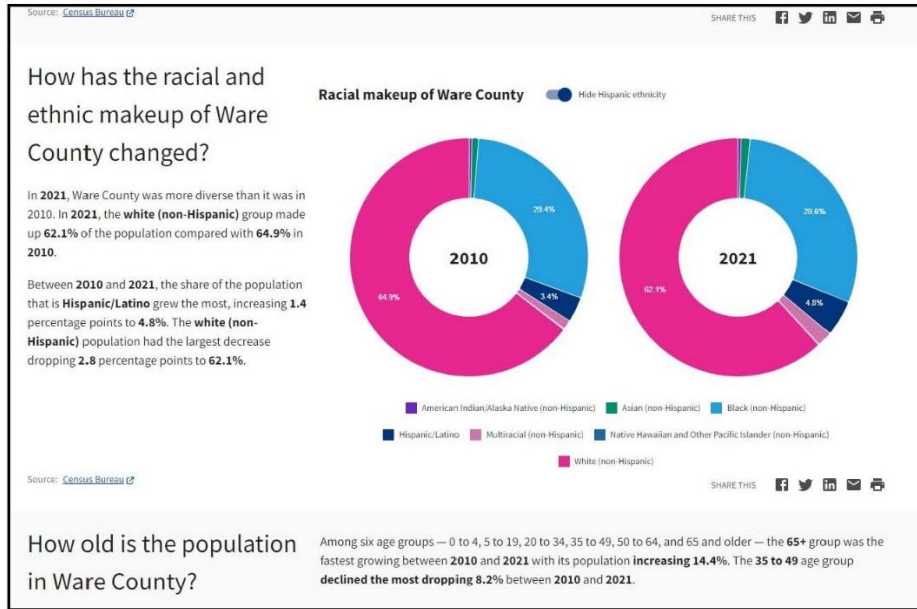
Ware County, Georgia 2010-2021



Source: Usafacts.org – U.S. Census Bureau – USA Facts Website

In Ware County, the share of the population that is 0 to 4 years old decreased from 6.9% in 2010 to 6.6% in 2021. The share of the population that is 65 and older increased from 15.2% in 2010 to 17.6% in 2021.

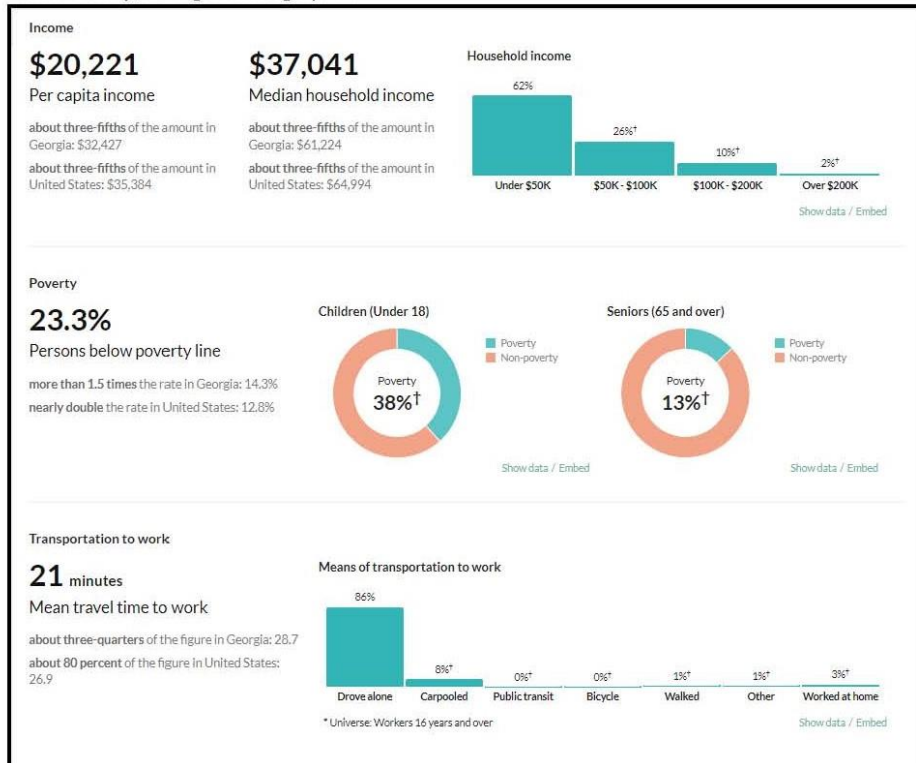
Ware County, Georgia 2010-2021



Source: Usafacts.org – U.S. Census Bureau – USA Facts

The racial make up of Ware County was more diverse in 2021 than it was in 2010. The White (non-Hispanic) (pink) group was the largest race in Ware in 2010 and still remained so in 2021. In 2010, the White (non-Hispanic) race made up 64.9% and it grew smaller by 2021 to 62.1% but still remained dominant. Most other races increased in population in Ware, but the Hispanic/Latino race which grew the largest percentage at 1.4%.

Ware County, Georgia Demographics



Source: censusreporter.org – Census Reporter

Chapter 2: Local Natural Hazard, Risk, and Vulnerability (HRV) Summary

Summary of changes:

Table 2.1 provides a brief description of each section in this chapter and a summary of changes that have been made.

Chapter 2 Section	Updates to Section
I. Wildfire	Updated data and information; edited for clarity
II. Drought	Updated data and information; edited for clarity
III. Windstorm	Updated data and information; edited for clarity
IV. Flood	Updated data and information; edited for clarity
V. Extreme Heat	Updated data and information; edited for clarity
VI. Tornado	Updated data and information; edited for clarity
VII. Hailstorm	Updated data and information; edited for clarity
VIII. Hurricane/Tropical Storm	Updated data and information; edited for clarity
IX. Severe Winter Storm	Updated data and information; edited for clarity

Table 2.1: Overview of updates to Chapter 2

The hazards listed have remained the same from the 2013 and 2018 Ware Hazard Mitigation Plan.

Six of these hazards constitute an equal threat to all geographic areas of the community. Of the remaining three, flood, wildfire, and wind are the only spatially definable hazards chosen by Ware County and the City of Waycross. Flood and wildfire are limited to somewhat smaller areas (For flood, see Chapter 2, Section IV and Appendix A, Section I; For wildfire, see Chapter 2, Section I and Appendix A, Section I). Ware County contains two different wind hazard zones (see Chapter 2, Section III).

Section I. Wildfire

A. Identification of Hazard:

The threat of wildfire has been chosen by the Ware County HMPUC as the most likely hazard to occur and cause damage in Ware County and the City of Waycross, based on past experience, the FEMA-described methodology, and other factors.

According to the Community Wildfire Protection Plan (CWPP) for Ware County, Ware County is the largest county in land area in Georgia. Forestland covers approximately 89% of the county's land area. While about one third of the county, mostly south of the city of Waycross, is located within the confines of the Okefenokee National Wildlife Refuge and the Dixon State Forest, there are still significant large expanses of timber and wildlands to the immediate southwest and southeast of town along with major stretches of pine flatwoods with high fuel loadings to the west and northwest of Waycross including many smaller communities such as Manor, Dixie Union, Millwood, Waresboro, Pebble Hill, Bickley and Jamestown.

Historic data have been examined from various sources (see Appendix A), from the Georgia Forestry Commission's Ware County "Community Wildfire Protection Plan," and from the NOAA Storm Events Database (see Appendix F), as well as from local history and personal accounts, in order to determine the frequency of events.

In addition, hazard maps generated by The Critical Facilities Inventory for wildfire (see Appendix A1.2) were examined. A Risk Factor map for Ware was also consulted and can be found in (Appendix A1.3). Complete inventory information is contained at <https://www.itos.uga.edu/GEMA-HS>. These map values come from the predicted model of the GEMA-HS database.

Nationwide, approximately 80 percent of wildfires are caused by people. In Georgia, debris burning is the #1 cause of wildfire according to the Georgia Forestry Commission. In Ware County, the leading cause of fires is also debris burning according to the Community Wildfire Protection Plan (CWPP). Lightning is also a major igniter of fires.

Acreage Burned/Number of Fires by Fire Cause for Ware County for FY 2008-2017		
Fire Cause	Acreage Burned	Number of Fires
Campfire	29.56	19
Children	3.55	11
Debris Burning	806.19	204
Incendiary	370319	34
Lightning	580.89	73
Machine Use	19,294.97	49
Miscellaneous	21,046.68	52
Railroad	0.00	0
Smoking	26.02	7
Undetermined	93.25	26
Total	42,251.30	475

Over the past fifty years, Ware County has averaged around 127 reported wildfires a year with almost 50% of these occurring during February, March April and May. These fires have burned an average of 746 acres a year over the same period (excluding the large fire of 2007), though generally there has been some slight decrease since the advent of burning permits the past 20 years. However, the seasonality of both the numbers of fires and acres burned has evened out somewhat over this period. The leading cause of fires in Ware County has been debris burning accounting for about 35% of the fires and about 25% of the acres lost. The second and third leading causes of fires were incendiary or arson and railroads accounting for 16% and 15% respectively of the fires reported and 19% and 20% of the acres lost. (Source CWPP - Sept. 2018 – Appendix C1)

More recently over the last 10 years, fiscal years 2008-2017, Ware County has averaged 54 wildfires and 4234 acres burned annually. During this the time the leading cause was debris burning causing 43% of the fires and burning 2% of the acres. Lightning was the 2nd leading cause accounting for 15% of the fires and 1% of the acreage burned. Machine use was the 3rd major cause with 10% of the fires and 46% of the acreage burned. Miscellaneous causes such as powerlines, fireworks, etc. accounted for 11% of the fires and 50% (21,047 acres) of the acreage burned. Incendiary (arson) caused fires, while lower in the most recent years, is still of concern causing 7% of the fires during these years and about 1% of the acreage burned. (Source CWPP – Sept. 2018 – Appendix C1)

Low humidity, lack of recent precipitation (or drought conditions), wind speed, and temperature are a combination of weather conditions that favor the kindling and spread of forest or brush fires. Dead fuel moisture, in combination with the above, also provides for the kindling and spread of forest or brush fires. Much of Ware County and some areas in and near the City of Waycross are wooded with commercial and free-growing pine trees and other trees. These trees can and do catch fire frequently in both small and large fire events.

Wildfires often begin unnoticed. They spread quickly and can change direction rapidly, igniting brush, trees, and homes. Also, fire may smolder for weeks at a time in the underbrush and then ignite some distance away from where it started, resisting efforts to eradicate it and spreading quickly throughout the area. Surface fires are the most common type of wildfires, moving slowly and burning along the forest floor, killing and damaging vegetation. Ground Fires, another type, are usually started by lightning and burn on or below the forest floor through the root systems. The final type, Crown Fires, spread by wind moving quickly along the tops of trees.

B. Profile of Wildfire Events, Frequency of Occurrences, Probability:

The historic record for minor to major wildfire is spotty at best, with many unreported or underreported events. All of Ware County and the City of Waycross are vulnerable to wildfires due to their unpredictability and random occurrences. The effects can range from minimal damage to severe and widespread damage. Wildfires can occur at any time of the year.

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Members of the Ware County HMPUC have witnessed many unreported and underreported cases of minor to major wildfire events occurring in Ware County and the City of Waycross, some lasting for days, weeks, or months at a time.

According to National Climatic Data Center (NCDC) information (see Appendix F1, Section 1), there are 13 reports of wildfires occurring in Ware County (including the City of Waycross) between 01/01/1950 and 12/31/2021. More complete data are provided by the Georgia Forestry Commission. According to GFC data, there were 6,213 wildland fires in Ware County (including the City of Waycross) from Jan. 1, 1950 to Dec. 31, 2021, an average of 87.5 per year. (This total figure includes the 13 events reported by the NCDC.) The Historic Recurrence Interval is 0.01 years. The Historic Frequency Chance is 11,722% per year. The past 10-year Record Frequency Per Year is 58.6, the past 20-year frequency is 81.9, and the past 50-year frequency is 117.02.

Since the previous Hazard Mitigation Plan was completed, there have been an estimated 174 wildfire events in Ware County and the City of Waycross.

Most of Ware County has a wildfire hazard score of 1. Scattered areas throughout the county have a score of 0. Much of the area surrounding the City of Waycross has a hazard score of 3. Some areas to the east of Waycross have a hazard score of 4. A map of wildfire hazard areas with critical facilities is shown in Appendix A1.2. The Community Wildfire Protection Plan (CWPP) is included in Appendix C.

The Ware County and City of Waycross Fire Departments and the Georgia Forestry Commission, in their “Community Wildfire Protection Plan” (see Appendix C), have determined through hazard ratings that the following areas have a Low, Moderate or High level of probability concerning wildfire:

Ware County Assessment Ratings

Boggy Bay (Moderate)
Telmore (Moderate)
Millwood Plantations (High)
Southeastern (Moderate)
Millwod (Moderate)
Emerson Park (Moderate)
Aycock Road (Moderate)
Dixie Union (Moderate)
Astoria Road (Extreme)
Waresboro (Moderate)
Manor (Moderate)
Josephine Park (Extreme)
Musket Trail (Moderate)
Jamestown Road (Moderate)
Palmetto Place (Moderate)

As can be seen from the above information, there are several sources of information that have different determinations of wildfire risks although all place certain areas of Ware County and the City of Waycross within wildfire hazard areas.

C & D. Inventory of Assets exposed and potential loss to Wildfire:

From a fire management perspective, the Wildland-Urban Interface (WUI) is commonly defined as an area where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. As fire is dependent on a certain set of conditions, the National Wildfire Coordinating Group has defined the wildland-urban interface as a set of conditions that exists in or near areas of wildland fuels, regardless of ownership. This set of conditions includes type of vegetation, building construction, accessibility, lot size, topography and other factors such as weather and humidity. When these conditions are present in certain combinations, they make some communities more vulnerable to wildfire damage than others. This “set of conditions” method is perhaps the best way to define wildland-urban interface areas when planning for wildfire prevention, mitigation, and protection activities.

There are three major categories of wildland-urban interface. Depending on the set of conditions present, any of these areas may be at risk from wildfire. A wildfire risk assessment can determine the level of risk. These three categories are:

- 1) “Boundary” Wildland-Urban Interface is characterized by areas of development where homes, especially new subdivision, press against the public and private wildlands, such as private or commercial forest land or public forests or parks. This is the classic type of wildland-urban interface, with a clearly defined boundary between the suburban fringe and the rural countryside.
- 2) “Intermix” Wildland-Urban Interface areas are places where improved property and/or structures are scattered and interspersed in wildland areas. These may be isolated rural homes or an area that is just beginning to go through the transition from rural to urban land use.
- 3) “Island” Wildland-Urban Interface, also called occluded interface, are areas of wildland within predominantly urban or suburban areas. As cities or subdivisions grow, islands of undeveloped land may remain, creating remnant forests. Sometimes these remnants exist as parks, or as land that cannot be developed due to site limitations, such as wetlands.

Due to the unpredictability and the potential spread of wildfire, it will be assumed that 100% of the Critical Facilities exist in a wildfire hazard area (i.e. an area with a wildfire hazard score of 1 or 2). Based on this theory, it may also be assumed that 100%, or 11,267, of the residential structures combined in both Waycross and Ware County may be affected, with a total value of \$969,871,348. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (3,067) in Ware County (which includes those property types in the City of Waycross) may be affected, with a total value of \$919,994,424.

E. Land Use and Development Trends Related to Wildfire:

Development continues to take place in Ware County and the City of Waycross, with a large amount of new construction taking place in areas bordered by pine tree production and other naturally growing trees. More and more people are making their homes in woodland settings in or near forest or in rural areas. These homeowners enjoy the beauty of the environment, but face the real danger of wildfires. This is not a new phenomenon, but has always been the case. The trend is for this is to continue.

Ware County and the City of Waycross currently operate in compliance with the standards of the 2018 International Building Code. Both jurisdictions have building inspection programs and zoning ordinances. Both jurisdictions are served by the joint Waycross-Ware County Planning Commission. No other trends regarding the relationship between land use/development and this hazard have been identified at this time.

F. Multi-Jurisdictional Wildfire differences:

Virtually all of Ware County and the City of Waycross may be affected by wildfire. Geographical differences are not so much dependent on jurisdiction, as on land use and fire district resources. The Ware County Fire Department is made up of 15 paid firefighters and 50 volunteers at 11 stations throughout the County. The City of Waycross Fire Department has 52 paid firefighters in four stations.

G. General overall HRV summary of wildfire events and their impact on the Community:

Wildfire has the potential to cause damage in any wildfire-prone area, at any time, throughout Ware County and the City of Waycross. The cost of the damage and the potential loss of life may be higher if a wildfire occurs in the more densely populated areas. The effects could range from minimal damage to severe and widespread damage. Wildfires can occur at any time of the year.


The Ware County HMPUC recognized wildfire as the most likely natural hazard to occur and cause damage. They have developed a comprehensive range of Mitigation Goals, Objectives, and Action Steps to lessen wildfire impact on Ware County and the City of Waycross, which are contained in Chapter 4, Section I.


Ware County and the City of Waycross have completed a comprehensive mapping of the community's environmentally sensitive areas and performed a historic resource survey within the community. The County and City have completed their Community Wildfire Protection Plan, which contains goals and objectives to decrease the community's overall vulnerability to this hazard.

Since the previous plan was approved, there have not been any new developments, regulations, or programs that would either increase or decrease the community's overall vulnerability to this hazard.

Draft

Ware County Fire Rescue utilizes Social Media to post photos and descriptions of fires in the county. The following are some photos of wildfires that occurred in 2021 and 2022.

 Ware County Fire Rescue
June 3, 2021 · 🌐



0:11 / 0:33

Georgia Forestry Commission
June 2, 2021 · 🌐

The Ft. Mudge Fire started on May 25 and is burning about 13 miles SE of Waycross. The [#wildfire](#) has burned 1,063 acres and is currently 70% contained. The fire originated from a silvicultural burn on Dixon Memorial Forest that escaped containment. Smoke may become heavy across US Hwy 1 in the morning hours, so motorists should follow local law enforcement instructions. Crews are currently reinforcing containment lines and plowing contingency lines around the perimeter of the fire. We'll post updates here every few days.



Ware County Fire Rescue

March 27 · 🌐



On Sunday March 27, 2022 at 5:21 PM, WCFR Firefighters responded to reports of a possible structure fire off Cleve Rd. Arriving units found a yard on fire, getting close to the structure. Fire units quickly pulled a line and extinguished the fire. No damage reported to the structure and no injuries reported. Thank you [Ware County Sheriff's Office](#) and [Ware County Emergency Medical Service](#) for their assistance.





Ware County Fire Rescue

April 11 · 🌐



On Monday, April 11, 2022 at 4:51 PM, WCFR Firefighters responded to a possible field fire off Harvey Thrift Rd. Arriving units found a debris pile had gotten out of control and started to attack the fire. WCFR went in to structural protection mode (meaning protecting all structures in the area) while Forestry assisted by cutting fire breaks and flying above to get eyes on the fire. Waycross Fire Dept was called mutual aid to assist in structural protection. At the end, about... See more



Draft

In May of 2021, a 90-acre prescribed burn got out of control in Ware County and turned into a 600+- acre fire near Swamp Perimeter Road near Waycross.



Credit FCN







Ware County Fire Rescue

June 25 · 🌐



On Friday, June 24, 2022 at 10:13 PM, WCFR firefighters responded to a possible brush fire off Camp Branch Cross Rd. Forestry was dispatched along with WCFR, arriving units found a fire that had spread about 4 acres. No buildings were in danger so forestry put a break around the fire. No injuries were reported. Thank you [Ware County Sheriff's Office](#), [Georgia Forestry Commission](#) and WCFR volunteers for their assistance.



Draft



Ware County Fire Rescue

August 5 · 🌐

...

At approximately 2:30pm on 8/04/22 WCFR units were dispatched to a woods fire in the area of Bickley hwy and J Lee rd. Responding units included engines 1102 and tanker 1151 from station 1 and engine 1110 from station 10. Additional units included Georgia Forestry Commission and Rayonier. Approximately 150 acres burned from what is thought to have started from a lightning strike. No injuries or loss of structural property occurred.





Ware County Fire Rescue

September 29 · 🌐



On 9/29/22 at approximately 2:42pm stations 1 and 7 were dispatched to the report of a field on fire off of Fairfax road. First arriving units found approximately 3.5 acres of fire contained to an agricultural field. Units from Georgia Forestry Commission responded with two tractors and were able to put a fire break to contain fire to the field and prevent further growth.



Draft

The following is a graphic of a notice of elevated Fire Danger showing a humidity map and its relativity to the advent of wildfires.

 Ware County Fire Rescue
October 19 at 3:55 PM · 🌐



MINIMUM RELATIVE HUMIDITY TODAY

ELEVATED FIRE DANGER

WHAT Minimum Relative Humidity Values around 25%. Dry Fuels and Breezy North-Northwest Winds around 15 mph

WHERE Inland Locations

WHEN 12 PM through 5 PM ET

ACTION Fires have the potential to become uncontrolled under these conditions - Check with local forestry about outdoor conditions

 NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
JACKSONVILLE, FL
Issue: 4:15 AM on Wednesday, October 19, 2022

15-	20-	25-	30-	35-
20%	25%	30%	35%	40%

Section II. Drought

A. Identification of Hazard:

The threat of a drought has been chosen by the Ware County HMPUC as the second most likely hazard to occur and cause damage in Ware County and the City of Waycross, based on past experience, the FEMA-described methodology, and other factors. Historic data have been examined from various sources including the North American Drought Monitor (see Appendix F), as well as from local history and personal accounts, in order to determine frequency of events. In addition, hazard maps generated by The Critical Facilities Inventory were examined.

What is known as drought is usually the result of several factors that come together to gradually increase dry conditions in the community until they reach a severe and extreme level. These factors could be related to weather patterns, lack of rainfall, wind conditions, lack of water from rivers and upstream areas, or other factors.

Although drought is usually associated with the summer months due to its more visible effects, it can occur at any time and its effects can last throughout the year and continue from year to year. These effects may range from agricultural losses, to increased wildfire and fire risk, to lack of water for citizens and firefighting, to increased flooding risk (because dry land can be less absorbent of rainfall), as well as other effects that influence other hazards and the safety of the community.

Crops (including trees) are usually most adversely affected by drought events, along with community residents whose water supplies are restricted or cut off (especially those using individual wells). Many residents of Ware County and the City of Waycross have shallow wells which often go dry during drought periods, thus leaving those residents without water for extended periods of time.

The ***Palmer Z Index*** measures short-term drought on a monthly scale. The ***Palmer Crop Moisture Index (CMI)*** measures short-term drought on a weekly scale and is used to quantify drought's impacts on agriculture during the growing season.

The ***Palmer Drought Severity Index (PDSI)*** (known operationally as the ***Palmer Drought Index (PDI)***) attempts to measure the duration and intensity of the long-term drought-inducing circulation patterns. Long-term drought is cumulative, so the intensity of drought during the current month is dependent on the current weather patterns plus the cumulative patterns of previous months. Since weather patterns can change practically overnight from a long-term drought pattern to a long-term wet pattern, the PDSI (PDI) can respond fairly rapidly.

The hydrological impacts of drought (e.g., reservoir levels, groundwater levels, etc.) take longer to develop and it takes longer to recover from them. The ***Palmer Hydrological Drought Index (PHDI)***, another long-term drought index, was developed to quantify these hydrological effects. The PHDI responds more slowly to changing conditions than the PDSI (PDI).

The U.S. Drought Monitor (<http://droughtmonitor.unl.edu>) is produced in partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration and has been used to determine some of information in this section.

The U.S. Drought Monitor utilizes a variety of sources, including the Palmer Index(s), to rate an area as D0 (Abnormally Dry), D1 (Moderate Drought), D2 (Severe Drought), D3 (Extreme Drought) and D4 (Exceptional Drought). Any area rated at D0 or above was considered to be in a drought for the purposes of this plan.

There have been cases in Ware County and the City of Waycross where some level of drought conditions have persisted for years in a row.

B. Profile of Drought Events, Frequency of Occurrences, Probability:

The historic record for drought is spotty at best, especially prior to the year 2000, with many unreported or underreported drought events. All of Ware County and the City of Waycross are vulnerable to drought due its unpredictability and widespread coverage. The effects vary depending on the severity of the drought and the length of time that it has occurred. Members of the Ware County HMPUC have witnessed many unreported and underreported cases of drought events occurring within Ware County and the City of Waycross.

According to NOAA (see Appendix F1.2A), there was only one report of drought occurring in Ware County (including Waycross) between 01/01/1950 and 5/2/20. However, the U.S. Drought Monitor (see Appendix F1.2) (<http://droughtmonitor.unl.edu>) offers more complete data, reporting that some level of drought occurred in Ware County in the majority of years between 2000 and 2022. While most of these events were D0 (Abnormally Dry) and D1 (Moderate Drought), there were D4 events (Exceptional Drought) reported in 2011 and 2012, as well as many years with some instance of D3 events (Extreme Drought). D2 events (Severe Drought) have occurred in most years since 2000.

U. S. Drought Monitor Legend for Drought Conditions

Intensity and Impacts



Source: droughtmonitor.unl.edu

More recently, in May 2017, between 74 and 76 percent of Ware County was under D3 conditions, and in April 2017 100% of the County was under D1 conditions. In the last half of March 2018 and three weeks of April Ware County was 100% under D1 conditions again. For three weeks in June of 2018, Ware County was 100% in D1 conditions. In 2019, Ware County

Draft

saw its first very dry conditions in June where, for three weeks, it was 100% in D1 and for one week it was 100% in D2 conditions. Shortly thereafter, it the conditions again reached 100% D1 conditions for seven weeks beginning September 9, 2019 and ending November 5, 2019. For the week of October 15, 2019, the county was 100% in a D2 (Severe Drought) condition. The drought conditions ended in December of 2019 and Ware County did not occur again until the week of March 8, 2022 when 95+% of the county registered a D1 condition. In July 2022, Ware fell into the D1 category with 35% of the county affected.

According to US Drought Monitor data, a total of 652 drought events (D0, D1, D2, D3, and D4) are recorded for the Jan. 1, 2000 – Oct. 11, 2022 timeframe (which includes the 1 event listed by the NCDC).

The Historic Recurrence Interval is 0.03 years. This is a 3,009.52% Historic Frequency Chance per year. The past 10-year Record Frequency Per Year is 32.2, the past 20-year frequency is 29.15, and the past 50-year frequency is 12.64. (However, it should be noted that no drought events are recorded prior to the year 2000 in the available data.) For further information, see Appendix A and Appendix F.

C & D. Inventory of Assets exposed and potential loss to Drought:

The threat of a drought is a constant in Ware County and the City of Waycross due to the unpredictability and widespread coverage of the hazard. Drought events tend to be area-wide and will likely not be limited to certain areas of the community, although the effect on residents will depend on the infrastructure and services available (for example, the depth of wells).

Approximately 100% of the Residential property (17,044 of 17,044) in Ware County (including the City of Waycross) may be affected, with a total value of \$969,871,348. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (21,325 of 21,325) in Ware County (including the City of Waycross) may be affected, with a total value of \$919,994,424. The values are based on the most recent available tax roll data for Ware County and the City of Waycross, provided by the Ware County Tax Assessor's Office.

According to the inventory database reports and maps, all of the 167 Critical Facilities and Infrastructure for Ware County (including the City of Waycross) are located in areas that may be affected by drought. The total value of these 171 Critical Facilities is \$1,889,865,772.

E. Land use and development trends related to Drought:

The dry conditions caused by drought can be conducive to a further hazard covered in this plan, namely wildfire. During periods of drought, the community must be on high alert for wildfire hazards. This hazard is exacerbated due to the fact that new construction in Ware County and the City of Waycross continues to take place in areas bordered by pine tree production and other naturally growing trees. These homeowners enjoy the beauty of the environment, but face the

real danger of wildfires. This is not a new phenomenon, but has always been the case. The trend is for this is to continue. For more specific information, see Chapter 2, Section I (Wildfire).

F. Multi-Jurisdictional Drought Differences:

Due to the area-wide nature of drought events, all of Ware County and the City of Waycross are at equal risk. However, households in unincorporated Ware County are served by well water while the City of Waycross operates its own water and sewer systems. Due to the capacity of the municipal water system, it is predicted that households in the City of Waycross will be better protected from drought-related water shortages than households in the unincorporated county, which must rely on their own local wells for water. Data regarding the depth of individual wells are not currently available.

G. General Overall HRV Summary of Drought Events and their impact on the Community:

Drought has the potential to cause damage at any place, at any time, throughout Ware County and the City of Waycross. The cost of the damage may be higher if the drought occurs at certain critical times of the year that would exacerbate its impact on agricultural production or greatly increase the risk of wildfires.

The Ware County HMPUC recognizes drought as the second most likely natural hazard to occur and cause damage. They have developed a comprehensive range of Mitigation Goals, Objectives, and Action Steps to lessen the impact of drought on Ware County and the City of Waycross. These are contained in Chapter 4, Section II. Due to continued population growth, increased water usage has the potential to put a strain on the municipal water system and on public and private wells, which can become dry under drought conditions.

Since the previous plan was approved, there have not been any new developments, regulations, or programs that would either increase or decrease the community's overall vulnerability to this hazard.

Section III. Thunderstorm/Windstorm

A. Identification of Hazard:

The threat of Thunderstorm/Windstorm has been chosen by the Ware County HMPUC as the third most likely hazard to occur and cause damage in Ware County and the City of Waycross, based on past experience, the FEMA-described methodology, and other factors. Historic data have been examined from various sources, including the National Climatic Data Center (NOAA) (see Appendix F) as well as from local history and personal accounts, in order to determine frequency of events.

In addition, hazard maps generated by The Critical Facilities Inventory for wind (see Appendix A8.3) were examined. The values on the map come from the predictive model of the GEMA-HS database.

Windstorms have the potential to be destructive and may occur at any time. Thunderstorms with wind may develop quickly in Ware County and the City of Waycross due to inclement weather conditions, a passing front, or hurricane/tropical storm events. Wind events may occur on their own, due to inclement weather, as a result of a passing front, or as part of thunderstorm or hurricane/tropical storm events.

Thunderstorms are one of the most common weather products of our atmosphere and should not be underestimated. They can cause serious injury, substantial property damage, and even death. Dangers associated with thunderstorms include lightning, hail, heavy rain, flooding, and strong winds. Wind speeds in a thunderstorm can exceed 100 mph and can be as damaging as a tornado. Lightning associated with these events may be one of the leading causes of wildfire in Ware County. Lightning can also occur even if it is not raining.

NOAA Types of Thunderstorms:

THE SINGLE CELL STORM:

Single cell thunderstorms usually last from 20 to 30 minutes. A true single cell storm is actually quite rare because often the gust front of one cell triggers the growth of another.

Most single cell storms are not usually severe. However, it is possible for a single cell storm to produce a brief severe weather event. When this happens, it is called a pulse severe storm. Their updrafts and downdrafts are slightly stronger, and typically produce hail that barely reaches severe limits and/or brief microbursts (a strong downdraft of air that hits the ground and spreads out). Brief heavy rainfall and occasionally a weak tornado are possible. Though pulse severe storms tend to form in more unstable environments than a non-severe single cell storm, they are usually poorly organized and seem to occur at random times and locations, making them difficult to forecast.

THE MULTICELL CLUSTER STORM:

The multicell cluster is the most common type of thunderstorm. The multicell cluster consists of a group of cells, moving along as one unit, with each cell in a different phase of the thunderstorm life cycle. Mature cells are usually found at the center of the cluster with dissipating cells at the downwind edge of the cluster.

Multicell Cluster storms can produce moderate size hail, flash floods and weak tornadoes.

Each cell in a multicell cluster lasts only about 20 minutes; the multicell cluster itself may persist for several hours. This type of storm is usually more intense than a single cell storm, but is much weaker than a supercell storm.

THE MULTICELL LINE STORM (SQUALL LINE):

The multicell line storm, or squall line, consists of a long line of storms with a continuous well-developed gust front at the leading edge of the line. The line of storms can be solid, or there can be gaps and breaks in the line.

Squall lines can produce hail up to golf-ball size, heavy rainfall, and weak tornadoes, but they are best known as the producers of strong downdrafts. Occasionally, a strong downburst will accelerate a portion of the squall line ahead of the rest of the line. This produces what is called a bow echo. Bow echoes can develop with isolated cells as well as squall lines. Bow echoes are easily detected on radar but are difficult to observe visually.

THE SUPERCELL STORM:

The supercell is a highly organized thunderstorm. Supercells are rare, but pose a high threat to life and property. A supercell is similar to the single-cell storm because they both have one main updraft. The difference in the updraft of a supercell is that the updraft is extremely strong, reaching estimated speeds of 150-175 miles per hour. The main characteristic which sets the supercell apart from the other thunderstorm types is the presence of rotation. The rotating updraft of a supercell (called a mesocyclone when visible on radar) helps the supercell to produce extreme severe weather events, such as giant hail (more than 2 inches in diameter, strong downbursts of 80 miles an hour or more, and strong to violent tornadoes.

The surrounding environment is a big factor in the organization of a supercell. Winds are coming from different directions to cause the rotation. And, as precipitation is produced in the updraft, the strong upper-level winds blow the precipitation downwind. Hardly any precipitation falls back down through the updraft, so the storm can survive for long periods of time.

The leading edge of the precipitation from a supercell is usually light rain. Heavier rain falls closer to the updraft with torrential rain and/or large hail immediately north and east of the main updraft. The area near the main updraft (typically towards the rear of the storm) is the preferred area for severe weather formation.

Most thunderstorm and wind events in Ware County and the City of Waycross are relatively minimal, typically lasting about 30 minutes. However, there is also the possibility of longer-duration thunderstorms and wind events associated with hurricane/tropical storm events or passing fronts. Thunderstorms and wind events can occur at any time, but are most likely to occur in the afternoon and evening hours in the spring and summer.

B. Profile of Thunderstorm and Wind Events, Frequency of Occurrences, Probability:

The historic record for thunderstorms and wind is spotty at best, with many unreported or underreported events. All of Ware County and the City of Waycross are vulnerable to thunderstorms and wind due to their unpredictability and random occurrences, but the effects, if any, are usually minimal.

Members of the Ware County HMPUC have witnessed many unreported and underreported cases of minimal to severe thunderstorm and wind events occurring within Ware County and the City of Waycross.

BEAUFORT WIND SCALE

Beaufort Number	Description	Wind speed	Wave height	Sea conditions	Land conditions	
0	Calm	< 1 knot < 1 mph < 2 km/h	0 ft 0 m	Sea like a mirror	Smoke rises vertically	
1	Light air	1–3 knots 1–3 mph 2–5 km/h	0–1 ft 0–0.3 m	Ripples	Direction shown by smoke drift	
2	Light breeze	4–6 knots 4–7 mph 6–11 km/h	1–2 ft 0.3–0.6 m	Small wavelets	Wind felt on face	
3	Gentle breeze	7–10 knots 8–12 mph 12–19 km/h	2–4 ft 0.6–1.2 m	Large wavelets	Leaves and small twigs in constant motion	
4	Moderate breeze	11–16 knots 13–18 mph 20–28 km/h	3.5–6 ft 1–2 m	Small waves	Raises dust and loose paper	
5	Fresh breeze	17–21 knots 19–24 mph 29–38 km/h	6–10 ft 2–3 m	Moderate waves	Small trees and leaves begin to sway	
6	Strong breeze	22–27 knots 25–31 mph 39–49 km/h	9–13 ft 3–4 m	Large waves	Large branches in motion	
7	High wind, moderate gale, near gale	28–33 knots 32–38 mph 50–61 km/h	13–19 ft 4–5.5 m	Sea heaps up	Whole trees in motion	
8	Gale, fresh gale	34–40 knots 39–46 mph 62–74 km/h	18–25 ft 5.5–7.5 m	Moderately high waves	Twigs break off trees	
9	Strong/severe gale	41–47 knots 47–54 mph 75–88 km/h	23–32 ft 7–10 m	High waves	Slight structural damage	
10	Storm, whole gale	48–55 knots 55–63 mph 89–102 km/h	29–41 ft 9–12.5 m	Very high waves	Trees uprooted, considerable structural damage	
11	Violent storm	56–63 knots 64–72 mph 103–117 km/h	37–52 ft 11.5–16 m	Exceptionally high waves	Widespread damage	
12	Hurricane force	≥ 64 knots ≥ 73 mph ≥ 118 km/h	≥ 46 ft ≥ 14 m	Exceptionally high waves, sea is completely white	Devastation	

Source: science-sparks.com

According to National Climatic Data Center information (NCDC), there were 180 thunderstorm/wind events reported in Ware County between Jan 1, 1950 and Dec. 31, 2021. Two injuries were reported – one in 1996 and another in 2019. The events involved wind speeds between 45 and 67 knots. The Historic Recurrence Interval is 0.39 years. This is a 253.00% Historic Frequency Chance per year. The past 10-year Record Frequency Per Year is 5.9, the past 20-year frequency is 5.8, and the past 50-year frequency is 3.6 (GEMA-HS Hazard Frequency Table Appendix D1).

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Since the previous Hazard Mitigation Plan was completed, 13 thunderstorm/wind events have occurred in Ware County and the City of Waycross.

All of Ware County has the same design wind speed of 200 miles per hour for a 3-second gust, as determined by the American Society of Civil Engineers (ASCE). In addition, Ware County is in a special Hurricane Susceptible Region.

According to www.GEMA-HS.ga.gov, the MEOW (Maximum Envelope of Wind) for a Georgia Coast Landfall for Ware County ranges from 39-57 mph in the county (for a Category 1 hurricane with sustained winds of 75 mph and forward speed of 9 mph) to 109-126 mph in the eastern 1/3 of the county and 92-108 mph in the western 2/3 of the county (for a Category 4 hurricane with sustained winds of 144 mph and forward speed of 25 mph).

100% of Ware County and the City of Waycross are included in some wind hazard area. As shown on the wind hazard map (see Appendix A3.2), most of Ware County is within the 90-99 mph wind speed area, while some areas in the eastern part of the county (including a substantial portion of the City of Waycross) are within the 100-109 mph wind speed area. These wind speed areas correspond to basic wind speeds for a 3-second gust with a 50-year return interval, contained in the 2012 International Building Code.

C & D. Inventory of Assets exposed and Potential Loss to Thunderstorms and Wind:

The threat of thunderstorms and wind is a constant in Ware County and the City of Waycross due to the unpredictability and random occurrence of the hazard. When and where they will occur and the potential damage that they will cause is not easy to predict.

In GEMA-HS Worksheet 3A: Inventory of Assets (appearing in Appendix A3.1), we estimate that all of Ware County and the City of Waycross are vulnerable to thunderstorms and wind. Property values were provided by the Ware County Tax Assessor's Office using the most recent data available.

Approximately 100% of the Residential property (11,267 of 11,267) in Ware County (including the City of Waycross) may be affected, with a total value of \$969,871,348. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (3,067 of 3,067) in Ware County (including the City of Waycross) may be affected, with a total value of \$919,994,424. The values are based on the most recent available tax roll data for Ware County and the City of Waycross, provided by the Ware County Tax Assessor's Office.

E. Land use and development trends related to Thunderstorms and Wind:

Ware County and the City of Waycross currently operate in compliance with the standards of the 2018 International Building Code. Both jurisdictions have building inspection programs and zoning ordinances. Both jurisdictions are served by the joint Waycross-Ware County Planning Commission. No other trends regarding the relationship between land use/development and this hazard have been identified at this time.

F. Multi-Jurisdictional Thunderstorm and Wind Differences:

All of Ware County and the City of Waycross may be equally affected by thunderstorms and wind. No differences between the two jurisdictions in this regard have been determined.

G. Overall HRV Summary of Thunderstorm/Wind Events and their impact on the community:

Thunderstorms and wind have the potential to cause damage at any place, at any time, throughout Ware County and the City of Waycross. Of course, the cost of the damage and potential loss of life may be higher if thunderstorms and wind occur in populated areas and municipalities, as opposed to if they were to occur in more rural sections of Ware County. A majority of the thunderstorms and wind that pass through the area, however, cause minimal to no damage.

The Ware County HMPUC recognizes thunderstorms and wind as the third most likely natural hazard to occur and cause damage. They have developed a comprehensive range of Mitigation Goals, Objectives, and Action Steps to lessen thunderstorm and wind impact on Ware County and the City of Waycross. These are contained in Chapter 4, Section III.

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Since the previous plan was approved, there have not been any new developments, regulations, or programs that would either increase or decrease the community's overall vulnerability to this hazard.

Section IV. Flood

A. Identification of Hazard:

The threat of a flood has been chosen by the Ware County HMPUC as the fourth most likely hazard to occur and cause damage in Ware County and the City of Waycross based on past experience, the FEMA-described methodology, and other factors. Historic data have been examined from various sources, including the National Climatic Data Center (NOAA) (see Appendix F), as well as from local history and personal accounts, in order to determine frequency of events. For further information, see the HAZUS Report in Appendix G.

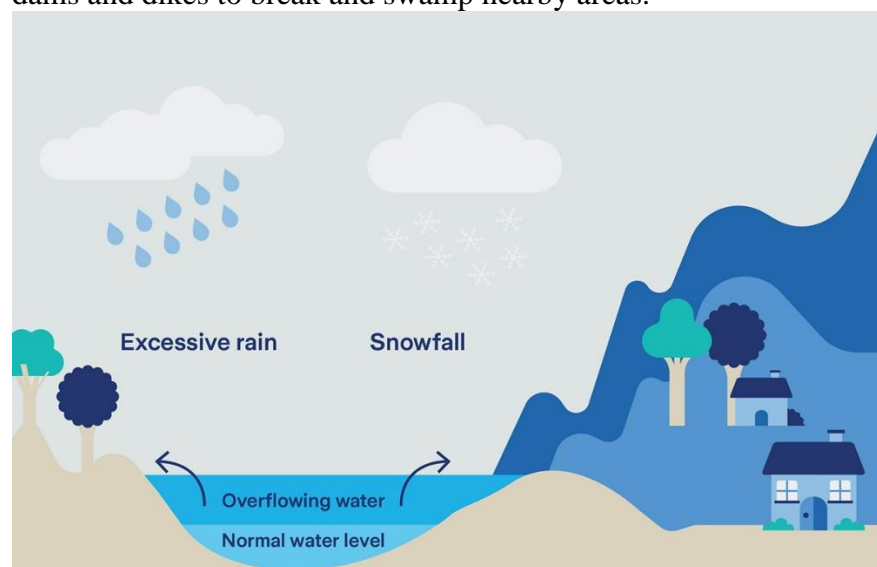
In addition, hazard maps generated by the Critical Facilities Inventory for Flood (see Appendix A) were examined. Complete inventory information is contained at <https://www.itos.uga.edu/GEMA-HS>. These map values come from the predicted model of the GEMA-HS database.

Floods may occur at any time, in many cases without warning, and may cause widespread destruction. Drainage ditches and canals that are improperly cleaned or maintained may exacerbate flooding, causing homeowners to experience hours, if not days, of water-filled yards as well as water damage.

There are many different types of floods, but three types are more common: Fluvial (river floods); Pluvial (flash floods and surface water); and Coastal flood (storm surge).

1. Fluvial Flood

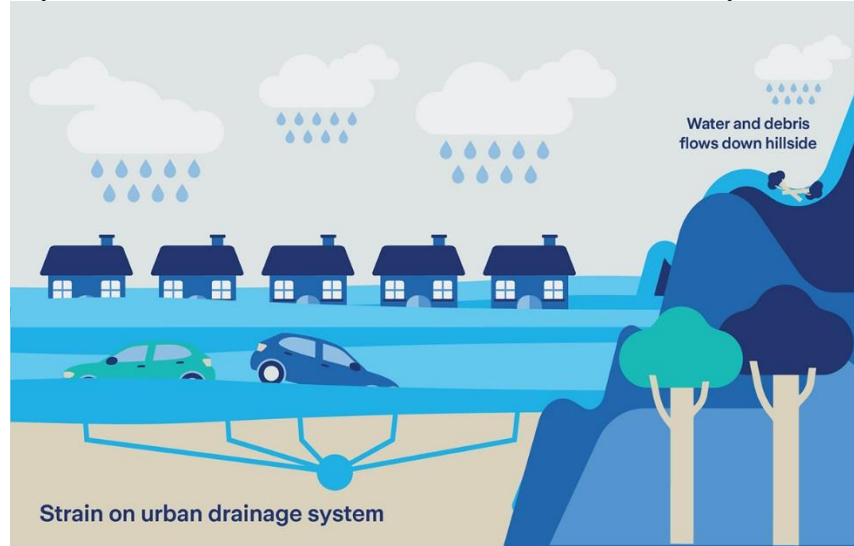
A fluvial, or river flood, occurs when the water level in a river, lake or stream rises and overflows onto the neighboring land. The water level rise of the river could be due to excessive rain or snowmelt. The damage from a river flood can be widespread as the overflow affects smaller rivers downstream, which can cause dams and dikes to break and swamp nearby areas.



Fluvial Flood Example Source: Zurich Insurance Co. – Zurich.com

2. Pluvial Flood

Occurs when an extreme rainfall event creates a flood independent of an overflowing water body. A common misconception about flood is that one must be located near a body of water to be at risk. Yet pluvial flooding can happen in any location, urban or rural, even in areas with no nearby bodies of water.



Pluvial Flood Example Source: Zurich Insurance Co. – Zurich.com

Two types of pluvial flooding: Surface Water Floods and Flash Floods.

- A. **Surface Water Floods** - occur when an urban drainage system is overwhelmed and water flows into the streets and nearby structures. It occurs gradually, which provides people time to move to safe locations, and the level of water is usually shallow (rarely more than 1 meter deep). It creates no immediate threat to lives but may cause significant economic damage.
- B. **Flash Floods** – are characterized by an intense, high-velocity torrent of water triggered by torrential rain falling within a short amount of time within the vicinity or nearby elevated terrain. They can also occur via a sudden release of water from an upstream levee or a dam. Flash floods are very dangerous and destructive not only because of the force of the water, but also the hurtling debris that is often swept up in the flow.

3. Coastal Flood (storm surge)

Coastal flooding is the inundation of land areas along the coast by seawater. Common cause of coastal flooding are intense windstorm events occurring at the same time as high tide (storm surge), and tsunamis.

The severity of a coastal flood is determined by several other factors, including the strength, size, speed, and direction of the windstorm. The onshore and offshore topography also plays an important role. To determine the probability

and magnitude of a storm surge, coastal flood models consider this information in addition to data from historical storms that have affected the area.



Coastal Flood Example Source: Zurich Insurance Co. – Zurich.com

Flash floods are the number one weather-related killer in the United States, and flooding accounts for the majority of natural hazard damages. Six inches of fast-moving water can knock a person off of his or her feet. Two feet of water can float a full-sized automobile. More than half of flood victims are in vehicles that moving water sweeps away.

Ware County and the City of Waycross are both members of the National Flood Insurance Program. Both local governments have some part of their jurisdictions located within a floodplain. As of 2022, both jurisdictions are complying with NFIP requirements. Both jurisdictions intend to remain in compliance by enforcing flood plain ordinances (for example: City of Waycross Code of Ordinances Sec. 105-23; City of Waycross Zoning Ordinance Section 712, Flood Damage Prevention District) which prohibit or severely limit development in floodplains.

Ware County and the City of Waycross do not participate in the Community Rating System (CRS) program. As of 2022, they were not eligible, according to FEMA (https://www.fema.gov/sites/default/files/documents/fema-crs-eligible-communities_apr-2022.pdf).

B. Profile of Flood Events, Frequency of Occurrences, Probability:

The historic record for floods is spotty at best, with many unreported or underreported flood events. Members of the Ware County HMPUC have witnessed many unreported and underreported cases of minor to major flooding occurring within Ware County and the City of Waycross, some lasting for days at a time, following large rain events. However, only certain areas of Ware County and the City of Waycross are usually vulnerable to major flooding.

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Many of these major flooding areas are located on or adjacent to the Satilla River and numerous other creeks and streams. Several areas of Ware County and the City of Waycross are subject to flooding, especially in areas around drainage canals and areas where improved stormwater infrastructure is needed. Flooding regularly occurs in certain areas due to rainfall and other factors.

Damages from a 1% Annual chance of flooding in Ware County and Waycross could be larger than imagined. It is estimated that Waycross could see 188 residential, 1 education, 50 commercial, 1 government, 29 industrial and 6 religious buildings damaged. In Ware County, it is estimated that 164 residential, 16 industrial, 2 government, 8 commercial and 1 religious facility could be damaged or destroyed. The total number of potentially damaged or destroyed buildings for Ware and Waycross equals 466 buildings at a cost of \$3,974,198,290.

Essential Facilities in Ware County and Waycross are also vulnerable to flooding damage. It is estimated that a 1% probability flood could cause damage to 1 fire station and 1 school with loss of use of both buildings.

Residential structures comprise the vast majority of all buildings in the county and have the highest percentage of probable damage by flood. It is estimated that 1,215 households might be displaced, evacuated near the flood or actually damaged by the flood, and that 3,645 people would be affected, of which 1,874 may require short-term publicly provided shelter. This estimate is likely high, though, due to the lack of exact building locations within the parcel data.

Debris is also a factor of floods and there are three debris categories that are widely accepted as the most important and they are: Finishes (drywall, insulation, etc.); Structural (wood, brick, etc.); and Foundations (concrete slab, concrete block, rebar, etc.). The analysis estimates that an approximate total of 6,704 tons of debris might be generated which breaks into 1) Finishes – 4,128 tons; 2) Structural – 1,032 tons; and 3) Foundations – 1,544 tons. Source: Hazard Risk Analyses Supplement to the Ware County Joint Hazard Mitigation Plan (Appendix G).

Base flood elevations are provided by FEMA in their floodplain maps. Within Ware County, the base flood elevations range between 141 feet above sea level and 149 feet above sea level. The following chart, generated on the NOAA website (water.weather.gov), shows Flood Stages and Historic Crests for the Satilla River near Waycross. The historical crests show the highest crest of 22.40 feet in 1948.

Satilla River near Waycross, Georgia

National Weather Service Advan... x +

water.weather.gov/ahps2/hydrograph.php?wfo=jax&prob_type=stage&gage=aysg1

NOTE: Forecasts for the Satilla River near Waycross are issued routinely year-round.

Downstream Gauge →

Flood Categories (in feet)

Major Flood Stage:	20
Moderate Flood Stage:	18
Flood Stage:	16
Action Stage:	14
Low Stage (in feet):	4

Historic Crests

- (1) 22.40 ft on 04/04/1948
- (2) 22.36 ft on 04/05/2009
- (3) 22.20 ft on 05/01/1928
- (4) 21.52 ft on 03/06/1991
- (5) 20.29 ft on 03/10/1984
- (6) 20.23 ft on 03/12/1998
- (7) 20.10 ft on 12/08/1964
- (8) 20.03 ft on 02/13/1986
- (9) 19.77 ft on 02/02/1991
- (10) 19.72 ft on 04/08/1960

Show More Historic Crests

(P): Preliminary values subject to further review.

Recent Crests

- (1) 16.01 ft on 09/21/2021
- (2) 18.26 ft on 04/29/2021
- (3) 16.65 ft on 03/07/2021
- (4) 17.50 ft on 02/22/2021
- (5) 16.27 ft on 04/27/2020
- (6) 18.49 ft on 03/09/2020
- (7) 17.38 ft on 12/07/2018
- (8) 17.53 ft on 01/27/2017
- (9) 17.39 ft on 04/06/2016
- (10) 18.43 ft on 02/08/2016

Show More Recent Crests

(P): Preliminary values subject to further review.

Low Water Records

- (1) 3.12 ft on 10/09/1990
- (2) 3.16 ft on 11/01/1954
- (3) 3.26 ft on 10/20/1981
- (4) 3.31 ft on 07/21/2000
- (5) 3.34 ft on 07/11/1998

Show More Low Water Records

Esri, HERE, Garmin, GeoTech... esri

Gauge Location Disclaimer

Latitude/Longitude Disclaimer: The gauge location shown in the above map is the approximate location based on the latitude/longitude coordinates provided to the NWS by the gauge owner.

FEMA

For more information on your flood risk go to www.floodsmart.gov.

Show FEMA's National Flood Hazard Layers

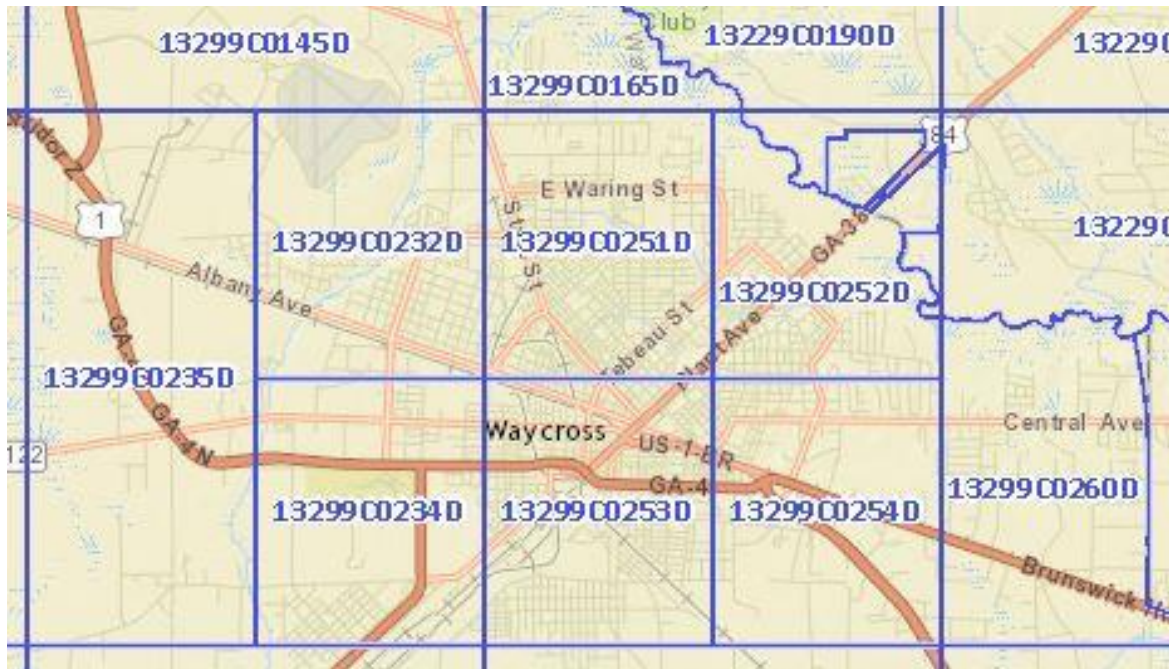
Flood Impacts & Photos

If you notice any errors in the below information, please contact our Webmaster

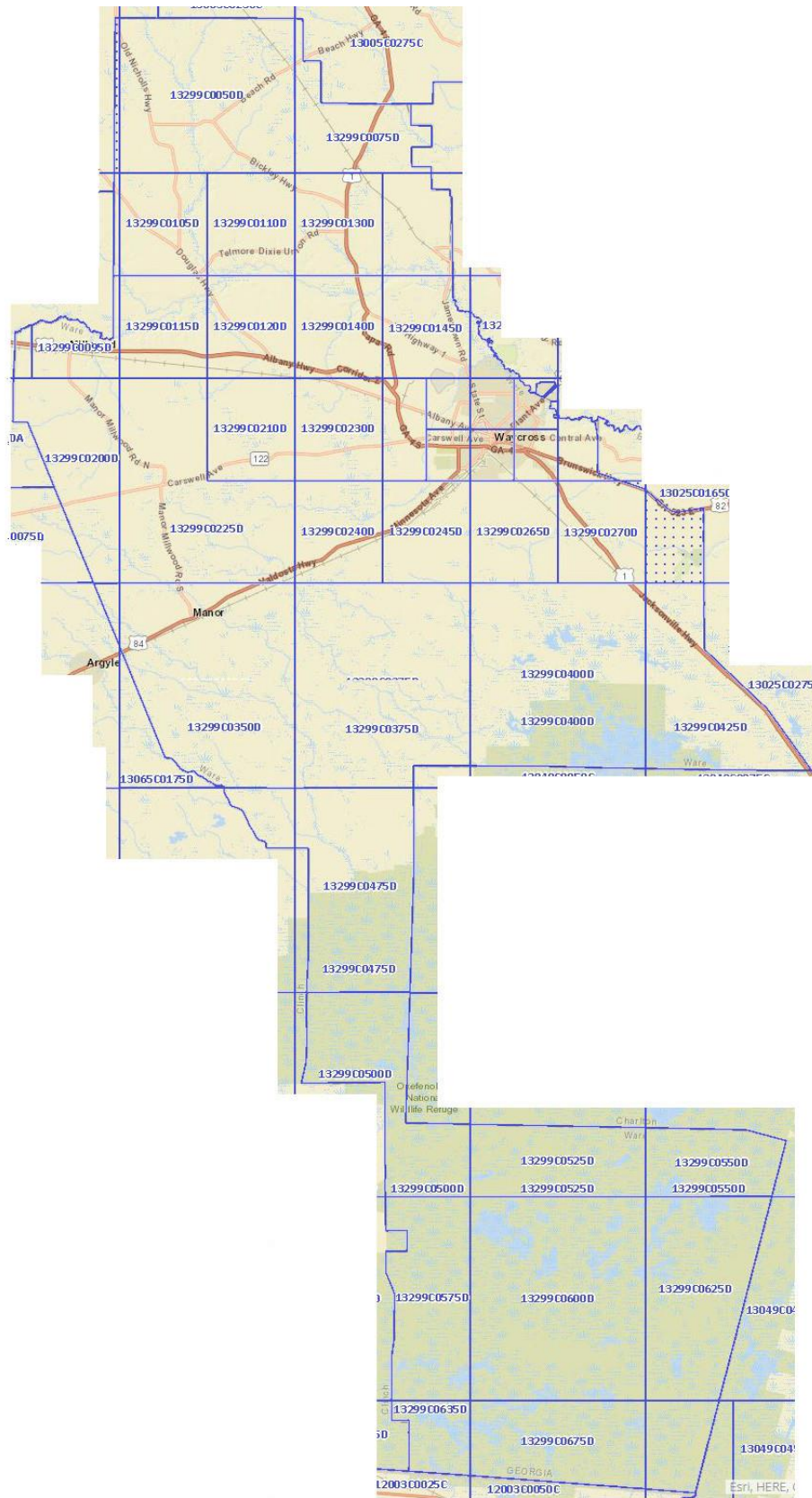
According to the National Climatic Data Center (NCDC), there are 25 flood events reported (including Flood, Flash Flood, and Heavy Rain) occurring in Ware County between Jan 1, 1950 and Dec. 31, 2021. Six of these events were Flood events, six were Flash Flood events, and thirteen were Heavy Rain events. Total injuries were reported as zero.

The Historic Recurrence Interval is 1.0 years. This is a 100.0% Historic Frequency Chance per year. The past 10-year Record Frequency Per Year is 1.1, the past 20-year frequency is 0.6, and the past 50-year frequency is 0.24 (see GEMA-HS PDM Hazard Frequencies Table contained in Appendix D1).

Flood Insurance Rate Maps (FIRMs) in effect for Ware County and the City of Waycross include maps 13299C0050D, 13299C0075D, 13299C0105D, 13299C0110D, 13299C0130D, 13299C0095D, 13299C0115D, 13299C0120D, 13299C0140D, 13299C0145D, 13299C0200D, 13299C0225D, 13299C0210D, 13299C0230D, 13299C0235D, 13299C0232D, 13299C0234D, 13299C0251D, 13299C0253D, 13299C0252D, 13299C0254D, 13299C0260D, 13299C0240D, 13299C0245D, 13299C0265D, 13299C0270D, 13299C0350D, 13299C0375D, 13299C0400D, 13299C0425D, 13299C0475D, 13299C0500D, 13299C0525D, 13299C0550D, 13299C0575D, 13299C0600D, 13299C0625D, 13299C0635D, and 13299C06745D (see index map below).



Flood Insurance Rate Maps for the City of Waycross and surrounding area. Data Source: FEMA website.



Flood Insurance Rate Maps for Ware County and the City of Waycross. Data Source: FEMA website.

The Critical Facilities Inventory Database Reports contained in Appendix F show that certain areas of Ware County and the City of Waycross fall within the Flood Hazard Area. Complete inventory information is contained at <https://www.itos.uga.edu/GEMA-HS>. There does not appear to be enough data information at the present time to determine differences in flood hazard level between Ware County and the City of Waycross hazards and/or risks.

C./D. Inventory of Assets Exposed and Potential Loss to Flood:

When and where floods will occur and the potential damage that they will cause cannot be predicted with any high level of confidence due to the variation in the strength levels of the causes that may trigger the occurrence. To determine what assets in Ware County and the City of Waycross are potentially exposed to flooding, a GIS analysis was conducted using FEMA flood zone data, tax roll data from the Ware County Tax Assessor's Office, and Critical Facilities data housed in the database (corresponding to the Critical Facilities Inventory which is provided in Appendix F).

Approximately 53.2 percent of Ware County's total area is within a flood zone, and approximately 17.9 percent of the City of Waycross is within a flood zone. Much of Ware County's flood-prone areas are within the Okefenokee Swamp and are not populated. However, flooding has been and continues to be a persistent problem within the City of Waycross and other populated areas of Ware County. In some neighborhoods, due to drainage issues and other factors, any significant amount of rainfall brings about some degree of flooding.

There are 2,055 properties in Ware County that have greater than 26% chance of being severely affected by flooding over the next 30 years. This represents 12% of all properties in Ware County. In the City of Waycross, the only incorporated city in Ware County, there are 971 properties that have greater than 26% chance of being severely affected by flooding over the next 30 years. This represents 13% of all properties in Waycross.

Many individuals do not have access to transportation and thus are susceptible to weather hazards. It is very important to notify these individuals through weather radios, radio stations, and other means so that they may seek shelter and/or arrange transportation to shelter facilities. Therefore, a major consideration should be helping individuals, government, and non-profit organizations prepare for the pending flood hazard events.

The report lists 3 Repetitive Loss Properties in the community. One is in Ware County and two are in the City of Waycross. All three are residential properties.

E. Land use and development trends related to Floods:

The river corridors are protected through zoning in the 100-year floodplain and up to 25 feet from the rested edge of the river. Wetland areas are protected by Corps of Engineers permitting requirements. Soil and Sedimentation Control Ordinances are in effect.

Ware County and the City of Waycross currently operate in compliance with the standards of the 2018 International Building Code. Both jurisdictions have building inspection programs and

zoning ordinances. Both jurisdictions are served by the joint Waycross-Ware County Planning Commission. No other trends regarding the relationship between land use/development and this hazard have been identified at this time.

F. Multi-Jurisdictional Flood Differences:

Both local governments have some part of their jurisdiction located within a floodplain. As mentioned above, according to GIS analysis conducted by SGRC Staff, approximately 53.2 percent of Ware County’s total area is within a flood zone, and approximately 17.9 percent of the City of Waycross is within a flood zone. The City of Waycross is arranged in a denser development pattern and therefore may be more susceptible to a larger quantity of structures and essential facilities to be affected by floods. No other differences between the two jurisdictions in this regard have been determined.

G. General overall HRV Summary of flood events and their impact on the community:

Floods have the potential to cause damage in any flood-prone area, at any time throughout Ware County and the City of Waycross. Of course, the cost of the damage and potential loss of life may be higher if the Flood were to occur in more densely populated areas. Damage caused by flooding can vary depending on the amount of flooding and severity, among other factors.

The Ware County HMPUC recognizes Floods as the fourth most likely natural hazard to occur and cause damage. They have developed a comprehensive range of Mitigation Goals, Objectives, and Action Steps to lessen Floods impact on Ware County and the City of Waycross. These are contained in Chapter 4, Section IV.

Ware County and the City of Waycross have completed a comprehensive mapping of the community’s environmentally sensitive areas and performed a historic resource survey within the community.

Since the previous plan was approved, there have not been any new developments, regulations, or programs that would either increase or decrease the community’s overall vulnerability to this hazard.

Section V. Extreme Heat

A. Identification of Hazard: The threat of Extreme Heat has been chosen by the Ware County HMPUC as the fifth most likely natural hazard to occur and cause damage in Ware County and in the City of Waycross, based on past experience, the FEMA described methodology, and other factors. Historic data have been examined from various sources (see Appendix A5.1-A5.3) including the National Climatic Data Center (see Appendix F), as well as from local history and personal accounts, in order to determine frequency of events. In addition, hazard maps generated by the Critical Facilities Inventory were examined.

The major hazard presented by heat waves is not so much to infrastructure as to the population. Despite the comparatively warm climate of Ware County and the City of Waycross, there are many residents who are not adequately prepared to handle extreme heat events (for example, those without air conditioning in their homes). The risk is particularly high for the elderly and the young. Extreme heat is a hazard that may result in loss of life or damage to property and the economy. Due to weather forecasting methods, most extreme heat events can be predicted with some level of accuracy ahead of time.

The following table shows the average high and low temperatures and record temperatures for Ware County and the City of Waycross. During June, July, and August, average daily high temperatures are in excess of 90° F. The record high temperature is 108° F.

Monthly Highest Max Temperature for WAYCROSS 4 NE, GA													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1981	74	82	82	94	96	102	105	99	96	94	82	82	105
1982	82	82	89	89	98	98	99	M	96	95	88	86	99
1983	72	79	83	89	94	98	101	102	100	94	83	81	102
1984	72	83	87	95	98	101	99	100	99	92	M	84	101
1985	82	85	89	95	97	106	98	98	98	93	86	82	106
1986	74	82	89	98	101	102	108	M	99	97	90	81	108
1987	74	75	85	94	94	99	101	101	97	86	85	82	101
1988	80	82	83	91	94	103	101	99	95	90	85	81	103
1989	87	86	89	95	100	100	98	98	94	91	84	79	100
1990	81	84	88	91	98	101	104	103	100	94	85	81	104
1991	80	84	88	93	94	96	98	96	97	87	84	83	98
1992	74	78	84	90	94	94	101	95	95	86	86	81	101
1993	80	75	88	88	94	100	100	101	95	91	87	79	101
1994	76	84	88	90	94	96	96	96	96	90	87	77	96
1995	78	81	86	95	97	99	99	103	95	92	88	81	103
1996	80	86	85	90	99	101	101	96	97	89	87	82	101
1997	82	86	88	88	91	97	104	99	100	94	84	83	104
1998	81	80	88	88	99	106	105	101	102	90	89	85	106
1999	84	88	85	98	98	102	102	104	96	90	83	80	104
2000	79	81	85	88	96	100	103	97	91	92	85	80	103
2001	83	84	84	90	95	95	94	94	91	86	84	82	95
2002	80	78	88	92	96	101	100	98	96	95	90	76	101
2003	78	80	87	88	93	93	95	94	94	87	89	74	95
2004	81	80	87	92	100	100	99	96	94	92	88	80	100
2005	80	83	83	85	90	94	97	97	97	91	85	78	97
2006	80	81	88	91	95	99	99	99	92	90	82	84	99
2007	84	84	87	92	92	97	97	98	92	89	85	82	98
2008	80	84	84	90	96	99	99	102	97	95	84	85	102
2009	86	80	85	90	92	103	102	101	94	94	87	78	103
2010	78	74	80	89	94	103	103	101	100	90	85	84	103
2011	77	84	88	96	104	106	101	105	98	88	85	81	106
2012	80	83	87	93	97	95	102	97	96	90	79	81	102
2013	84	82	85	91	93	98	95	98	97	90	86	86	98
2014	77	87	83	89	94	96	97	M	M	M	M	M	97
2015	M	M	M	M	M	M	M	M	M	M	M	M	M
2016	M	M	M	M	M	M	M	M	M	M	M	M	M
2017	M	M	M	M	M	M	M	M	M	M	M	M	M
2018	M	M	M	M	M	M	M	M	M	M	M	M	M
2019	M	M	M	M	M	M	M	M	M	M	M	M	M
2020	M	M	M	M	M	M	M	M	M	M	M	M	M
2021	M	M	M	M	M	M	M	M	M	M	M	M	M
2022	M	M	M	M	M	M	M	M	M	M	M	M	M
Mean	79	82	86	91	96	99	100	99	96	91	86	81	101
Max	87	88	89	98	104	106	108	105	102	97	90	86	108
	1989	1999	1989	1999	2011	2011	1986	2011	1998	1986	2002	2013	1986
Min	72	74	80	85	90	93	94	94	91	86	79	74	95
	1984	2010	2010	2005	2005	2003	2001	2003	2001	2001	2012	2003	2003

Source: [Climate \(weather.gov\)](https://climate.weather.gov) – NOAA National Weather Service - NOWData

Source: NOAA online weather data - <http://w2.weather.gov/climate/xmacis.php?wfo=jax>

HEAT INDEX:

The table below shows the heat index as calculated by the National Weather Service. It is based on temperature and humidity.

Heat Index category and effects

Category	Heat Index	Possible heat disorders for people in high risk groups
Extreme Danger	130° F or higher	Heat stroke or sunstroke likely.
Danger	105 - 129° F	Sunstroke, muscle cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure and/or physical activity.
Extreme Caution	90 - 105° F	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Caution	80 - 90° F	Fatigue possible with prolonged exposure and/or physical activity.

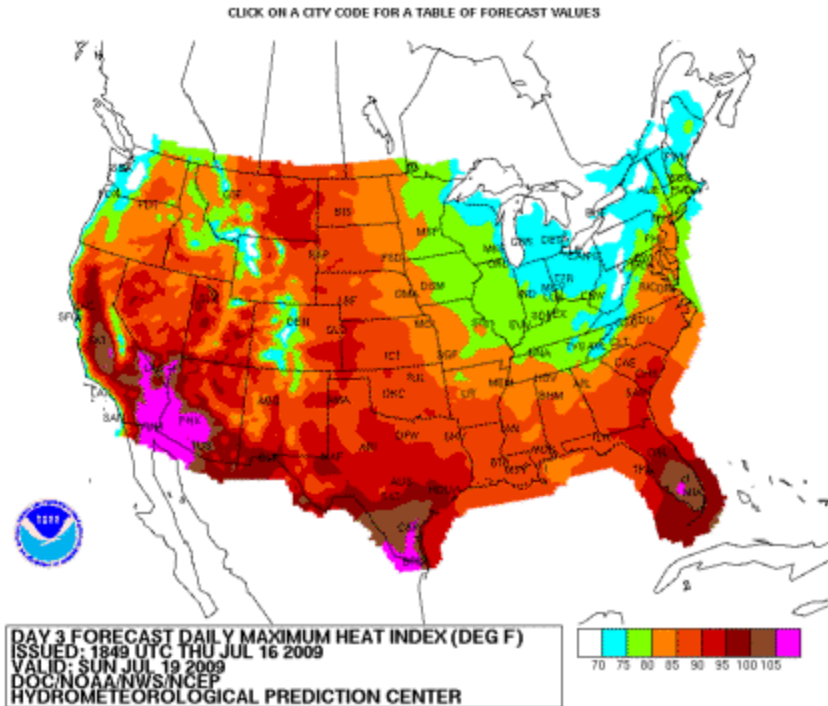
NOAA's Watch, Warning, and Advisory Products for Extreme Heat

Each National Weather Service Forecast Office issues the following heat-related products as conditions warrant:

Excessive Heat Outlooks: Issued when the potential exists for an excessive heat event in the next 3-7 days. An Outlook provides information to those who need considerable lead time to prepare for the event, such as public utility staff, emergency managers, and public health officials. See the mean heat index and probability forecasts maps.

Excessive Heat Watches: Issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is still uncertain. A Watch provides enough lead time so that those who need to prepare can do so, such as cities officials who have excessive heat event mitigation plans.

Excessive Heat Warning/Advisories: Issued when an excessive heat event is expected in the next 36 hours. These products are issued when an excessive heat event is occurring, is imminent, or has a very high probability of occurring. The warning is used for conditions posing a threat to life or property. An advisory is for less serious conditions that cause significant discomfort or inconvenience and, if caution is not taken, could lead to a threat to life and/or property.



How Forecasters Decide Whether to Issue Excessive Heat Products

NOAA’s heat alert procedures are based mainly on Heat Index Values. The Heat Index, sometimes referred to as the apparent temperature, is given in degrees Fahrenheit. The Heat Index is a measure of how hot it really feels when relative humidity is factored with the actual air temperature.

The Heat Index chart below shows Heat Index Values for various temperatures and humidity levels. As an example, if the air temperature is 96° F and the relative humidity is 65%, the heat index—i.e., how hot it feels—is 121° F. The Weather Service will initiate alert procedures when the Heat Index is expected to exceed 105°-110° F (depending on local climate) for at least 2 consecutive days.

NOAA's National Weather Service

Heat Index

Temperature (°F)

	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution
 Extreme Caution
 Danger
 Extreme Danger

Figure 1. Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

IMPORTANT: Since heat index values were devised for shady, light wind conditions, **exposure to full sunshine can increase heat index values by up to 15° F.** Also, **strong winds**, particularly with very hot, dry air, can be extremely hazardous.

B. Profile of Extreme Heat Events, Frequency of Occurrences, Probability:

The historic record for extreme heat is spotty at best, with many unreported or underreported events. All of Ware County and the City of Waycross are equally vulnerable to extreme heat, although more severe effects are likely to be seen in densely populated areas. Extreme heat can occur at any time during the warmer months of the year. Most extreme heat events can be predicted somewhat in advance.

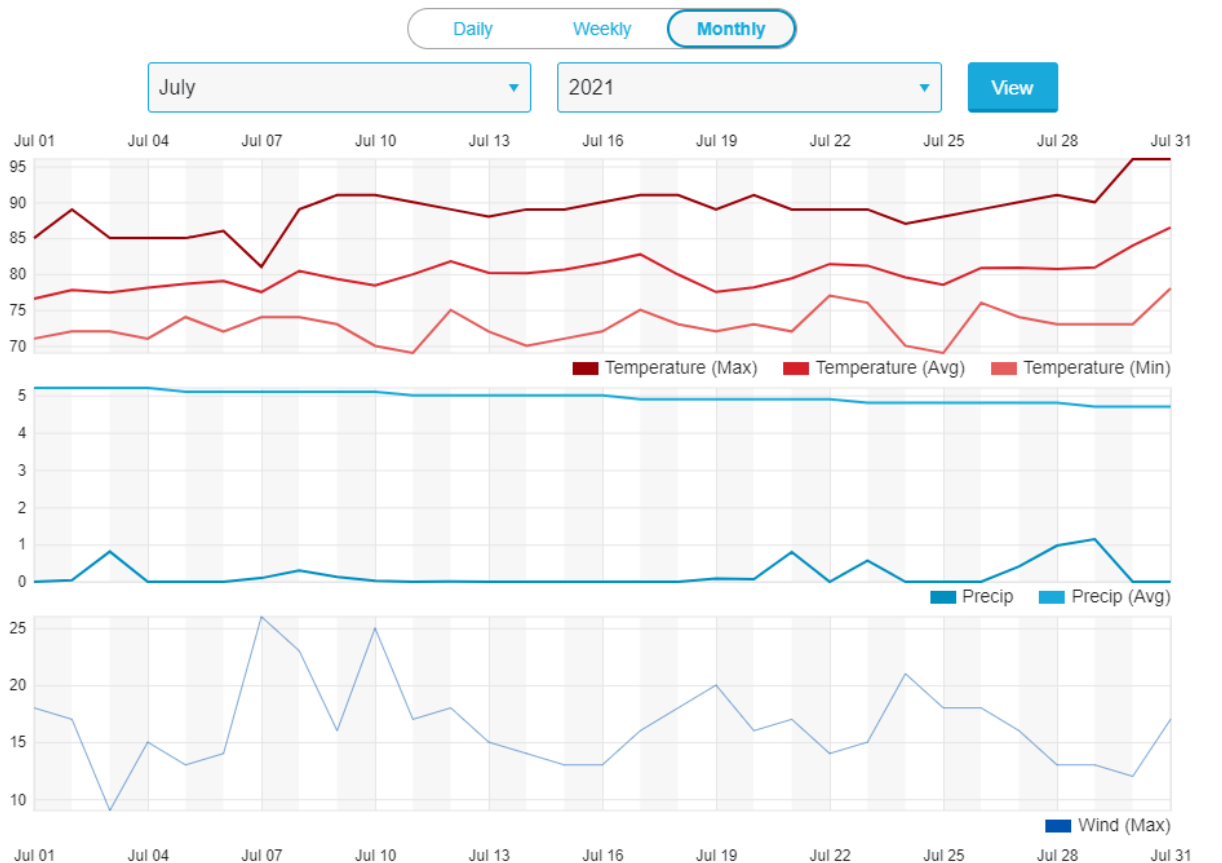
The Heat Index in relation to the number of Heat Disorders during extreme heat events is unknown. Extreme heat events, however, can significantly increase certain other listed hazards including wildfire and drought.

Extreme Heat events are defined in this Hazard Mitigation Plan as those events where the heat index falls within the “Danger” or “Extreme Danger” zone as defined by the National Weather Service (see Figure 1). While historical heat index data are not available for Ware County and the City of Waycross, historical temperature data are available. According to information provided by Weather Underground ([Weather Underground](#)), the average humidity level throughout the year 2021 in Ware County was 77.0%. Assuming this average humidity level, Extreme Heat events are therefore defined as any days with temperatures of 88° F or higher (according to Figure 1, 88° F at 75 percent humidity = 103° heat index).

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The chart below (source: Weather Underground website) shows the past temperatures measured in Ware County. In 2021 there were 82 days with maximum temperature of 88° F or higher (and therefore potentially dangerous levels of heat) compared to 2016 which had 136 days at or above 88°. The highest daily maximum temperature in 2021 was 96° F compared to 2016 which had a maximum temperature of 102° F, recorded on 3 consecutive days, July 28, 29, and 30. These temperatures affected all of Ware County and the City of Waycross. When 2021 is compared to 2016 the temperatures were cooler and less high heat days recorded. The difference is that 2021 had 54 less days measuring above 88° F than 2016 and the overall high temperature for the year was 6° F cooler in 2021 than 2016.

The following chart is from Weather Underground and shows the hottest month for Ware Co. and Waycross for the year 2021.



Source: [Brunswick, GA Weather History | Weather Underground \(wunderground.com\)](https://www.wunderground.com/history/airport/KAWX/2021/7/1/150000.html)

By this definition, according to Weather Underground data, there have been 4,954 Extreme Heat events between Feb. 1, 1979 and December of 2021. The Historic Recurrence Interval is 0.01 years. The Historic Frequency Chance is 11,795% per year. The past 10-year Record Frequency Per Year is 189.8, the past 20-year frequency is 136.6, and the past 50-year frequency is 92.22. (Note: NCDC data are not used for this section since the NCDC reports zero Extreme Heat events between 1/1/1950 and 12/31/2021.)

C. Inventory of Assets exposed to Extreme Heat & Estimate of Potential Loses:

The threat of extreme heat in Ware County and the City of Waycross would primarily occur in the summer months, usually with some advance warning being possible.

Approximately 100% of the Residential property (11,267 of 11,267) in Ware County (including the City of Waycross) may be affected, with a total value of \$969,871.348. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (3,067 of 3,067) in Ware County (including the City of Waycross) may be affected, with a total value of \$919,994,424. The values are based on the most recent available tax roll data for Ware County and the City of Waycross, provided by the Ware County Tax Assessor's Office.

Typically, the damage caused by extreme heat events consists of illness and injury to people (for example, heat stroke and sunstroke), rather than damage to buildings and infrastructure. However, extreme heat can increase the risk of wildfires (see Chapter 2, Section I and Chapter 4, Section I for more information).

D. Land use and development trends related to Extreme Heat:

The dry conditions caused by extreme heat can be conducive to a further hazard covered in this plan, namely wildfire. During periods of extreme heat, the community must be on high alert for wildfire hazards. This hazard is exacerbated due to the fact that new construction in Ware County and the City of Waycross continues to take place in areas bordered by pine tree production and other naturally growing trees. These homeowners enjoy the beauty of the environment, but face the real danger of wildfires. The trend is for this is to continue. For more specific information, see Chapter 2, Section I (Wildfire).

E. Multi-Jurisdictional Extreme Heat Differences:

All of Ware County and the City of Waycross may be equally affected by extreme heat. No differences between the two jurisdictions in this regard have been determined. However, some densely populated areas in the City of Waycross may contain older buildings with unreliable air conditioning or no air conditioning. Higher numbers of residents in such areas could be adversely affected by extreme heat.

F. General overall HRV Summary of Extreme Heat Events and their impact on the Community:

Extreme heat has the potential to cause damage at any place, at any time, throughout Ware County and the City of Waycross. The cost of the damage may be higher if an extreme heat event is accompanied by a power failure, preventing air conditioning systems from functioning.

The Ware County HMPUC recognizes extreme heat as the fifth most likely natural hazard to occur and cause damage. They have developed a comprehensive range of Mitigation Goals,

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Objectives, and Action Steps to lessen the impact of extreme heat on Ware County and the City of Waycross. These are contained in Chapter 4, Section V.

Since the previous plan was approved, there have not been any new developments, regulations, or programs that would either increase or decrease the community's overall vulnerability to this hazard.

Section VI. Tornado

A. Identification of Hazard:

The threat of a tornado has been chosen by the Ware County HMPUC as the sixth most likely hazard to occur and cause damage in Ware County and the City of Waycross, based on past experience, the FEMA-described methodology, and other factors. Historic data have been examined from various sources, including the National Climatic Data Center (see Appendix F1.6), as well as from local history and personal accounts, in order to determine the frequency of events. For further information, see the HAZUS Report in Appendix G.

A tornado is a violently rotating column of air extending to the ground. Tornadoes are one of nature's most destructive forces. Tornadoes can generate wind speeds of up to 318 miles per hour. A tornado's damage path can be more than a mile wide and fifty miles in length.

ENHANCED FUJITA WIND DAMAGE SCALE

Number	Wind Speed	Damage
EF-0	65 To 85 mph	Light damage. Some damage chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
EF-1	86 mph to 110 mph	Moderate Damage., The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
EF-2	111 mph to 135 mph	Significant Damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; high rise windows broken and blown in; light-object missiles generated.
EF-3	136 mph to 165 mph	Severe Damage. Roofs and walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
EF-4	166 mph to 200 mph	Devastating, damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
EF-5	Above 200 mph	Incredible, damage. Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 m (109 yards); trees debarked; steel reinforced concrete structures badly damaged.

Tornadoes may occur at any time of year and may develop quickly. Tornadoes can occur due to inclement weather conditions, as a result of a passing front, or as part of thunderstorm or hurricane/tropical storm events. Tornado season in Georgia is typically from March through August. Tornadoes are most likely to occur between 3:00 p.m. and 9:00 p.m. Hurricane/tropical cyclone season (June 1 to November 30th) is another time during which tornadoes are more likely to occur. The path and severity of a tornado cannot be determined in advance. The best defense is to heed tornado warnings and seek appropriate shelter when a tornado has been sighted in the area or when conditions conducive to a tornado are present.

B. Profile of Tornado Events, Frequency of Occurrences, Probability:

The historic record for tornadoes is spotty at best, with many unreported or underreported tornado events. All of Ware County and the City of Waycross are vulnerable to tornadoes due to their unpredictability and random occurrences. The effects of this hazard are usually substantial and occur with little to no warning. Members of the Ware County HMPUC have witnessed many unreported and underreported cases of tornado events occurring within Ware County and the City of Waycross.

According to National Climatic Data Center information (see Appendix F), there are 18 reports of tornadoes occurring in Ware County (including the City of Waycross) between 01/01/1950 and 12/31/2021.



The Historic Recurrence Interval for tornadoes is 1.0 years. This is a 100% Historic Frequency Chance per year. The past 10-year Record Frequency Per Year is 0.6, the past 20-year frequency is 0.4, and the 50-year frequency is 0.28 (See GEMA-HS PDM Hazard Frequencies Table contained in Appendix D1).

C & D.: Inventory of Assets Exposed and potential loss due to Tornadoes:

The threat of tornadoes is a constant in Ware County and the City of Waycross due to their unpredictability and random occurrence. In GEMA-HS Worksheet 3A: Inventory of Assets, appearing in Appendix A, Section VI, we estimate that all of Ware County and the City of Waycross are equally vulnerable to tornadoes.

Approximately 100% of the Residential property (11,267 of 11,267) in Ware County (including the City of Waycross) may be affected, with a total value of \$969,871,348. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (3,067 of 3,067) in Ware County (including the City of Waycross) may be affected, with a total value of \$919, 994,424. The values are based on the most recent available tax roll data for Ware County and the City of Waycross, provided by the Ware County Tax Assessor's Office.

According to the inventory database reports and maps, all of the 171 Critical Facilities and Infrastructure for Ware County (including the City of Waycross) are located in areas that may be affected by tornadoes. The total value of these 171 Critical Facilities is \$32,019,666.

To show the potential devastation from a tornado, an EF3 Tornado was modeled to illustrate what could happen in Ware County and Waycross based on its population and density of building stock. The path of the hypothetical tornado was chosen to run southwest to northwest based on the predominant direction observed in historical tornadoes. The tornado path was placed through the City of Waycross. Based on past documentation, it is estimated that the hypothetical EF3 Tornado would have a path width of 1,200 feet and it is expected that 80% of the buildings in the path would sustain minor to major damage. Based on the pre-determined parameters of the hypothetical EF3 Tornado, Waycross would see a total of 1,109 buildings damaged. This would break down into: 47 commercial; 1 educational; 0 governmental; 10 industrial; 1,032 residential; and 19 religious buildings equaling total damages of \$48,666,898. There was also 1 Essential Facility located within the tornado path scenario, according to the modeling, that would suffer moderate damage. Source: Hazard Risk Analyses Supplement to the Ware County Joint Hazard Mitigation Plan (Appendix G).

E. Land Use and Development trends related to Tornadoes:

With the unpredictability of tornadoes and their pathways, there is no particular land-use pattern or land-use proposal to better prepare for damages caused by an event. One area where planning can occur for tornadoes is within the Building Permit offices for Ware County and the City of Waycross whereby both operate permit and inspections programs under the 2018 International Building Codes.

F. Multi-Jurisdictional Tornado differences:

All of Ware County and the City of Waycross may be equally affected by tornadoes. No differences in hazard level between the two jurisdictions have been identified. However, due to the higher population density within the City of Waycross, a direct hit from a powerful tornado in that area would likely cause more damage and casualties than in the less populous areas of unincorporated Ware County.

G. General overall HRV Summary of Tornado Events and their impact on the Community:

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Tornadoes have the potential to cause damage at any place, at any time, throughout Ware County and the City of Waycross. The cost of the damage and potential loss of life may be higher if the tornado occurs in a more densely populated areas as opposed to a sparsely populated or unpopulated area. Most tornadoes do cause substantial damage.

The Ware County HMPUC recognizes tornadoes as the sixth most likely natural hazard to occur and cause damage. They have developed a comprehensive range of Mitigation Goals, Objectives, and Action Steps to lessen the impact of tornadoes on Ware County and the City of Waycross. These are contained in Chapter 4, Section VI.

Since the previous plan was approved, there have not been any new developments, regulations, or programs that would either increase or decrease the community's overall vulnerability to this hazard.

Section VII. Hail

A. Identification of Hazard:

The threat of hail has been chosen by the Ware County HMPUC as the seventh most likely hazard to occur and cause damage in Ware County and the City of Waycross, based on past experience, the FEMA-described methodology, and other factors. Historic data have been examined from various sources, including the National Climatic Data Center (see Appendix F), as well as from local history and personal accounts, in order to determine the frequency of events.

Hail is precipitation in the form of lumps of ice that form in some storms. They are usually round and vary from the size of a grain of millet all the way up to grapefruit size. Hailstones generally form in thunderstorms between currents of rising air called the updraft and the current of air descending toward the ground called the downdraft. Large hailstones indicate strong updrafts in storms. The larger the hail, the stronger the updraft needed to hold it aloft in the storm.

In storms that cause tornadoes, hail often falls directly to the northeast or east of the path of the tornado. The strong updraft is associated with the part of the storm that produces the tornado. Fortunately, hail very rarely kills anyone. However, a couple of dozen people are injured by hailstones each year. The best way to keep safe during a hailstorm is to seek shelter immediately.

Individual hail events, although they can be destructive, tend to be relatively short in duration. They can occur at any time of year, but are more likely to occur during tornado season in Georgia, which is typically from March through August, or during hurricane/tropical storm season, which is typically June 1 through November 30.

B. Profile of Hail Events, Frequency of Occurrences, Probability:

The historic record for hail is spotty at best, with many unreported or underreported hail events. All of Ware County and the City of Waycross are vulnerable to hail due to its unpredictability and random occurrence, but the damage effects, if any, vary with the storm. Members of the Ware County HMPUC have witnessed many unreported and underreported hail events occurring in Ware County and the City of Waycross.

According to National Climatic Data Center information (see Appendix F), there were 50 reports of hail occurring in Ware County (including the City of Waycross) between 01/01/1950 and 12/31/2020. Hail sizes ranged between penny to quarter size. The Historic Recurrence Interval is 1.02 years. This is a 98.04% Historic Frequency Chance per year. The past 10-year Record Frequency Per Year is 0.8, the past 20-year frequency is 2, and the past 50-year frequency is 1 (See GEMA-HS PDM Hazard Frequencies Table contained in (Appendix D1).

Since the previous Hazard Mitigation Plan was completed, 20 hail events have occurred in Ware County and the City of Waycross according to the Hail Map for Waycross, Georgia by Interactive Hail Maps. Source: interactivehailmaps.com

C & D.: Inventory of Assets exposed and potential loss to Hail:

The threat of hail is a constant in Ware County and the City of Waycross due to the unpredictability and the random occurrence of the hazard, however it may occur more frequently during tornado season (March through August) or during hurricane/tropical storm season (June 1 through November 30). When and where it will occur and the potential damage that it will cause is not easy to predict. In addition, hail may move randomly from place to place and miss entire areas completely.

Approximately 100% of the Residential property (11,267 of 11,267) in Ware County (including the City of Waycross) may be affected, with a total value of \$969,871,348. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (3,067 of 3,067) in Ware County (including the City of Waycross) may be affected, with a total value of \$919, 994,424. The values are based on the most recent available tax roll data for Ware County and the City of Waycross, provided by the Ware County Tax Assessor's Office.

According to the inventory database reports and maps, all of the 171 Critical Facilities and Infrastructure for Ware County (including the City of Waycross) are located in areas that may be affected by hail. The total value of these 171 Critical Facilities is \$32.019,666.

E. Land Use and Development trends related to Hail:

Ware County and the City of Waycross currently operate in compliance with the standards of the 2018 International Building Code. Both jurisdictions have building inspection programs and zoning ordinances. Both jurisdictions are served by the joint Waycross-Ware County Planning Commission. No other trends regarding the relationship between land use/development and this hazard have been identified at this time.

F. Multi-Jurisdictional Hail differences:

All of Ware County and the City of Waycross have an equal chance of being affected by hail. No differences between the two jurisdictions have been identified at this time.

G. General overall HRV Summary of Hail Events and their impact on the community:

Hail has the potential to cause damage at any place, at any time, throughout Ware County and the City of Waycross. The cost of the damage will vary depending on the size and quantity of hailstones and where they land. Damage to vehicles (especially roof dents) is one of the most widespread effects of major hailstorms; injuries to people are rarer but not unheard of. The damage effects of hail, if any, vary with the storm.

The Ware County HMPUC recognizes hail as the seventh most likely natural hazard to occur and cause damage. They developed a comprehensive range of Mitigation Goals, Objectives, and

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Action Steps to lessen hail impacts on Ware County and the City of Waycross. These are contained in Chapter 4, Section VII.

Since the previous plan was approved, there have not been any new developments, regulations, or programs that would either increase or decrease the community's overall vulnerability to this hazard.

Section VIII. Hurricanes/Tropical Storms

A. Identification of Hazard:

The threat of hurricanes/tropical storms has been chosen by the Ware County HMPUC as the eighth most likely hazard to occur and cause damage in Ware County and the City of Waycross, based on past experience, the FEMA-described methodology, and other factors. Historic data have been examined from various sources, including the National Climatic Data Center (see Appendix F), as well as from local history and personal accounts, in order to determine frequency of events. For further information, see the HAZUS Report in Appendix G.

A Tropical Cyclone is a rotating, organized system of clouds and thunderstorms that originates over tropical or subtropical waters and has a closed low-level circulation. Tropical Cyclones are destructive and have the potential to cause great damage and loss of life. They are divided into four major types: Tropical Disturbances, Tropical Depressions, Tropical Storms, and Hurricanes.

A tropical disturbance is a discrete tropical weather system of apparently organized convection originating in the tropics or subtropics, having a non-frontal migratory character, and maintaining its identity for 24 hours or more.

A tropical depression is defined as an organized system of clouds and thunderstorms with a defined circulation and maximum sustained winds of 38 mph.

A tropical storm is defined as an organized system of strong thunderstorms with a defined circulation and maximum sustained winds of 39 to 73 mph.

A hurricane is defined as an intense tropical weather system with a well-defined circulation and maximum sustained winds of 74 mph or higher.

Hurricanes explained by the Army Corps of Engineers.

About Hurricanes



Hurricanes are strong tropical cyclones that develop over warm ocean waters with sustained winds of at least 74 mph. They typically occur in the Atlantic Basin (which includes the Atlantic Ocean, Caribbean Sea, and the Gulf of Mexico) from June through November, although they can occasionally occur outside of this period if ocean and atmosphere conditions are favorable.

Above: Satellite image of Hurricane Floyd, 1999.

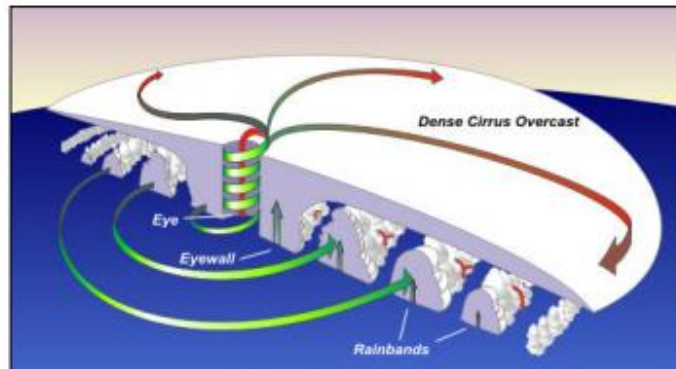
Tropical Storm

Sustained winds 39-73 mph
Watch: Conditions possible within 48 hours
Warning: Conditions expected within 36 hours

Hurricane

Sustained winds 74 mph+
Watch: Conditions possible within 48 hours
Warning: Conditions expected within 36 hours

The structure of a hurricane consists of 3 main parts: the eye, eyewall, and rain bands. Although the eye of the storm in the center is calm with little wind, the surrounding eyewall contains the strongest winds, including possible tornadoes. This area is typically the most destructive part of the storm. The outer rain bands swirl around the eye and contain rain, gusty winds, and sometimes tornadoes.



Above: Diagram of hurricane structure. Photo Credit NOAA.

Georgia Hurricane Guide

Source: <https://coastalhealthdistrict.org/wp-content/uploads/2019/06/Hurricane-Guide-April-2019.pdf>

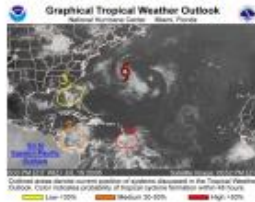
Following is a Hurricane Chart from the Army Corps of Engineers, Georgia Emergency Management and the National Weather Service outlining some important websites for hurricane information.

Forecast Information

Important Websites

- National Hurricane Center: hurricanes.gov
- NWS Charleston Tropical Webpage: weather.gov/chs/tropical
- NWS Jacksonville Tropical Webpage: srh.noaa.gov/jax/?=tropical
- NWS Tallahassee Tropical Webpage: srh.noaa.gov/tae/?=tropical
- NWS Columbia Tropical Webpage: <http://www.weather.gov/cae/tropical.html>

The National Hurricane Center (NHC) in Miami, Florida, is the official source for tropical cyclone advisories and forecasts and is responsible for issuing tropical cyclone watches and warnings for the United States. The local NWS forecast offices provide detailed forecasts and potential impacts.



Graphical Tropical Weather Outlook

- This NHC product provides an overview of all tropical cyclone activity and indicates areas of interest that have potential for tropical cyclone development.



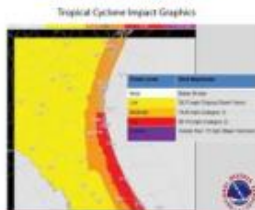
NHC Forecast Advisory

- This product identifies the most recent position for a storm along with all coastline watches and warnings, including a 5-day track with error cone representing a 5-year average error. Storms only stay within the error cone roughly 60 to 70 percent of the time. Do not focus too closely on the exact track forecast.



Wind Speed Probability Graphics

- These graphics show the probability of tropical storm and hurricane force winds for various periods through the next 5 days.



Hurricane Threats and Impacts

- These graphics are issued by local NWS office to summarize potential storm impacts and recommended preparedness actions.
- Each colored area describes potential impacts.

Source: <https://coastalhealthdistrict.org/wp-content/uploads/2019/06/Hurricane-Guide-April-2019.pdf>

Hurricanes are categorized as Category 1 through Category 5, as described in the table below.

SAFFIR-SIMPSON HURRICANE SCALE

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

Hurricane/tropical storm season in Georgia is officially from June 1 through November 30, but they may occur slightly before or after those dates.

Whether the hurricane/tropical storm is a short-term event or a long-term event depends on many factors including category, strength, speed, and impact of other weather systems, including fronts and wind patterns.

Because of their location, Ware County and the City of Waycross are vulnerable to severe hurricanes/tropical storms forming in both the Atlantic Ocean and the Gulf of Mexico. Also due to location, Hurricanes may degrade into Tropical storms, tropical depressions or tropical disturbances by the time they reach Ware County and the City of Waycross. These may or may not contain tornadoes or hail. In some cases, tropical storms, depressions, or disturbances may

never reach hurricane strength before reaching the shore. The effects vary depending on the severity of the hurricane/tropical storm and the duration of the event.

B. Profile of Hurricane/Tropical Storm Events, Frequency of Occurrences, Probability:

The historic record for hurricanes/tropical storms is spotty at best, with many unreported and underreported events. All of Ware County and the City of Waycross are vulnerable to hurricanes/tropical storms due to their proximity to the coasts of both the Atlantic Ocean and the Gulf of Mexico. The effects of the hazard are usually substantial. Members of the Ware County HMPUC have witnessed many unreported and underreported tropical events occurring in Ware County and the City of Waycross.

According to National Climatic Data Center information (see Appendix F), there are five reports of tropical storms occurring in Ware County (including the City of Waycross) between 01/01/1950 and 12/31/2021. The Historic Recurrence Interval is 14.2 years. This is a 7.04% Historic Frequency Chance per year. The past 10-year Record Frequency Per Year is 0.5, the past 20-year frequency is 0.35, and the past 50-year frequency is 0.14 (see PDM Hazard Frequencies Table contained in Appendix D).

All of Ware County has the same design wind speed of 200 miles per hour for a three-second gust as determined by the American Society of Civil Engineers (ASCE), plus it is in a special Hurricane Susceptible Region (see Appendix A, Section VIII).

According to www.GEMA-HS.ga.gov, the MEOW (Maximum Envelope of Wind) for a Georgia Coast Landfall for Ware County ranges from 39-57 mph in the county (for a Category 1 hurricane with sustained winds of 75 mph and forward speed of 9 mph) to 109-126 mph in the eastern 1/3 of the county and 92-108 mph in the western 2/3 of the county (for a Category 4 hurricane with sustained winds of 144 mph and forward speed of 25 mph).

The Critical Facilities Inventory does not address hurricanes/ tropical storms but does address wind (see Appendix A). This model has determined that all of Ware County and the City of Waycross are all within the wind hazard area. This model also attempts to determine certain wind speed areas for the hazard of wind, and has identified wind speeds of 90 to 99 mph and 100 to 109 mph exist. 100% of Ware County and the City of Waycross are included in some wind hazard area. Complete inventory information is contained at <https://www.itos.uga.edu/GEMA-HS>.

C & D.: Inventory of Assets Exposed and Potential Loss to Hurricanes/Tropical Storms:

In Worksheet 3A: Inventory of Assets appearing in Appendix A, Section VIII, we estimate that all of Ware County and the City of Waycross are equally vulnerable to hurricanes/tropical storms.

Approximately 100% of the Residential property (11,267 of 11,267) in Ware County (including the City of Waycross) may be affected, with a total value of \$969,871,348. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (3,067 of 3,067) in Ware County (including the City of Waycross) may be affected, with a total value of \$919,994,424. The values are based on the most recent available tax roll data for Ware County and the City of Waycross, provided by the Ware County Tax Assessor's Office.

According to the inventory database reports and maps, all of the 171 Critical Facilities and Infrastructure for Ware County (including the City of Waycross) are located in areas that may be affected by hurricanes/tropical storms. The total value of these 171 Critical Facilities is \$32,019,666.

E. Land Use and Development Trends Related to Hurricanes/Tropical Storms:

Ware County and the City of Waycross currently operate in compliance with the standards of the 2018 International Building Code. Both jurisdictions have building inspection programs and zoning ordinances. Both jurisdictions are served by the joint Waycross-Ware County Planning Commission. No other trends regarding the relationship between land use/development and this hazard have been identified at this time.

F. Multi-Jurisdictional Hurricane/Tropical Storm Differences:

All of Ware County and the City of Waycross may be affected by hurricanes/tropical storms. Such events are normally area-wide and no difference in the severity is expected between Ware County and the City of Waycross. However, the impact of a hurricane/tropical storm will likely be more severe in places with higher population density due to more people being in danger, more people needing to be evacuated, more debris from damaged buildings, and other impacts associated with higher population density.

G. General overall HRV Summary of Hurricanes/Tropical Storms Events and their impact on the community:

Hurricanes/tropical storms have the potential to cause damage at any place, at any time, throughout Ware County and the City of Waycross. They are usually preceded by some watch or warning well in advance. The cost of the damage and potential loss of life may be higher if the path of the hurricanes/tropical storms covers more densely populated areas as opposed to more sparsely populated or unpopulated areas.

Damage that can occur from a Category 1 Hurricane can be devastating. For instance, in a Category 1 (100 Year Event) Hurricane scenario, 464 total buildings in Ware and Waycross could be damaged with the total estimated cost of \$10,662,110. When the other factors such as economic loss are calculated in the total economic loss would be estimated at \$14,777,390. Overall, the county building loss rate would be 0.27% of the total countywide building replacement costs. Essential facilities are also at risk from storm events and some may be moderately or severely damaged by high winds. There is only one essential facility projected to

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be damaged by the Category 1 Hurricane Scenario but the total of 35 is expected to have losses due to closures of a minimum of one day. The number of households severely damaged by this scenario is small at one (1) and the no households are expected to be displaced and no short-term shelter is anticipated.

Debris is also expected to be generated by a Category 1 Hurricane and it is divided into three broad categories:

- Reinforced Concrete and Steel Debris
- Brick and Wood and Other Building Debris
- Tree Debris

It is predicted that a Category 1 Hurricane Scenario could generate a total of 259,414 pounds of debris. The breakdown would include 1,266 tons of Brick, Wood and Other debris, no concrete or steel debris, 9,199 tons of tree debris and 248,949 tons of Other Tree Debris. Source: Hazard Risk Analyses Supplement to the Ware County Joint Hazard Mitigation Plan (Appendix G).

The Ware County HMPUC recognizes hurricanes/tropical storms as the eighth most likely natural hazard to occur and cause damage. They have developed a comprehensive range of Mitigation Goals, Objectives, and Action Steps to lessen hurricane/tropical storm impacts on Ware County and the City of Waycross. These are contained in Chapter 4, Section VIII.

Since the previous plan was approved, there have not been any new developments, regulations, or programs that would either increase or decrease the community's overall vulnerability to this hazard.

Section IX. Severe Winter Storm

A. Identification of Hazard:

The threat of a severe winter storm has been chosen by the Ware County HMPUC as the ninth most likely hazard to occur and cause damage in Ware County and the City of Waycross, based on past experience, the FEMA-described methodology, and other factors. Historic data have been examined from various sources, including the National Climatic Data Center (see Appendix F), as well as from local history and personal accounts, in order to determine frequency of events.

Although this natural hazard did not rank high in any dataset of occurrences or damages happening in Ware County or the City of Waycross, undocumented personal accounts of the Ware County HMPUC members rated this hazard as likely to occur and cause damage. Because of the infrequency of severe winter storms in this region, residents of Ware County and the City of Waycross are not well prepared to handle such events. Icy roads may result in a disproportionate number of automobile crashes because residents are not accustomed to driving in icy conditions. Bridges and overpasses may be more susceptible to icing over, creating an additional hazard. Being unprepared may result in loss of life or substantial damage to property and the economy.

Severe winter storms, at the worst, will produce sleet, freezing rain, and/or 1 to 2 inches of snow, with temperatures as low as the teens (°F). Snow accumulation usually melts away within 24 hours. Possible damage that may occur includes downed tree limbs, impassable roadways, power outages, increased emergency service workloads, failed water/sewer/septic systems, crop damage, and vehicle crashes.

B. Profile of Severe Winter Storm Events, Frequency of Occurrences, Probability:

The historic record for severe winter storms is spotty at best, with many unreported or underreported events. All of Ware County and the City of Waycross are vulnerable to severe winter storms, but the effects of most such events are minimal. Severe winter storms can occur at any time during winter months, usually with some warning being given in advance.

According to National Climatic Data Center information (see Appendix F), there are four (4) reports of a severe winter storms (including frost/freeze and sleet) occurring in Ware County (including the City of Waycross) between 01/01/1950 and 12/31/2021. The total cost reported has been zero. Total injuries were reported as zero. No measurable snow or ice accumulation was recorded. Temperatures in recent severe winter storm events have been in the low 20s.

The Historic Recurrence Interval is 17.5 years. This is a 5.71% Historic Frequency Chance per year. The past 10-year Record Frequency Per Year is 0.1, the past 20-year frequency is 0.1, and the past 50-year frequency is 0.04 (see GEMA-HS PDM Hazard Frequencies Table contained in Appendix D, Section D).

C & D.: Inventory of Assets Exposed and Potential Loss to Severe Winter Storms:

Approximately 100% of the Residential property (11,267 of 11,267) in Ware County (including the City of Waycross) may be affected, with a total value of \$969,871,348. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (3,067 of 3,067) in Ware County (including the City of Waycross) may be affected, with a total value of \$919, 994,424. The values are based on the most recent available tax roll data for Ware County and the City of Waycross, provided by the Ware County Tax Assessor’s Office.

According to the inventory database reports and maps, all of the 171 Critical Facilities and Infrastructure for Ware County (including the City of Waycross) are located in areas that may be affected by severe winter storms. The total value of these 171 Critical Facilities is \$32.019,666.

However, it should be noted that damage to buildings and other structures is not usually the most significant effect seen from severe winter storms. As described above, the major hazards from severe winter storms are vehicle crashes and crop damage, as well as frozen/burst water pipes, power outages, overtaxed emergency services, and roadway blockages.

E. Land Use and Development Trends Related to Winter Storms:

Ware County and the City of Waycross currently operate in compliance with the standards of the 2018 International Building Code. Both jurisdictions have building inspection programs and

zoning ordinances. Both jurisdictions are served by the joint Waycross-Ware County Planning Commission. No other trends regarding the relationship between land use/development and this hazard have been identified at this time.

F. Multi-Jurisdictional Severe Winter Storm Differences:

All of Ware County and the City of Waycross have an equal chance of being affected by severe winter storms. In the event of icy roads, hazards would be greater along high-traffic corridors and in more densely populated areas (mainly the City of Waycross).

G. General overall HRV Summary of Severe Winter Storm Events and their impact on the community:

Severe winter storms have the potential to cause damage at any place, at any time during the winter months, throughout Ware County and the City of Waycross. The cost of the damage may be higher in terms of vehicle crashes in the City of Waycross and other population centers, and higher in terms of crop damage in the agricultural areas of the county. A majority of the severe winter storms that pass through the area cause minimal to no damage.

The Ware County HMPUC recognizes severe winter storms as the ninth most likely natural hazard to occur and cause damage. They have developed a comprehensive range of Mitigation Goals, Objectives, and Action Steps to lessen severe winter storm impacts on Ware County and the City of Waycross. These are contained in Chapter 4, Section IX.

Since the previous plan was approved, there have not been any new developments, regulations, or programs that would either increase or decrease the community's overall vulnerability to this hazard.

Chapter 3: **Local Technological/Man-Made Hazard, Risk,** **and Vulnerability (HRV) Summary**

Summary of changes:

- This is the first Ware County and City of Waycross Hazard Mitigation Plan Update to include this chapter.

I. MANMADE Hazard – Public Health Emergency

A. Hazard Identification and Description

A public health emergency is an event that impacts the health of a significant portion of the population. Public Health emergencies can occur at any time without warning. Examples of public health emergencies arising from natural causes include disease outbreaks (including pandemics and food-borne illnesses) and poisoning from naturally occurring environmental factors. Public health emergencies may occur by themselves or may occur secondary to other natural hazards, for example when flooding leads to contamination of drinking water supplies. Public health emergencies may also be man-made (for example, chemical spills, radiation incidents, and bioterrorism).

The National Disaster Medical System Federal Partners Memorandum of Agreement defines a public health emergency as "an emergency need for health care [medical] services to respond to a disaster, significant outbreak of an infectious disease, bioterrorist attack or other significant or catastrophic event. For purposes of NDMS activation, a public health emergency may include but is not limited to, public health emergencies declared by the Secretary of HHS (Health and Human Services) under 42 U.S.C. 247d, or a declaration of a major disaster or emergency under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), 42 U.S.C. 5121-5206).

Source: "Wikipedia"

B. Hazard Profile

Many identified natural hazards in Ware County have the potential to lead to secondary public health emergencies. These include but are not limited to:

- Large numbers of injuries requiring treatment after an extreme weather event
- Contamination of drinking water, food supplies, and/or living spaces due to flooding
- Health effects resulting from extreme heat/cold events
- Health effects resulting from people being displaced/homeless due to a natural hazard event
- Contamination of drinking water and/or soil resulting from industrial activity

Draft

Ware County is also vulnerable to public health emergencies that may occur naturally on their own, including but not limited to:

- Communicable disease outbreaks
- Pandemic influenza
- Pandemic COVID
- Mosquito-borne illness
- Food-borne illness

Diseases that cause a public health emergency may have a rapid onset or a slow onset. They may be highly localized or may be widespread in nature. Depending on the nature of the public health emergency, treatment may or may not be immediately available.

Some examples of recent public health emergencies include:

1. Coronavirus disease (COVID-19)

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus that first emerged in December of 2019. It is a highly contagious respiratory disease that is thought to be spread from person to person through droplets released when an infected person coughs, sneezes, or talks. It may also be spread by touching a surface with the virus on it and then touching one's nose, mouth, or eyes but is less common. The most common signs of COVID-19 are fever, cough, and trouble breathing. Fatigue, muscle pain, chills, headache, sore throat, runny nose, nausea or vomiting, diarrhea, and loss of taste or smell may occur. The signs and symptoms may be mild or severe and usually appear 2 to 14 days after exposure to the SARS-CoV-2 virus. Some people may not have any symptoms but are still able to spread the virus. Most people with COVID-19 recover without needing special treatment. But other people are at higher risk of serious illness. Those at higher risk include older adults and people with serious medical problems, such as heart, lung, or kidney disease, diabetes, cancer, or a weak immune system. Serious illness may include life-threatening pneumonia and organ failure. Research is being done to treat COVID-19 and to prevent infection with SARS-CoV-2. Source: [NIH National Cancer Institute](#).

COVID-19 first appeared in the United States in early 2020 with a widespread transmission and devastating effects. The virus spread rapid across the country and in other countries as well. The SARS-CoV-2 was the dominant strain of the virus between when it emerged in 2020 through early 2021 causing widespread illness and many deaths. The Center for Disease Control issued guidelines for vaccinations, testing, mask wearing, washing hands and staying out of crowded places to help slow the spread of the virus. They also issued guidelines on isolation if symptoms appeared. The U.S. Government shut down its economy closing all non-essential business for a period of weeks in March of 2020 attempting to slow the spread and all but seven states followed suit. The states that did not require lockdown and or issue stay-at-home orders were: North Dakota, South Dakota, Nebraska, Wyoming, Utah and Arkansas. Although these states did issue lockdowns, they did require some businesses to close such as: restaurants, bars,

gyms, theaters, team sporting events, and other businesses where large groups of people would traditionally gather. Schools and universities were closed as well.

Although the shutdown across the U.S. was massive, the results of its success are not widely known but it is assumed that many lives were saved as a result. Unfortunately, the shutdown took a drastic toll on the economy as businesses shed millions of jobs in attempt to stay afloat. Since the initial onslaught of measures that crippled the economy, the U.S. has slowly been working to restore the pre-pandemic economy, but as businesses have come back and the public has moved toward living with the virus, inflation has skyrocketed and presented new threats. (Source: thehill.com)

Since the initial waves of COVID-19-related deaths in 2020 and early 2021, which coincided with the widespread transmission of the first SARS-CoV-2 variants in the United States, two additional waves of COVID-19-related deaths have occurred, coinciding with the emergence of new genomic variants (Delta and Omicron). We refer to these two waves in this report as the Delta and early Omicron periods. At the end of 2021 and into 2022, subvariants of Omicron emerged. We refer to the three-month period following the initial (early) Omicron wave as the later Omicron subvariant period. Specifically, we present data during the Delta (B.1.617.2) variant period (>50% of sequenced isolates beginning the week ending June 26, 2021), Omicron B.1.1.529/BA.1 subvariant period or the early Omicron subvariant wave (>50% of sequenced isolates beginning the week ending December 25, 2021), and the later Omicron BA.2 subvariant period (>50% of the sequenced isolates beginning the week ending March 26, 2022). In this report, we classify these three periods as Delta (July-October 2021), early Omicron (January-March 2022), and later Omicron (April-June 2022). In July-October 2022, Omicron BA.5 was the predominant subvariant. As of early November 2022, a mix of BA.5-related subvariants that included BA.5, BF.7, BQ1.1, and BQ.1 accounted for >50% of sequenced isolates; however, no individual subvariant was predominant. We present provisional mortality estimates for the BA.5 period and the BA.5-related subvariant period, but comparative analysis to earlier variant and subvariant periods is not provided because data were not yet available from all sources.

Excess deaths are defined as the difference between the observed numbers of deaths from all cases in a specific period compared to the expected numbers of deaths in the same period based on predictions from past years of data. Since the beginning of the pandemic, significant and sustained elevations in excess deaths have been observed across the United States. During March-September 2022, an estimated 117,173 excess deaths were reported in the United States. COVID-19-related deaths are estimated to have accounted for 57% of excess deaths during this period. Although the number of reported COVID-19-related deaths remained relatively low during April-early November 2022 as compared to previous phases of the pandemic, excess deaths continued to occur in the United States and may be attributable to the ongoing direct and indirect effects of the COVID-19 pandemic.

Age has been an important risk factor for COVID-19-related mortality in all phases of the pandemic, with adults aged ≥ 65 years consistently having the highest mortality rates. By contrast, throughout the pandemic, children aged < 18 years have accounted for the lowest proportion of deaths. Although children account for $\sim 23\%$ of the U.S. population, they have accounted for $\sim 0.1\%$ of reported COVID-19 deaths (data not shown). Additional information on COVID-19 disease among children is available.

Draft

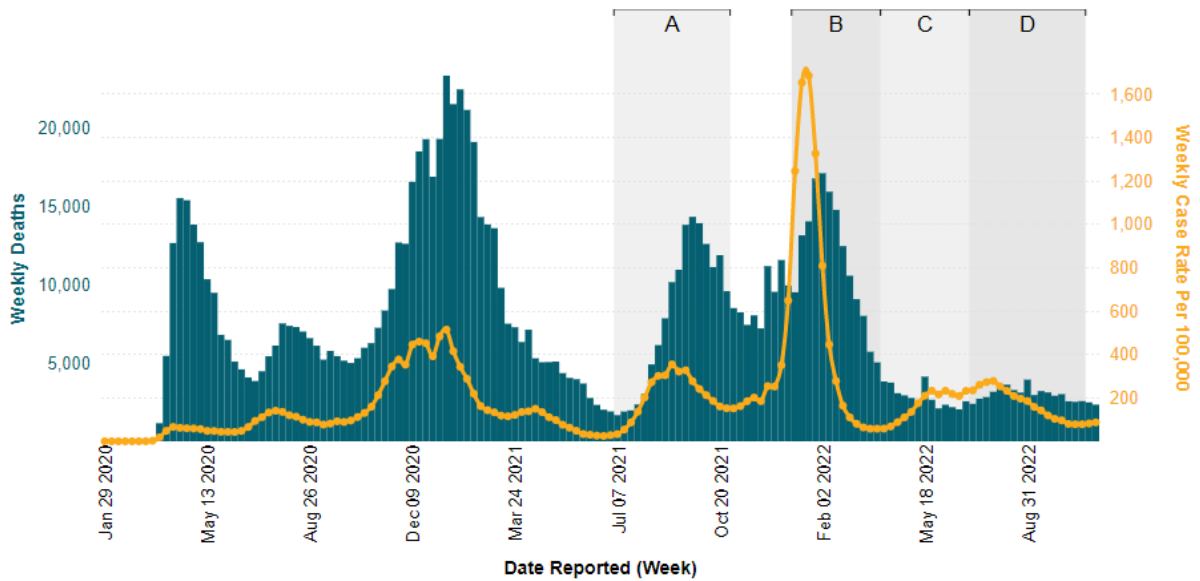
Adults aged ≥ 65 years, especially those aged ≥ 85 years, have accounted for a disproportionate share of COVID-19-related deaths since the beginning of the pandemic. During April-September 2022, this disparity increased for adults aged >85 years, compared with the Delta and early Omicron periods.

Throughout the pandemic, the COVID-19-related mortality rate among men has been higher than among women. The rates among men were 1.2-1.7 times higher than among women. The reasons for this disparity are likely complex and include differences in health behaviors, occupational exposures, and pre-existing health conditions.

Disparities in COVID-19-related mortality rates among racial and ethnic groups have occurred throughout the pandemic. Black, Hispanic/Latino, American Indian and Alaska Native, and Native Hawaiian and Pacific Islander persons have been disproportionately affected by COVID-19-related mortality compared with Non-Hispanic (NH) White persons. During the first few months of the pandemic, Black and Hispanic person had the highest age-standardized mortality rates compared to persons of other racial and ethnic groups.

(Source: cdc.gov) - <https://www.cdc.gov/coronavirus/2019-ncov/science/data-review/risk.html>

Figure 1. Weekly COVID-19-Related Deaths and Weekly COVID-19 Case Rate by the Predominant Variant Period*, United States, January 29, 2020–November 9, 2022



Data Table: Figure One +

[Download "Figure One" \(CSV\)](#)

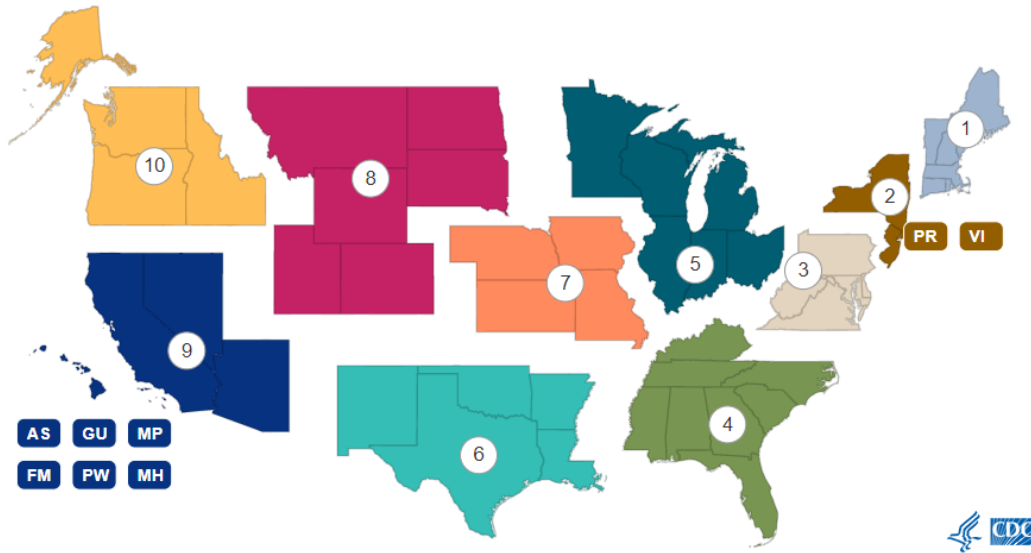
Predominant Variant Period

- (A) Delta
- (B) Early Omicron
- (C) Later Omicron
- (D) Omicron BA.5

*Variants became the predominant circulating strain (representing >50% of sequenced isolates) during the following weeks: Delta (B.1.617.2) during the week ending June 26, 2021; Omicron B.1.1.529 during the week ending December 25, 2021; Omicron BA.2 subvariant during the week ending March 26, 2022, and Omicron BA.5 subvariant during the week of July 2, 2022. These periods are classified as: Delta (July–October 2021), early Omicron (January–March 2022), later Omicron (April–June 2022), and Omicron BA.5 (July–October 2022).

Source: CDC's Aggregate COVID-19 Case and Death Surveillance Data.

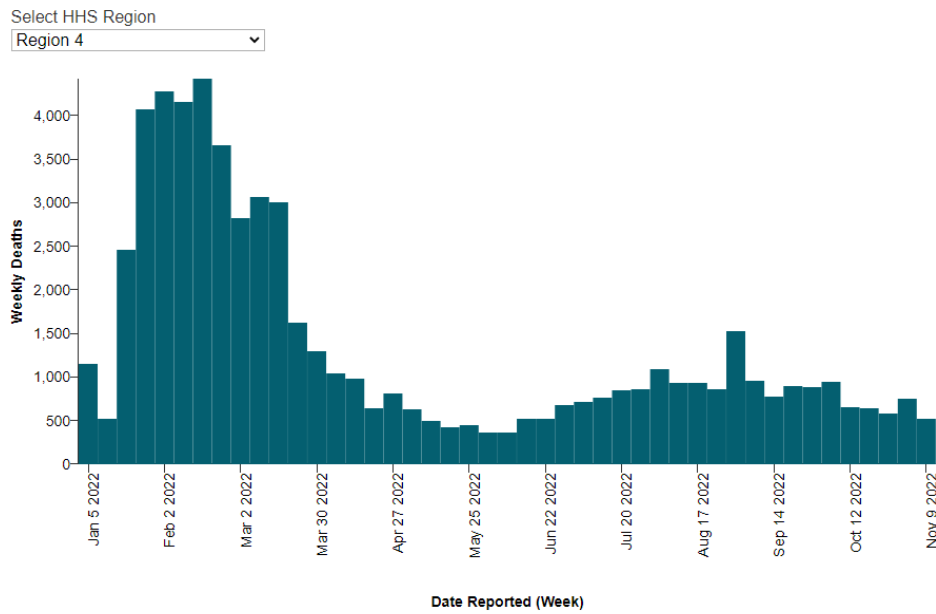
Figure 3. Weekly COVID-19-Related Deaths by U.S. Department. of Health and Human Services (HHS) Region, United States, January 5, 2022–November 9, 2022



Source: <https://www.cdc.gov/coronavirus/2019-ncov/science/data-review/risk.html>

The following chart shows deaths for Region 4 (green) the Southeast for Jan. 2022 through Nov. 2022

The chart below displays the COVID-19 Deaths for each HHS Region



Source: <https://www.cdc.gov/coronavirus/2019-ncov/science/data-review/risk.html>

2. H1N1

2009 H1N1 was first detected in the United States in April 2009. This virus was a unique combination of influenza virus genes never previously identified in either animals or people. The virus genes were a combination of genes most closely related to North American swine-lineage H1N1 and Eurasian lineage swine-origin H1N1 influenza viruses. Because of this, initial reports referred to the virus as a swine origin influenza virus. However, investigations of initial human cases did not identify exposures to pigs and quickly it became apparent that this new virus was circulating among humans and not among U.S. pig herds.

Infection with this new influenza A virus (then referred to as ‘Swine Origin Influenza A Virus’) was first detected in a 10-year-old patient in California on April 15, 2009, who was tested for influenza as part of a clinical study. Laboratory testing at CDC confirmed that this virus was new to humans. Two days later, CDC laboratory testing confirmed a second infection with this virus in another patient, an 8-year-old living in California about 130 miles away from the first patient who was tested as part of an influenza surveillance project. There was no known connection between the two patients. Laboratory analysis at CDC determined that the viruses obtained from these two patients were very similar to each other, and different from any other influenza viruses previously seen either in humans or animals. Testing showed that these two viruses were resistant to the two antiviral drugs amantadine and rimantadine, but susceptible to the antiviral drugs oseltamivir and zanamivir. CDC began an immediate investigation into the situation in coordination with state and local animal and human health officials in California.

The cases of 2009 H1N1 flu in California occurred in the context of sporadic reports of human infection with North American-lineage Swine Influenza Viruses in the United States, most often associated with close contact with infected pigs. (During December 2005 – January 2009, 12 cases of human infection with swine influenza were reported; five of these 12 cases occurred in patients who had direct exposure to pigs, six patients reported being near pigs, and the source of infection in one case was unknown). Human-to-human spread swine influenza viruses had been rarely documented and had not been known to result in widespread community outbreaks among people. In mid-April of 2009, however, the detection of two patients infected with swine origin flu viruses 130 miles apart, raised concern that a novel swine-origin influenza virus had made its way into the human population and was spreading among people.

CDC worked closely with state and local animal and human health officials on epidemiological investigations by tracing contacts of both patients to try to determine the source of their infection and by examining whether there was any link between the patients and pigs. Surveillance also was enhanced to try to detect additional cases of human illness with this virus. Based on the geographic location of the first cases, lack of contact between these cases and swine, and data collected through contact tracing and laboratory testing, CDC epidemiologists suspected that human-to-human transmission of this virus had taken place. In an article entitled Swine Influenza A (H1N1) Infection in Two Children --- Southern California, March-April 2009 published on April 21, 2009 in the Morbidity and Mortality Weekly Report (MMWR), CDC described the cases and requested that state public health laboratories send to CDC all influenza A specimens that could not be subtyped. That same day CDC responded to media inquiries related to the

MMWR from medical reporters. Within a day, three additional samples of this new virus were identified in San Diego County and Imperial County California hospitals and sent to CDC for further testing. CDC laboratory testing confirmed that these samples also were positive for the virus that would come to be called “2009 H1N1.”

On April 23, 2009, samples submitted by Texas revealed two additional cases of human infections with 2009 H1N1, transforming the investigation into a multistate outbreak and response. At the same time, CDC was testing 14 samples from Mexico, some of which had been collected from patients who were ill before the first 2 U.S. (California) patients. Results from seven of the samples were positive for 2009 H1N1 and similar findings were reported for specimens submitted by Mexico to Canada. It had now become clear that cases were occurring in multiple countries and human to human spread of the virus appeared to be ongoing. That same day CDC held the first formal full press briefing to inform the media and guide the public and health care response to the rapidly evolving situation. CDC held nearly 60 press briefings during the 2009 H1N1 response.

On April 24, 2009, CDC uploaded complete gene sequences of the 2009 H1N1 virus to a publicly-accessible international influenza database, which enabled scientists around the world to use the sequences for public health research and for comparison against influenza viruses collected elsewhere, and an updated report on the outbreak was published online in the MMWR. On Saturday, April 25, 2009, under the rules of the International Health Regulations, the Director-General of the World Health Organization declared the 2009 H1N1 outbreak a Public Health Emergency of International Concern and recommended that countries intensify surveillance for unusual outbreaks of influenza-like illness and severe pneumonia. Also, on April 25, 2009, New York City officials reported an investigation into a cluster of influenza-like illness in a high school, and CDC testing confirmed two cases of 2009 H1N1 influenza infection in Kansas, and another case in Ohio shortly after.

On April 26, 2009, the United States Government determined that a public health emergency existed nationwide; CDC’s Strategic National Stockpile (SNS) began releasing 25% of the supplies in the stockpile that could be used to protect and treat influenza. This included 11 million regimens of antiviral drugs, and personal protective equipment including over 39 million respiratory protection devices (masks and respirators), gowns, gloves and face shields, to states (allocations were based on each state’s population). On April 27, the World Health Organization Director-General raised the level of influenza pandemic alert from Phase 3 to Phase 4 based primarily on epidemiological data demonstrating human-to-human transmission and the ability of the virus to cause community-level outbreaks. Based on reports of widespread influenza-like-illness and many severe illnesses and deaths in Mexico, CDC issued a travel health warning recommending that United States travelers postpone all non-essential travel to Mexico. As in past influenza seasons, CDC urged the public and especially those people at highest risk of influenza-related complications, to protect themselves by taking antiviral drugs early in their illness when recommended by their doctor; CDC also advised that everyone take every day preventive actions like covering coughs and sneezes and staying home from work and school when ill to help reduce the spread of illness.

On April 29, 2009 the World Health Organization raised the influenza pandemic alert from Phase 4 to Phase 5 signaling that a pandemic was imminent, and requested that all countries immediately activate their pandemic preparedness plans and be on high alert for unusual outbreaks of influenza-like illness and severe pneumonia. The U.S. Government was already implementing its pandemic response plan. CDC continued to post and update guidance for states, clinicians, laboratories, schools, partners and the public on topics ranging from the non-pharmaceutical measures communities could take to limit spread of disease, to how to evaluate a patient for possible infection with 2009 H1N1 influenza, to how to care for children who might be sick with 2009 H1N1 influenza.

On April 30, 2009, CDC issued an MMWR Dispatch describing the initial outbreak of 2009 H1N1 influenza in Mexico. Findings in Mexico indicated that transmission in Mexico involved person-to-person spread with multiple generations of transmission. CDC also issued an MMWR Dispatch on the outbreak of 2009 H1N1 influenza infection at a high school in New York City, that was, at the time, the largest reported cluster of 2009 H1N1 cases in the United States. The Dispatch suggested that the high school age students had respiratory and fever symptoms similar to those caused by a seasonal flu, but in addition, about half had diarrhea, which is more than expected with seasonal flu. As the details of the outbreak unfolded, the Federal response continued in high gear. Also, on April 30, 2009, HHS announced that the Federal Government would purchase an additional 13 million treatment courses of antiviral drugs to help fight influenza. The additional treatment courses would be added to the SNS.

As the outbreak spread, CDC began receiving reports of school closures and implementation of community-level social distancing measures meant to slow the spread of disease. School administrators and public health officials were following their pandemic plans and doing everything they could to slow the spread of illness. (Social distancing measures are meant to increase distance between people. Measures include staying home when ill unless to seek medical care, avoiding large gatherings, telecommuting, and implementing school closures).

3. Enterovirus D68

In 2014, the United States experienced a nationwide outbreak of EV-D68 associated with severe respiratory illness. From mid-August 2014 to January 15, 2015, CDC or state public health laboratories confirmed a total of 1,153 people in 49 states and the District of Columbia with respiratory illness caused by EV-D68. Almost all of the confirmed cases were among children, many whom had asthma or a history of wheezing. Additionally, there were likely millions of mild EV-D68 infections for which people did not seek medical treatment and/or get tested.

CDC received about 2,600 specimens for enterovirus lab testing during 2014, which is substantially more than usual. About 36% of those tested positive for EV-D68. About 33% tested positive for an enterovirus or rhinovirus other than EV-D68.

EV-D68 was detected in specimens from 14 patients who died and had samples submitted for testing. State and local officials have the authority to determine and release information about the cause of these deaths.

Draft

In general, infants, children, and teenagers are most likely to get infected with enteroviruses and become ill. That's because they do not yet have immunity (protection) from previous exposures to these viruses. We believe this is also true for EV-D68. Adults can get infected with enteroviruses, but they are more likely to have no symptoms or mild symptoms.

Children with asthma may have a higher risk for severe respiratory illness caused by EV-D68 infection.

4. MERS

Middle East Respiratory Syndrome (MERS) is an illness caused by a virus (more specifically, a coronavirus as described by the World Health Organization. MERS affects the respiratory system (lungs and breathing tubes). Most MERS patients developed severe acute respiratory illness with symptoms of fever, cough and shortness of breath. About 3-4 out of every 10 patients reported with MERS have died.

Health officials first reported the disease in Saudi Arabia in September 2012. Through retrospective investigations, health officials later identified that the first known cases of MERS occurred in Jordan in April 2012. So far, all cases of MERS have been linked through travel to or residence in countries in and near the Arabian Peninsula. The largest known outbreak of MERS outside the Arabian Peninsula occurred in the Republic of Korea in 2015. The outbreak was associated with a traveler returning from the Arabian Peninsula.

MERS-CoV has spread from ill people to others through close contact, such as caring for or living with an infected person. MERS can affect anyone. MERS patients have ranged in age from younger than 1 to 99 years old.

CDC continues to closely monitor the MERS situation globally and work with partners to better understand the risks of this virus, including the source, how it spreads, and how infections might be prevented. CDC recognizes the potential for MERS-CoV to spread further and cause more cases globally and in the U.S. We have provided information for travelers and are working with health departments, hospitals, and other partners to prepare for this. In May 2014, CDC confirmed two unlinked imported cases of MERS in the United States – one to Indiana, the other to Florida. Both cases were among healthcare providers who lived and worked in Saudi Arabia. Both traveled to the U.S. from Saudi Arabia, where they are believed to have been infected. Both were hospitalized in the U.S. and later discharged after fully recovering.

CDC and other public health partners continue to closely monitor the MERS situation. The CDC recognizes the potential for MERS-CoV to spread further and cause more cases in the United States and globally. In preparation for this, The CDC has done the following:

- Continued to collaborate with international partners on epidemiologic and laboratory studies to better understand MERS
- Improved the way they collect data about MERS cases
- Increased lab testing capacity in states to detect cases

Draft

- Developed guidance and tools for health departments to conduct public health investigations when MERS cases are suspected or confirmed
- Provided recommendations for healthcare infection control and other measures to prevent disease spread
- Provided guidance for flight crews, Emergency Medical Service (EMS) units at airports, and U.S. Customs and Border Protection (CPB) officers about reporting ill travelers to CDC
- Disseminated up-to-date information to the general public, international travelers, and public health partners
- Used Advanced Molecular Detection (AMD) methods to sequence the complete virus genome on specimens from the two U.S. MERS cases to help evaluate and further describe the characteristics of MERS-CoV.

Ebola Virus Disease

Ebola, previously known as Ebola hemorrhagic fever, is a rare and deadly disease caused by infection with one of the Ebola virus species. Ebola can cause disease in humans and nonhuman primates (monkeys, gorillas, and chimpanzees).

Ebola viruses are found in several African countries. Ebola was first discovered in 1976 near the Ebola River in what is now the Democratic Republic of the Congo. Since then, outbreaks have appeared sporadically in Africa.

The natural reservoir host of Ebola virus remains unknown. However, on the basis of evidence and the nature of similar viruses, researchers believe that the virus is animal-borne and that bats are the most likely reservoir. Four of the five virus strains occur in an animal host native to Africa.

People get Ebola through direct contact (through broken skin or mucous membranes in, for example, the eyes, nose, or mouth) with:

- blood or body fluids (including but not limited to urine, saliva, sweat, feces, vomit, breast milk, and semen) of a person who is sick with or has died from Ebola,
- objects (like needles and syringes) that have been contaminated with body fluids from a person who is sick with Ebola or the body of a person who has died from Ebola,
- infected fruit bats or primates (apes and monkeys), and
- possibly from contact with semen from a man who has recovered from Ebola (for example, by having oral, vaginal, or anal sex)

Ebola Virus Disease has no cure or vaccine and due to the high mortality rate and highly infectious nature of the virus, planning efforts in the United States have been focused on controlling exposure for potentially exposed travelers from the countries where the outbreaks have been rampant. Because the timeframe between a person contracting the disease and exhibiting symptoms can be up to 21 days, combined with the ease of international travel, prevention and planning have become a focal point in public health preparedness.

5. Zika

Zika virus disease (Zika) is a disease caused by Zika virus that is spread to people primarily through the bite of an infected *Aedes* species mosquito. The most common symptoms of Zika are fever, rash, joint pain, and conjunctivitis (red eyes). The illness is usually mild with symptoms lasting for several days to a week after being bitten by an infected mosquito. People usually don't get sick enough to go to the hospital, and they very rarely die of Zika. For this reason, many people might not realize they have been infected. Once a person has been infected, he or she is likely to be protected from future infections.

Zika virus can be spread from a pregnant woman to her fetus and has been linked to a serious birth defect of the brain called Microcephaly in babies of mothers who had Zika virus while pregnant. CDC recommends special precautions for pregnant women. Pregnant women should consider delaying travel to areas with Zika.

Zika virus was first discovered in 1947 and is named after the Zika forest in Uganda. In 1952, the first human cases of Zika were detected and since then, outbreaks of Zika have been reported in tropical Africa, Southeast Asia, and the Pacific Islands. Zika outbreaks have probably occurred in many locations. Before 2007, at least 14 cases of Zika had been documented, although other cases were likely to have occurred and were not reported. Because the symptoms of Zika are similar to those of many other diseases, many cases may not have been recognized.

- In May 2015, the Pan American Health Organization (PAHO) issued an alert regarding the first confirmed Zika virus infection in Brazil and on Feb 1, 2016, the World Health Organization (WHO) declared Zika virus a public health emergency of international concern (PHEIC). Local transmission has been reported in many other countries and territories. Zika virus likely will continue to spread to new areas. As an arboviral disease, Zika virus is nationally notifiable.

C. Assets Exposed to Hazard - Community Exposure

The areas of the county with the highest population density would likely be most vulnerable to diseases that spread from person to person. The main area of high population density in Ware County is the City of Waycross. In addition, facilities that serve large volumes of people could potentially be vehicles for the transmission of communicable disease, as in an influenza pandemic; such areas include schools, colleges, large employment centers, and large retail areas such as malls.

Due to Ware County's humid subtropical climate, mosquito-borne illness is a greater hazard here than in many other parts of the country. Levels of exposure to mosquito-borne illness depend on several factors, including:

- Presence and prevalence of an illness-causing mosquito-borne virus;
- Presence of mosquitoes, which may be exacerbated both by natural standing water (such as lakes and ponds) and by standing water in man-made structures, such as old tires, buckets, and other containers;

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- Human exposure to mosquito bites, which may be influenced by factors such as the use of insect repellent, the amount of time spent outside, and the availability of air conditioning and window screens in residences.

The City of Waycross operates a mosquito control program, which include spraying, surveillance, and public education. Ware County does not have a mosquito control program. Mosquito-borne disease is an especially great concern as of early 2016 due to a Zika virus outbreak based in South and Central America that included many cases in Florida.

Public health emergencies involving food-borne illness are typically quite localized because the illness affects those people who have consumed food from a contaminated source, e.g. a certain product from a grocery store or restaurant. Consequently, no single part of Ware County is more or less vulnerable to such an emergency. A public health emergency involving illness transmitted through water can affect the entire population of a city, in cases where that city's entire water supply is affected. In rural areas where drinking water is obtained from wells, the effects of such an emergency may be more localized. Damage from Public Health Emergencies is equally likely to occur in any area of the county so all assets are exposed equally to potential Public Health Emergency damage to some degree.

D. Estimate of Potential Loss

The potential loss from a public health emergency depends entirely on the scope and severity of the emergency and the capacity of emergency management agencies and health care facilities to respond. Public health emergencies may be small and highly localized in nature, or may affect an entire community and/or nation and result in many fatalities. Due to the wide variety of possible public health emergencies, it is impossible to make precise generalized estimates of the potential loss.

In Worksheet 3A: Inventory of Assets appearing in Appendix A Section I Part A, we estimate that all of Ware County and the City of Waycross are vulnerable to Public Health Emergencies.

Ware County (including the City of Waycross):

Approximately 100% of the Residential property (11,267 of 11,267) in Ware County (including the City of Waycross) may be affected, with a total value of \$969,871,348. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (3,067 of 3,067) in Ware County (including the City of Waycross) may be affected, with a total value of \$919,994,424. The values are based on the most recent available tax roll data for Ware County and the City of Waycross, provided by the Ware County Tax Assessor's Office.

According to the inventory database reports and maps, all of the 171 Critical Facilities and Infrastructure for Ware County (including the City of Waycross) are located in areas that may be affected by a public health emergency. The total value of these 171 Critical Facilities is \$32,019,666.

E. Land Use and Development Trends

A wide range of land use and development regulations act to protect public health in Ware County, such as animal control ordinances, plumbing codes, solid waste management regulations, environmental regulations, and zoning regulations that minimize incompatible land uses. All such regulations contribute to reducing the likelihood of a public health emergency.

F. Multi-Jurisdictional Differences

Jurisdictional differences in vulnerability to public health emergencies depend on the nature and severity of the emergency, and on the mitigation measures in place. For example, communities not covered by any active mosquito control program may be more vulnerable to outbreaks of mosquito-borne illness. The City of Waycross is generally more vulnerable to public health emergencies that are exacerbated by higher population density.

G. Hazard, Risk and Vulnerability Summary

The entire population of Ware County and the City of Waycross is conceivably at risk from a public health emergency. The level of risk depends on the emergency type and severity and the measures that are in place to control and respond to it. Some types of public health emergency are impossible to predict and occur swiftly, leaving little or no time to respond. Others are more gradual in their onset, and mitigation measures can be put in place ahead of time.

II. MANMADE Hazard – Chemical, Biological, Radiological, Nuclear And Explosive (CBRNE) Incidents

A. Hazard Identification and Description

The threat of CBRNE has been chosen by Ware County as a likely man-made hazard to occur and cause damage in Ware County and the City of Waycross, based on past experience, the FEMA described methodology, and other factors.

CBRNE: Chemical, Biological, Radiological, Nuclear, and Explosives

Chemical: A **chemical weapon** (CW) is a device that uses chemicals formulated to inflict death or harm to human beings. They may be classified as weapons of mass destruction, and have been "condemned by the civilized world". They are separate from biological weapons (diseases), nuclear weapons (which use sub-nuclear fission) and radiological weapons (which use radioactive decay of elements). Chemical weapons can be widely dispersed in gas, liquid and solid forms and may easily afflict others than the intended targets. Nerve Gas and Tear Gas are two modern examples

For our purposes, this category could also include a wide variety of chemicals (including gasoline/diesel fuels), pesticides, etc. that are transported by rail, truck, or other means through the area, or are stored/used for business, manufacturing or agricultural purposes.

There have been several reports of LUST (Leaking Underground Storage Tanks), chemical spills, or vehicle accidents that could potentially cause damage to individuals or the environment. In May, 1991, approximately 1/3 of the population of the City of Ashburn was evacuated due to a Chemical Fire at Wilbur Ellis Company burning various pesticides and herbicides.

Biological: A **biological agent** — also called **bio-agent** or **biological threat agent** — is a bacterium, virus, prion, or fungus that can be used purposefully as a biological weapon in bioterrorism or biological warfare (BW). In addition to these living and/or replicating pathogens, biological toxins are also included among the bio-agents. More than 1,200 different kinds of potentially weaponizable bio-agents have been described and studied to date.

Biological agents have the ability to adversely affect human health in a variety of ways, ranging from relatively mild allergic reactions to serious medical conditions, including death. Many of these organisms are ubiquitous in the natural environment where they are found in water, soil, plants, or animals. Bio-agents may be amenable to "weaponization" to render them easier to deploy or disseminate. Genetic modification may enhance their incapacitating or lethal properties, or render them impervious to conventional treatments or preventives. Since many bio-agents reproduce rapidly and require minimal resources for propagation, they are also a potential danger in a wide variety of occupational settings.

Radiological: A **radiological weapon** or **radiological dispersion device (RDD)** is any weapon that is designed to spread radioactive material with the intent to kill and cause disruption.

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One version, known as a dirty bomb, is not a true nuclear weapon and does not yield the same explosive power. It uses conventional explosives to spread radioactive material, most commonly the spent fuels from nuclear power plants or radioactive medical waste.

Another version is the salted bomb, a true nuclear weapon designed to produce larger amounts of nuclear fallout than a regular nuclear weapon.

For our purposes, this category could also include radiological materials that are transported through the community by truck or train, accidents caused by radiotherapy and accidents resulting from material stored (or improperly disposed of) in medical devices or medical waste.

Nuclear: A **nuclear weapon** is an explosive device that derives its destructive force from nuclear reactions, either fission or a combination of fission and fusion.

Explosives: An **explosive weapon** generally uses high explosive to project blast and/or fragmentation from a point of detonation.

Explosive weapons may be subdivided by their method of manufacture into explosive ordnance and improvised explosive devices (IEDs).

Certain types of explosive ordnance and many improvised explosive devices are sometimes referred to under the generic term bomb.

When explosive weapons fail to function as designed they are often left as unexploded ordnance (UXO).

An **explosive material**, also called an **explosive**, is a reactive substance that contains a great amount of potential energy that can produce an explosion if released suddenly, usually accompanied by the production of light, heat, sound, and pressure. An **explosive charge** is a measured quantity of explosive material.

This potential energy stored in an explosive material may be

- chemical energy, such as nitroglycerin or grain dust
- pressurized gas, such as a gas cylinder or aerosol can.
- nuclear energy, such as in the fissile isotopes uranium-235 and plutonium-239

Explosive materials may be categorized by the speed at which they expand. Materials that detonate (explode faster than the speed of sound) are said to be "high explosives" and materials that deflagrate are said to be "low explosives". Explosives may also be categorized by their sensitivity. Sensitive materials that can be initiated by a relatively small amount of heat or pressure are primary explosives and materials that are relatively insensitive are secondary or Tertiary explosives.

Because of its location, and especially because of the large volume of freight that passes through the area (by rail and by truck) Ware County and the City of Waycross are vulnerable to the effects of CBRNE events. The effect may vary depending on the severity of the CBRNE and the duration of the event.

B. Hazard Profile

The possible extent of CBRNE events is unknown due to the numerous types and strengths of events that may occur.

C. Assets Exposed to Hazard - Community Exposure

The areas of the county with the highest population density would likely be most vulnerable to CBRNE Events. Areas of high population density in Ware County are generally within the City of Waycross. In addition, facilities that serve large volumes of people could potentially be vehicles for a CBRNE event. Such areas include malls, hospitals, and other large employment and retail centers. Airports and large rail facilities could also be targets.

Damage from CBRNE is equally likely to occur in any area of the community, so all assets are exposed equally to potential CBRNE damages to some degree.

D. Estimate of Potential Loss

The potential loss from CBRNE depends entirely on the scope and severity of the event and the capacity of emergency management agencies and health care facilities to respond. CBRNE events may be small and highly localized in nature, or may affect an entire community and result in many fatalities. Due to the wide variety of possible CBRNE Events, it is impossible to make precise generalized estimates of the potential loss.

In Worksheet 3A: Inventory of Assets appearing in Appendix A Section I Part A, we estimate that all of Ware County and the City of Waycross are vulnerable to CBRNE events.

Approximately 100% of the Residential property (11,267 of 11,267) in Ware County (including the City of Waycross) may be affected, with a total value of \$969,871,348. Also, approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (3,067 of 3,067) in Ware County (including the City of Waycross) may be affected, with a total value of \$919,994,424. The values are based on the most recent available tax roll data for Ware County and the City of Waycross, provided by the Ware County Tax Assessor's Office.

According to the inventory database reports and maps, all of the 171 Critical Facilities and Infrastructure for Ware County (including the City of Waycross) are located in areas that may be affected by CBRNE events. The total value of these 171 Critical Facilities is \$32,019,666.

E. Land Use and Development Trends

A wide range of laws and regulations act to protect the public in Ware County from CBRNE Events. Ware County and the City of Waycross each have their own law enforcement departments, individual fire departments, and joint Emergency Management Agency.

Land use and development trends that influence the vulnerability of Ware County and the City of Waycross are: The large number of rail lines and the relatively small number of overpasses (meaning that some communities are separated by rail lines from other places); the large volumes of freight and truck traffic that pass through the region; the relatively high density of the City of Waycross compared to the rest of the county; and the presence of some industrial areas with potentially hazardous chemicals present.

F. Multi-Jurisdictional Differences

Jurisdictional differences in vulnerability to CBRNE depend on the nature and severity of the emergency, and on the mitigation measures in place. The City of Waycross is generally more vulnerable to CBRNE events that are exacerbated by higher population density.

G. Hazard, Risk and Vulnerability Summary

The entire population of Ware County is conceivably at risk from a CBRNE Event. The level of risk depends on the emergency type and severity and the measures that are in place to control and respond to it. CBRNE are impossible to predict and occur swiftly, leaving little or no time to respond.

Chapter 4: **Local Natural Hazard Mitigation Goals and Objectives**

Summary of Changes:

Table 4.1 provides a brief description of each section in this chapter and a summary of the changes that have been made.

Chapter 4 Section	Updates to Section
I. Wildfire	Updated Goals, Objectives, and Action Step formatting, numbering, and data fields. Updated or deleted prior Action Steps and added new Action Steps if applicable.
II. Drought	Updated Goals, Objectives, and Action Step formatting, numbering, and data fields. Updated or deleted prior Action Steps and added new Action Steps if applicable.
III. Thunderstorm/Wind	Updated Goals, Objectives, and Action Step formatting, numbering, and data fields. Updated or deleted prior Action Steps and added new Action Steps if applicable.
IV. Flood	Updated Goals, Objectives, and Action Step formatting, numbering, and data fields. Updated or deleted prior Action Steps and added new Action Steps if applicable.
V. Extreme Heat	Updated Goals, Objectives, and Action Step formatting, numbering, and data fields. Updated or deleted prior Action Steps and added new Action Steps if applicable.
VI. Tornado	Updated Goals, Objectives, and Action Step formatting, numbering, and data fields. Updated or deleted prior Action Steps and added new Action Steps if applicable.
VII. Hail	Updated Goals, Objectives, and Action Step formatting, numbering, and data fields. Updated or deleted prior Action Steps and added new Action Steps if applicable.
VIII. Hurricane/Tropical Storm	Updated Goals, Objectives, and Action Step formatting, numbering, and data fields. Updated or deleted prior Action Steps and added new Action Steps if applicable.
IX. Severe Winter Storm	Updated Goals, Objectives, and Action Step formatting, numbering, and data fields. Updated or deleted prior Action Steps and added new Action Steps if applicable.

Table 4.1: Overview of updates to Chapter 4: Local Natural Hazards, Mitigation Goals and Objectives

Overall Community Mitigation Goals, Policies and Values Narrative

While Ware County and the City of Waycross each operate autonomously, there is a high level of cooperation exhibited when it comes to hazard mitigation and emergency planning efforts. Each local government has designated representatives to participate in the emergency management process, whether it be during planning, response, or recovery phases. The local Emergency Management Agency hosts regular meetings to gather all of the relevant local, regional and state partners together to develop effective plans and strengthen relationships among all of the stakeholders. Working together, Ware County and the City of Waycross have been able to access resources available through several state and federal sources that have been instrumental in improving the technical capabilities of these communities to more effectively mitigate hazards and provide more accurate warning and preparatory information to their citizens.

Overall, the priorities for each of the local communities has remained relatively unchanged. The hazards and risks associated with each have not changed and many of the action steps identified during previous versions of this plan are still relevant and remain a priority in this plan as well.

Authority for the development of this Plan was given by the Ware County Commission as a result of their execution of the Grantee-Subgrantee Agreement for the Ware County Hazard Mitigation Grant Program (HMGP) Planning Project; and by the City of Waycross, located in Ware County, through their participation in the planning project. The Ware County Emergency Management Agency is authorized to oversee emergency management within both Ware County and the City of Waycross.

The two jurisdictions have many current policies and programs related to hazard mitigation, which are described in detail in the goals, objectives, and action steps contained in Sections I through IX of Chapter 4 of this Plan. Both jurisdictions (within the boundaries of their budgets) have the ability to expand and improve their existing policies and programs as evidenced by the new and existing goals, objectives, and action steps included in this plan. The amount of resources available to the two jurisdictions for expansion and improvement of existing programs will depend on factors such as the local government budgets and the availability of state and federal funding to support hazard mitigation activities.

Following is a description of the comprehensive range of Mitigation Goals, Objectives, and Action Steps that were developed by the Ware County HMPUC to reduce damages and improve safety through Hazard Mitigation. These have been arranged by the natural hazards contained in Chapter Two, Sections I-IX. In this Chapter, in Sections I-IX, there is an analysis and description of a comprehensive range of specific Mitigation Goals, Objectives, and Action Steps to reduce the effects of each hazard. There is particular emphasis on future and existing buildings and infrastructure as well as public awareness and communication.

The Ware County HMPUC discussed and identified the comprehensive range of Mitigation Goals, Objectives, and Action Steps contained in Chapter 4 of this Plan after identifying the hazards noted in Chapter 2 Sections I-IX of this Plan. All areas of Ware County and the City of Waycross were considered in the development of the comprehensive range of Mitigation Goals, Objectives, and Action Steps. These were identified after weighing many factors discovered

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during the planning process, including risk assessment, storm history, past damage, community resources, and other factors.

A list of the comprehensive range of Mitigation Goals, Objectives, and Action Steps was compiled from the input of the Ware County HMPUC, as well as from others within the community. Members of the Ware County HMPUC prioritized the identified comprehensive range of Mitigation Goals, Objectives, and Action Steps based on what would be perceived as most beneficial to the community. The benefits were all determined to be greater than the costs involved (if any).

Several criteria were established to assist the Ware County HMPUC members in the prioritization of these suggested comprehensive range of Mitigation Goals, Objectives, and Action Steps. Criteria included perceived cost vs. benefit or cost effectiveness, availability of potential funding sources, overall feasibility, measurable milestones, multiple objectives, both public, political support for the proposed actions, and the STAPLEE criteria.

Through this 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. The determination of the cost/benefit analysis (such as the FEMA B/CA model) of a project will be implemented at the time of project application or funding request. Other projects allowed the communities to pursue completion of the project using potential grant funding. Still others required no significant financial commitment by the communities.

In Chapter 6, Section I-III, there is a description of the planning process involved in selecting the comprehensive range of Mitigation Goals, Objectives, and Action Steps. The Action Steps are given a rating of High, Medium, or Low Priority by the Ware County HMPUC based on a number of factors (with a primary emphasis on prioritized cost versus benefit review) identified in Chapter 6 Section I.

Relevant comprehensive ranges of Mitigation Goals, Objectives, and Action Steps are listed below throughout the chapter. The Waycross-Ware County EMA Director has been chosen by Ware County and the City of Waycross to oversee the projects. The Waycross-Ware County EMA has been designated by Ware County and the City of Waycross to be the coordinating agency for implementation and administration of these projects.

Section I. Wildfire

A. Community Mitigation Goals

As previously indicated in Chapter 2, wildfire may cause substantial damage to life, property, and the economy in Ware County and the City of Waycross. Wildfire is unpredictable and could happen at any place and at any time in the community. The Ware County HMPUC believes that, due to the great damage wildfire may cause, a comprehensive range of Mitigation Goals, Objectives, and Action Steps (contained in Section C below) should be implemented to reduce the threat of wildfire damage in the community.

B. Identification and Analysis of the Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include measures to reduce structural ignitability, expanded firefighting facilities, improving infrastructure such as water lines, and encouraging the maintenance of clear right-of-way.

Non-structural options include first responder training, upgrades to fire department equipment, conducting various training and outreach programs, improving public awareness of the dangers of wildfires, and promoting “Firewise” knowledge in the community.

2. Existing Policies, Regulations, Ordinances and Land Use:

Ware County and the City of Waycross currently operate in compliance with the standards of the 2018 International Building Code. Both jurisdictions have building inspection programs and zoning ordinances. Both jurisdictions are served by the joint Waycross-Ware County Planning Commission. The Community Wildfire Protection Plan outlines strategies for mitigating wildfire damage in the community.

3. Community Values, Historic and Special Considerations:

Ware County and the City of Waycross have two historic districts (Downtown Waycross Historic District and Waycross Historic District) and several other properties that are on the National Register of Historic Places, including the U.S. Post Office and Courthouse, Lott Cemetery, the First African Baptist Church and Parsonage, and the Obediah Barber Homestead. There are historic and special considerations that pose significant challenges with regard to mitigating damage.

Worksheet #4: STAPLEE Criteria was completed for each Action Step (see Appendix D Section I).

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

C. Wildfire – Mitigation Strategy and Recommendation

Goal #1: Prevent or reduce damage caused by Wildfire in Ware County and in the City of Waycross.

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, and woodlands due to wildfire.

Action Step #1: Provide additional first responder training, air units, air unit chargers, Class A Pumper & Fire Knocker trucks, and other specialized equipment & training to all Ware County Volunteer Fire Departments for Wildfire use.

Responsible Department	Ware County EMA, Ware County FD
Anticipated Cost	\$6,000,000.00
Existing & Potential Funding Sources	General Funds/DOHS-GEMA-HS/FEMA & SPLOST
Jurisdiction	Ware County
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #2: Provide additional first responder training, air units, air unit chargers, Class A Pumper & Fire Knocker trucks, and other specialized equipment & training to the City of Waycross Fire Departments for Wildfire use.

Responsible Department	Ware County EMA, City of Waycross FD
Anticipated Cost	\$2,500,000.00
Existing & Potential Funding Sources	General Funds/DOHS-GEMA-HS/FEMA & SPLOST
Jurisdiction	City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #3: Support & enforce GA Forestry Commission burn ordinances and bans and promote hazardous fuel reduction by prescribed burning, mechanical treatment, or chemical treatment carried out and promoted by the GA Forestry Commission in Ware County and the City of Waycross.

Responsible Department	Ware County EMA, Ware County FD, City of Waycross FD
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County/City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance. An ordinance has been passed by the City of Waycross supporting this Action Step.

Action Step #4: Complete construction of fire tower facility and add a 100’ X 100’ training classroom.

Responsible Department	Ware County EMA, Ware County FD, City of Waycross FD
Anticipated Cost	\$1,000,000.00
Existing & Potential Funding Sources	General Funds, DOHS-GEMA-HS/FEMA & SPLOST
Jurisdiction	Ware County/City of Waycross
Timeframe	2023-2028
Priority	High
Status	Partially Completed-Site Under Construction. Ongoing – Extended beyond 5-year time period due to importance.

Action Step #5: In the City of Waycross, replace the four-inch water lines with six-inch water lines and hydrants in the Gilmore/Brunel Street area.

Responsible Department	City of Waycross Community Development
Anticipated Cost	\$1,500,000
Existing & Potential Funding Sources	General Funds, HUD GDBG & SPLOST
Jurisdiction	City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Objective #2: Obtain Fire-Wise Community Status by educating the Ware County and City of Waycross Fire Department personnel and

the public on the hazards of Wildfire and the pre-disaster mitigation thereof.

Action Step #1: Maintain good public relations between the citizens of Ware County and the City of Waycross and the County/City Fire Departments and plan to increase levels of awareness and resources during peak hazard conditions through the use of education sessions, community meetings, etc.

Responsible Department	Ware County EMA
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County/City of Waycross
Timeframe	2023-2028
Priority	Medium
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #2: Partner with the Georgia Forestry Commission to provide education to Ware County and City of Waycross communities and citizens on the pre-disaster mitigation of wildfire and use; and develop school-based programs to educate children.

Responsible Department	Ware County EMA
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County/City of Waycross
Timeframe	2023-2028
Priority	Medium
Status	Ongoing – Extended beyond 5-year time period due to importance.

Objective #3: Implement priorities, projects and recommendations contained in GA Forestry Commission’s “Community Wildfire Protection Plan.”

Action Step #1: Educate the public on the importance of trimming shrubs and vines to 30 feet from structures, trimming overhanging limbs, replacing flammable plants near homes with less flammable varieties, and removing vegetation around chimneys. Place this message on Billboards and Social Media.

Responsible Department	Ware County EMA, Ware County/City of Waycross Fire Depts. & Public Works Depts.
Anticipated Cost	\$20,000.00
Existing & Potential Funding Sources	General Funds, DOHS-FEMA/GEMA-HS, GA Forestry, USFS
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #2: Educate the public on cleaning flammable vegetative material from roofs and gutters, storing firewood appropriately, installing skirting around raised structures, storing water hoses for easy access, and replacing pine straw and mulch around plantings with less flammable landscaping materials. Place this message on Billboards and Social Media.

Responsible Department	Ware County EMA, Ware County/City of Waycross Fire Depts. & Public Works Depts.
Anticipated Cost	\$2,500.00
Existing & Potential Funding Sources	General Funds, DOHS-FEMA/GEMA-HS, GA Forestry, USFS
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #3: Cut, prune, and mow vegetation in shared community spaces.

Responsible Department	Ware County EMA, Ware County/City of Waycross Fire Depts. & Public Works Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #4: Install new road signage with reflective lettering on non-flammable poles that meets all the minimum requirements of the MUTCD. Dead ends (no outlet or turnaround) should be prominently tagged.

Responsible Department	Ware County/City of Waycross Road Depts., Building Inspection Depts. & Public Works Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #5: As roads are upgraded, widen to minimum standards with a minimum 50-foot radius for cul-de-sacs.

Responsible Department	Ware County/City of Waycross Road Depts., Building Inspection Depts. & Public Works Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #6: Work with developers to identify and create alternative access and exit routes for subdivisions and communities with only one way in and out.

Responsible Department	Ware County Planning & Code, Ware County/City of Waycross Road Depts., Building Inspection Depts. & Public Works Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #7: Amend and enforce existing building codes as they relate to skirting, propane tank locations, public nuisances (trash/debris on property), property address marking standards, and other relevant concerns; at such time as the development of zoning, planning, and subdivision ordinances become practicable, include fire department and emergency services input in the design of these.

Responsible Department	Ware County Planning & Code, Ware County/City of Waycross Building Inspection Depts. & Public Works Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #8: On adjacent WUI Lands, encourage prescribed burning for private land owners and industrial timberlands particularly adjacent to residential areas.

Responsible Department	Georgia Forestry Commission
Anticipated Cost	\$100,000.00
Existing & Potential Funding Sources	General Funds, DOHS-GEMA-HS/FEMA, GA Forestry, USFS
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #9: On adjacent USF&W lands, work with USF&W land management to undertake fuel reduction strategies on Okefenokee NWR lands adjacent to WUI areas.

Responsible Department	Georgia Forestry Commission
Anticipated Cost	\$500,000.00
Existing & Potential Funding Sources	General Funds, DOHS-FEMA/GEMA-HS, GA Forestry, USFS, USF & W
Jurisdiction	Ware County
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #10: On adjacent GFC & WMA lands, work with GFC & DNR land management to incorporate regular prescribed burning on State managed lands adjacent to identified WUI areas.

Responsible Department	Georgia Forestry Commission
Anticipated Cost	\$500,000.00
Existing & Potential Funding Sources	General Funds, DOHS-FEMA/GEMA-HS, GA Forestry, USFS, GA DNR
Jurisdiction	Ware County
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #11: Encourage railroads to better maintain their ROW eliminating brush and grass through herbicide and mowing. Maintain firebreaks along ROW adjacent to residential areas.

Responsible Department	Ware County/City of Waycross Commissioners
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds, DOHS-FEMA/GEMA-HS, GA Forestry, USFS
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #12: Encourage private landowners to clean and re-harrow existing fire lines.

Responsible Department	Georgia Forestry Commission
Anticipated Cost	\$100,000.00
Existing & Potential Funding Sources	General Funds, DOHS-FEMA/GEMA-HS, GA Forestry, USFS
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #13: Inspect, maintain, and improve access to existing dry hydrants. Add signage along roads to mark the hydrants.

Responsible Department	Ware County EMA, Ware County Fire Dept., Road Dept. & Public Works Dept.
Anticipated Cost	Staff Time + \$50,000.00
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #14: Purchase brush trucks for identified stations.

Responsible Department	Ware County EMA, Ware County Fire Dept.
Anticipated Cost	\$95,000.00 each truck
Existing & Potential Funding Sources	General Funds

Jurisdiction	Ware County
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #15: Ensure all fire stations and firefighters are equipped with wildland hand tools and lightweight wildland PPE gear.

Responsible Department	Ware County EMA, Ware County/City of Waycross Fire Depts.
Anticipated Cost	\$200,000.00
Existing & Potential Funding Sources	General Funds, DHS FEMA/GEMA-HS, AFG & SPLOST
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #16: Obtain mobile and fixed generators (including transfer switches) to provide back-up power where needed.

Responsible Department	Ware County EMA, Ware County/City of Waycross Fire Depts.
Anticipated Cost	\$500,000.00 (Per Unit)
Existing & Potential Funding Sources	General Funds, DOHS-GEMA-HS/FEMA & SPLOST
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #17: Obtain Wildland Fire Suppression Training for Fire Personnel.

Responsible Department	Ware County EMA, Ware County/City of Waycross Fire Depts.
Anticipated Cost	\$80,000.00
Existing & Potential Funding Sources	General Funds, DOHS-GEMA-HS/FEMA AFG, GA Forestry, USFS, USF&W & SPLOST
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028

Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #18: Conduct “How to Have a Firewise Home” Workshop for Ware County/City of Waycross Residents.

Responsible Department	Ware County EMA, Ware County/City of Waycross Fire Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds, DOHS-GEMA-HS/FEMA, GA Forestry
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #19: Conduct “Firewise” Workshop for Ware County/City of Waycross Community Leaders.

Responsible Department	Ware County EMA, Ware County/City of Waycross Fire Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds, DOHS-GEMA-HS/FEMA, GA Forestry
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #20: Conduct an annual Clean-up Event every year.

Responsible Department	Ware County EMA, Ware County/City of Waycross Fire Depts., Public Works Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds, GA Forestry
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #21: Develop and distribute Firewise informational packets to realtors & insurance agents.

Responsible Department	Ware County EMA, Ware County/City of Waycross Fire Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds, DOHS-GEMA-HS/FEMA, GA Forestry
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #22: Create and Exhibit a Wildfire Protection Display for the general public during several festivals in the county. The display can be independent or combined with the Georgia Forestry Commission display.

Responsible Department	Ware County EMA, Ware County/City of Waycross Fire Depts., and Georgia Forestry Commission.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds, GA Forestry
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #23: Invite the Waycross News Media and area TV and Radio to community “Firewise” Functions for news coverage and regularly submit press releases documenting wildfire risk improvements in Ware County.

Responsible Department	Ware County EMA, Ware County/City of Waycross Fire Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #24: Construct overpass to/from the Jamestown community in conjunction with Perimeter Road project, in order to speed evacuation if needed.

Responsible Department	GDOT, CSX, Ware County, City of Waycross
Anticipated Cost	\$15,000,000.00
Existing & Potential Funding Sources	GDOT, CSX, Ware County, City of Waycross, State & Federal Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	Medium
Status	Ongoing – Extended beyond 5-year time period due to importance.

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy:

All sections of the Plan shall be monitored and evaluated annually by the Ware County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission meetings, City Commission meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Unchanged Action Steps:

Objective 1

- Action Step #3

Objective 2

- Action Step #1
- Action Step #2

Objective 3

- Action Step #3
- Action Step #4

- Action Step #5
- Action Step #6
- Action Step #7

G. Amended Action Steps:

Objective 1

- Action Step #1 (Provide additional first responder training, air units... Ware Co.) was updated to reflect an increased cost.
- Action Step #2 (Provide additional first responder training, air units... Waycross) was updated to reflect an increased cost.
- Action Step #7 (Complete construction of Fire Training Tower and Facility) has been changed to Action Step #4 and was changed to reflect the completion of the Fire Training Tower and to add a new element – the construction of a 100'X100' Training Classroom.
- Action Step #8 (In the City of Waycross, replace the four-inch water lines with six-inch water lines and hydrants in the Gilmore/Brunel Street Area.) was changed to Action Step #5 and also changed to reflect an increased cost.

Objective 2

- None

Objective 3

- Action Step #1 (Trim shrubs and vines to 30 feet from structures...) was changed to add the phrase “Educate the public on trimming vines and shrubs to 30 feet from structures...” and also updated to reflect an increased cost.
- Action Step #2 (Clean flammable vegetative material from roofs and gutters...) was changed to add the phrase “Educate the public on the importance of cleaning flammable vegetative material from roofs and gutters...” and also changed to reflect an increased cost.
- Action Step #9 (On adjacent WUI Lands, encourage prescribed burning...) was changed to Action Step #8 and the Responsible Department was changed from Ware Co./Waycross... to Georgia Forestry Commission and updated to reflect an increased cost.
- Action Step #10 (On adjacent USF&W lands, work with USF&W land management...) was changed from #10 to #9 and also updated from the Responsible Department of Ware Co. Fire Depts., Building Inspection Dept. & Public Works... to the Georgia Forestry Commission as well as updated to reflect an increased cost.
- Action Step #11 (On adjacent GFC & WMA lands, work with GFC & DNR...) was changed to Action Step #10 and the Responsible Department was changed from Ware County/City of Waycross Fire Depts., Building Inspection & Public Works Dept. to the Georgia Forestry Commission and updated to reflect an increased cost.
- Action Step #12 (Encourage railroads to better maintain their ROW eliminating brush...) was changed to Action Step #11 and the Responsible Department was changed from Ware County/City of Waycross Fire Depts., Building Inspection Depts., and Public Works to the Ware County and City of Waycross Commissioners. It was also updated from \$35 an acre cost to Staff Time.

- Action Step #13 (Encourage private land owners to clean and re-harrow existing fire lines.) was changed to Action Step #12 and the Responsible Department was changed from Ware County/City of Waycross Fire Depts., Building Inspection & Public Works to Georgia Forestry Commission and was updated to reflect an increased cost.
- Action Step #14 (Inspect, maintain, and improve access to existing dry hydrants. Add signage along roads to mark the hydrants.) was changed to Action Step #13.
- Action Step #15 (Investigate the need for Brush Trucks at selected stations.) was updated to Action Step #14 and also updated to reflect an increased cost.
- Action Step #16 (Ensure all fire stations and firefighters are equipped with wildland hand tools and lightweight wildland PPE gear.) was updated to Action Step #15 and also updated to reflect an increased cost.
- Action Step #17 (Obtain mobile and fixed generators (including transfer switches) to provide back-up power where needed.) was changed to Action Step #16 and also updated to add “Per Unit” to the cost column.
- Action Step #18 (Obtain Wildland Fire Suppression Training for fire personnel.) was changed to Action Step #17.
- Action Step #19 (Conduct “How to Have a Firewise Home” workshop for Ware County/City of Waycross residents.) was changed to Action Step #18.
- Action Step #20 (Conduct a “Firewise” workshop for Ware County/City of Waycross Community leaders.) was changed to Action Step #19.
- Action Step #21 (conduct an annual Spring Clean-up Event every year.) was changed to Action Step #20.
- Action Step #22 (Develop and distribute Firewise information packets to realtors and insurance agents.) was changed to Action Step #21.
- Action Step #23 (Create and exhibit a Wildfire protection Display for the general public...) was changed to Action Step #22 and also the Georgia Forestry Commission was added to the list of Responsible Departments.
- Action Step #24 (Invite the Waycross news media and Area TV and radio...) was changed to Action Step #23.
- Action Step #25 (Construct an overpass to/from the Jamestown community...) was changed to Action Step #24.

H. Completed and Deleted Action Steps:

Objective 1

- Action Step #4 (Plan to acquire property and construct new Ware Co. Volunteer Fire Stations...) has been completed and removed from the document.
- Action Step #5 (Establish a paid force at County Fire Station #3) has been completed and removed from the document.
- Action Step #6 (Construct and maintain the Comprehensive Training Facility for fire personnel training in Wildfire tactics.) has been completed and removed from the document.

Objective 2

- None

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Objective 3

- Action Step #8 (Create a Ware County WUI fire Council to accurately assess the Community Wildfire Protection Plan progress and effectiveness and implement programs and projects.) has been completed and removed from the document.

Section II. Drought

A. Community Mitigation Goals

As previously indicated in Chapter 2, drought may cause substantial economic, property, and personal damage in Ware County and the City of Waycross, particularly by increasing the likelihood of wildfires but also in the form of water shortages and crop damage. Its effects can be long-term, with the damage increasing as time goes by. The Ware County HMPUC believes that, due to the damage drought can cause, a comprehensive range of Mitigation Goals, Objectives, and Action Steps (contained in Section C below) should be implemented to reduce the impact of drought on Ware County and the City of Waycross.

B. Identification and Analysis of Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include maintenance of infrastructure, such as water and sewer lines, to maintain the water supply and mitigate post-drought flooding risk.

Non-structural options include distributing literature related to best management practices and encouraging the use of surface water.

2. Existing Policies, Regulations, Ordinances and Land Use:

Ware County and the City of Waycross currently operate in compliance with the standards of the 2012 International Building Code. Both jurisdictions have building inspection programs and zoning ordinances. Both jurisdictions are served by the joint Waycross-Ware County Planning Commission. The Community Wildfire Protection Plan outlines strategies for mitigating wildfire damage in the community.

3. Community Values, Historic and Special Considerations:

Ware County and the City of Waycross have two historic districts (Downtown Waycross Historic District and Waycross Historic District) and several other properties that are on the National Register of Historic Places, including the U.S. Post Office and Courthouse, Lott Cemetery, the First African Baptist Church and Parsonage, and the Obediah Barber Homestead. There are historic and special considerations that pose significant challenges with regard to mitigating damage.

Worksheet #4-STAPLEE Criteria was completed for each Action Step. Please see worksheets contained in Appendix D Section I.

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

C. Drought – Mitigation Strategy and Recommendation:

Goal #1: Prevent or reduce damage caused by Drought in Ware County and in the City of Waycross.

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, due to Drought.

Action Step #1: Seek input from State and Federal agencies to enact procedures during Drought to limit water usage in Ware County and the City of Waycross.

Responsible Department	Ware County EMA , Ware County Planning & Code
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #2: Replace antiquated water & sewer lines and equipment prone to failure in unincorporated Ware County and in the City of Waycross through CDBG grant funds and other funds when available.

Responsible Department	Ware County Commission, City of Waycross City Commission, Waycross Water & Sewer Dept., Satilla Regional Water & Sewer Authority
Anticipated Cost	\$1,000,000 each project
Existing & Potential Funding Sources	General Funds, GA DCA CDBG, USDA & SPLOST
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #3: Work with the County Extension Agent to distribute literature related to best management practices in Ware County and the City of Waycross.

Responsible Department	Ware County EMA
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #4: Promote increased usage of surface water and surface artesian flow for irrigation instead of well systems in Ware County and the City of Waycross.

Responsible Department	Ware County EMA
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	Medium
Status	Ongoing – Extended beyond 5-year time period due to importance.

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy:

All sections of the Plan shall be monitored and evaluated annually by the Ware County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission meetings, City Commission meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

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The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Unchanged Action Steps:

Objective 1

- Action Step #1
- Action Step #3
- Action Step #4

G. Completed, Amended or Deleted Action Steps:

Objective 1

- Action Step #2 (Replace antiquated water & sewer lines and equipment prone to failure...) was updated to reflect an increased project cost.

H. Completed and Deleted Action Steps:

- None

I. New Action Steps:

- None

Section III. Thunderstorms and Wind

A. Community Mitigation Goals

As previously indicated in Chapter 2, thunderstorms and wind may cause substantial damage to life, property, and the economy in Ware County and the City of Waycross. Thunderstorms and wind are unpredictable and could happen at any place and at any time in Ware County and the City of Waycross. Because these storms may be extremely violent and cause great damage, the HMPUC believes that the comprehensive range of Mitigation Goals, Objectives, and Action Steps (contained in Section C below) should be implemented to reduce the threat of thunderstorm and wind damage in Ware County and the City of Waycross.

B. Identification and Analysis of the Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include wind retrofitting of critical facilities and obtaining generators.

Non-structural options include increasing public awareness of shelter locations and sources of emergency warning information and dissemination of other information to the public.

2. Existing Policies, Regulations, Ordinances and Land Use:

Ware County and the City of Waycross currently operate in compliance with the standards of the 2018 International Building Code. Both jurisdictions have building inspection programs and zoning ordinances. Both jurisdictions are served by the joint Waycross-Ware County Planning Commission. No other trends regarding the relationship between land use/development and this hazard have been identified at this time.

3. Community Values, Historic and Special Considerations:

Ware County and the City of Waycross have two historic districts (Downtown Waycross Historic District and Waycross Historic District) and several other properties that are on the National Register of Historic Places, including the U.S. Post Office and Courthouse, Lott Cemetery, the First African Baptist Church and Parsonage, and the Obediah Barber Homestead. There are historic and special considerations that pose significant challenges with regard to mitigating damage, especially with regard to the wind retrofitting of historic buildings.

Worksheet #4: STAPLEE Criteria was completed for each Action Step (see Appendix D Section I).

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

C. Thunderstorms & Wind – Mitigation Strategy and Recommendation

Goal #1: Prevent or reduce damage caused by Thunderstorms and Winds in Ware County and in the City of Waycross.

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, due to Thunderstorms and Winds.

Action Step #1: Increase public awareness of weather radios, shelters, emergency procedures, and the use of a local radio station as the emergency broadcast system station in Ware County and in the City of Waycross through public safety announcements, publications, and other means.

Responsible Department	Ware County EMA
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County/City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #2: Plan to wind retrofit Critical Facilities, e.g., with storm windows, ballistic film, storm shutters, and/or hurricane doors, as funds become available to do so.

Responsible Department	Ware County EMA
Anticipated Cost	\$1,000,000.00 each project
Existing & Potential Funding Sources	General Funds, DOHS-GEMA-HS/FEMA & SPLOST
Jurisdiction	Ware County/City of Waycross
Timeframe	2023-2028
Priority	Medium
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #3: Disseminate information to the public concerning wind ratings and champion new construction being built to those minimum wind standards, and champion the wind retrofitting of existing buildings in Ware County and the City of Waycross.

Responsible Department	Ware County Planning & Code, City of Waycross Building Inspection Dept.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County/City of Waycross
Timeframe	2023-2028
Priority	Medium
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #4: Obtain mobile and fixed generators (including transfer switches) to provide back-up power where needed.

Responsible Department	Ware County EMA, Ware County/City of Waycross Fire Depts.
Anticipated Cost	\$500,000.00
Existing & Potential Funding Sources	General Funds, DOHS-GEMA-HS/FEMA & SPLOST
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy:

All sections of the Plan shall be monitored and evaluated annually by the Ware County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission meetings, City Commission meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

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The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Unchanged Action Steps:

Objective 1

- Action Step #1
- Action Step #2
- Action Step #3
- Action Step #4

G. Amended Action Steps:

- None

H. Completed and Deleted Action Steps:

- None

I. New Action Steps:

- None

Section IV. Flood

A. Community Mitigation Goals

As previously indicated in Chapter 2, flooding may cause substantial damage to life, property, and the economy in Ware County and the City of Waycross. Floods are unpredictable and could happen at any time in any flood-prone area.

Many of these major flooding areas are located on or adjacent to the Satilla River and numerous other creeks and streams. Several areas of Ware County and the City of Waycross are subject to flooding, especially in areas around drainage canals and areas where improved stormwater infrastructure is needed. Flooding regularly occurs in certain areas due to rainfall and other factors. Due to these facts, the Ware County HMPUC believes that the comprehensive range of Mitigation Goals, Objectives, and Action Steps listed below should be implemented to reduce the threat of flood damage in Ware County and the City of Waycross.

B. Identification and Analysis of the Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include upgrading drainage facilities, preserving wetland areas, and improving flood protection at water facilities.

Non-structural options include analysis of properties affected by flooding to determine mitigation options, and continued compliance with NFIP.

2. Existing Policies, Regulations, Ordinances and Land Use:

The river corridors are protected to the 100 year floodplain and up to 25 feet from the rested edge of the river through zoning. Wetland areas are protected by U.S. Army Core of Engineers (COE) permits. Soil and Sedimentation Control Ordinances are in effect.

Ware County and the City of Waycross currently operate in compliance with the standards of the 2018 International Building Code. Both jurisdictions have building inspection programs and zoning ordinances. Both jurisdictions are served by the joint Waycross-Ware County Planning Commission. Ware County and the City of Waycross participate in the National Flood Insurance Program.

Ware County and the City of Waycross do not participate in the Community Rating System (CRS) program. As of 2022, they were not eligible according to FEMA (https://www.fema.gov/sites/default/files/documents/fema-crs-eligible-communities_apr-2022.pdf).

All jurisdictions (within the boundaries of their budgets) have the ability to expand and improve their existing policies and programs as evidenced by the new and existing goals, objectives, and action steps included in this plan.

3. Community Values, Historic and Special Considerations:

Ware County and the City of Waycross have two historic districts (Downtown Waycross Historic District and Waycross Historic District) and several other properties that are on the National Register of Historic Places, including the U.S. Post Office and Courthouse, Lott Cemetery, the First African Baptist Church and Parsonage, and the Obediah Barber Homestead. There are historic and special considerations that pose significant challenges with regard to mitigating damage.

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

Worksheet #4: STAPLEE Criteria was completed for each Action Step (see Appendix D Section I).

C. Flood – Mitigation Strategy and Recommendation:

Goal #1: Prevent or reduce damage caused by Floods in Ware County and in the City of Waycross.

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, due to Floods.

Action Step #1: Conduct storm-water drainage replacement, repair & cleaning and maintain canals in Ware County and in the City of Waycross. This will include the following projects:

- 1200 and 1300 Blocks Mary Street - Frequent street flooding for short durations
- 1300 Block E. L. Saunders Dr - Routine sink holes on 72-inch deteriorated metal storm drain pipe through private property
- 1400 Block Isabella St - Roadway flooding
- 2700 Block Alice St - Occasional flooding on private properties (Downstream drainage through private properties)
- 501 West Oneida St - Deteriorated pipe along roadway
- 800 Block L Street - Roadway flooding
- Ava St, Harrison St, Satilla Blvd - Occasional heavy flooding
- Bailey St & Thomas St - Frequent flooding
- Baltimore St. and Dean St. – Deteriorated 36” pipe
- Baker Street from Ann Street to Jewel St - Deteriorated 36” Metal pipe
- Bazemore Park Area – Drainage system upgrades

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- Blackshear Ave near Dorothy St - Undersized pipe crossing
- Brunel St from Kollock St to Chandler St - Roadway Flooding
- Brunel St from Reynolds St to Chandler St - Undersized terra cotta pipe with root intrusion and frequent street flooding.
- Canal St and Division St - Occasional intense flooding
- Carswell Ave between Crawford St and Clinton St - Frequent flooding
- Carswell Ave near Clinton St - Roadway flooding
- Carswell Avenue including Perham Street – Drainage and outfall deficient
- Carver St & Walter St - Frequent Flooding
- Cedar St & Toomer St - Roadway and private property flooding
- Cedar St and Summit St near Toomer St - Occasional flooding of street and private property
- Central Ave near St Catherine’s Dr - Double 36” pipe crossing and headwall deteriorated
- City Blvd near Mt Pleasant Rd - Triple 36” pipe crossing and headwall deteriorated
- Cleo St & Izlar St - Roadway flooding
- Colley St and Thomas St Crossings - Undersized pipe, shallow drainage channel
- Coral Road – 1107 – Drainage pipe failure
- Daniel St Crossing - Undersized pipe
- Daniel St near Louise St - Undersized pipe crossing
- Eastover St. and Spurgeon St. – Drainage pipe failure
- Hamilton Ave & Littleton St - Double 48-inch pipes deteriorated and undersized (Need concrete box culvert)
- Hertson Dr & Sunnyside Dr - Roadway flooding adjacent to private property with elevation below roadway
- Hicks – Pendergrass – Sycamore Area – Drainage improvements
- Holiday Street – 1602 – Drainage pipe failure
- Hunter St & Brad St - Private property flooding and downstream drainage through private properties
- Lewis Street – Deteriorated drainage pipe
- Isabella St near Nicholls St - Private property flooding and downstream drainage through private properties
- Isabella Street crossing Nicholls St through Park - Pipe running through private property and pipe in park deteriorated (Frequent flooding of canal in park)
- Lee Ave, Fireman St, Gilmore St - Private property flooding and downstream drainage through private properties
- Long Bewick – K Street Area – Drainage improvements
- Mary St at Park - Canal flooding inside park
- Mary St near Crawford St - Roadway flooding
- Memorial Dr near Ambrose St - Occasional intense flooding
- MLK Dr Crossing - Undersized pipe
- MLK Dr near Louise St - Undersized pipe crossing
- MLK Dr to Quarterman St - Potential retention site
- MLK Dr to Quarterman St (Parallel to Colley St) - Potential storm water retention site
- MLK Dr to Quarterman St (Parallel to Colley St) - Storm drain pipe showing signs of deterioration

- MLK Dr to Quarterman St. – 60-inch pipe showing signs of deterioration
- Moody St & Spence St - Roadway flooding
- Oak St to Long Bewick St - Elevation reversed and pipe deteriorated on private property
- Ossie Davis Pkwy between Bailey St & Colley St - Roadway and private property flooding
- Ossie Davis Pkwy Crossing - Occasional flooding
- Patterson St & Thomas St - Frequent flooding
- Pernell Roberts Park Area – Drainage upgrades
- Rhoda St near Washington Ave - Frequent roadway flooding
- Ricardo St - Occasional canal flooding onto private properties near homes
- Riverside Ave near Blackshear Ave - Pipe crossing deteriorating, need concrete box culvert
- Senate Street – 1101 – Deteriorated drainage pipe
- St Mary’s Dr near Florence St - Occasional heavy flooding
- Ware St & Carswell Ave - Roadway flooding

Responsible Department	Ware County Public Works, City of Waycross Community Development & Public Works Depts. & City of Waycross Engineering Dept.
Anticipated Cost	\$500,000.00 - \$2,000,000 each project
Existing & Potential Funding Sources	General Funds, HUD CDBG & SPLOST
Jurisdiction	Ware County/City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #2: Plan and implement flood and drainage projects in Waycross on Harrison Street (by Ava), Albany Ave., Lee Avenue Railroad Underpass, Memorial Drive Railroad Underpass, on Gilmore Street, Brunel Street, Hamilton Street, Isabella/Folks/Mary Street Park Area, and other flood-prone areas.

Responsible Department	City of Waycross Community Development & Public Works Depts. & City of Waycross Engineering Dept.
Anticipated Cost	\$500,000.00 each project
Existing & Potential Funding Sources	General Funds, HUD CDBG, DOHS-GEMA-HS/FEMA & SPLOST
Jurisdiction	City of Waycross
Timeframe	2023-2028
Priority	High
Status	Completed: Carswell Street at Railroad Underpass project completed. Ongoing –

	Extended beyond 5-year time period due to importance.
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Action Step #3: Plan and implement flood and drainage projects in Ware County, including Buck Corbitt Road, Mill Creek Road, Twelve Mile Post Road, Duncan Bridge Road, and other flood-prone areas.

Responsible Department	Ware County Public Works Depts.
Anticipated Cost	\$500,000.00 each project
Existing & Potential Funding Sources	General Funds, HUD CDBG, DOHS-GEMA-HS/FEMA & SPLOST
Jurisdiction	Ware County
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #4: Attempt to take precautions at water facilities in unincorporated Ware County and in the City of Waycross to ensure flood protection, as funds become available to do so.

Responsible Department	Satilla Regional Water & Sewer Authority, City of Waycross Water Dept.
Anticipated Cost	\$500,000.00 each project
Existing & Potential Funding Sources	General Funds, HUD CDBG, DOHS-GEMA-HS/FEMA & SPLOST
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #5: Work to preserve wetland areas in Ware County and the City of Waycross to assure that excess water can be captured.

Responsible Department	Ware County Public Works Dept., City of Waycross Community Development & Public Works Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds, HUD CDBG, DOHS-GEMA-HS/FEMA
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	Medium

Status	Ongoing – Extended beyond 5-year time period due to importance.
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Action Step #6: After flood events or other hazard events in Ware County and the City of Waycross, attempt to perform analysis on properties affected to determine if events have occurred in the past and attempt to mitigate, raise levels above 100-year flood plain, or purchase, if necessary.

Responsible Department	Ware County EMA, Ware County Public Works Dept., City of Waycross Community Development & Public Works Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds, HUD CDBG, DOHS-GEMA-HS/FEMA
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	Medium
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #7: Continue compliance with NFIP through review, adoption and updates to flood protection ordinances and maps, and work towards database to record depth of flooding in order to determine extent and possible damage.

Responsible Department	Ware County EMA, Ware County Public Works Dept., City of Waycross Community Development & Public Works Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #8: Construct new regional retention/detention ponds where needed.

Responsible Department	Ware County & City of Waycross Public Works & Engineering Depts.
Anticipated Cost	\$1,000,000.00
Existing & Potential Funding Sources	General Funds, Grants, Local/State/Federal
Jurisdiction	Ware County, City of Waycross

Timeframe	2023-2028
Priority	High
Status	Ongoing - Extended beyond 5-year time period due to importance.

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies previously outlined apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy.

All sections of the Plan shall be monitored and evaluated annually by the Ware County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission meetings, City Commission meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Unchanged Action Steps:

Objective 1

- Action Step #3
- Action Step #4
- Action Step #5
- Action Step #6
- Action Step #7
- Action Step #8

G. Amended Action Steps:

- Action Step #1
- Action Step #2

H. Completed and Deleted Action Steps:

- None

I. New Action Steps:

- None

Section V. Extreme Heat

A. Brief Narrative of Community Mitigation Goals:

As previously indicated in Chapter 2, Extreme Heat may cause substantial damage to life, property, and the economy in Ware County and in the City of Waycross. Extreme Heat is usually somewhat predictable, and warnings can be issued for Extreme Heat events (heat waves). Events are usually countywide and can happen at any time, especially during the period surrounding the summer months.

Extreme Heat may cause substantial problems, including injury and death among residents, especially among those who are not adequately prepared for heat waves (those without air conditioning in their homes) and among the very old and very young. The Ware County HMPUC believes that, due to the fact that these Extreme Heat has the potential to cause great damage, this comprehensive range of Mitigation Goals, Objectives, Tasks and Action Steps (contained in Section C below) should be implemented to reduce the threat of Extreme Heat damage in Ware County and the City of Waycross.

B. Identification and Analysis of the Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include designating certain locations as emergency shelters and setting up cooling stations.

Non-structural options include identifying locations for cooling stations and promoting the use of emergency shelters.

2. Existing Policies, Regulations, Ordinances and Land Use:

Ware County and the City of Waycross currently operate in compliance with the standards of the 2018 International Building Code. Both jurisdictions have building inspection programs and zoning ordinances. Both jurisdictions are served by the joint Waycross-Ware County Planning Commission. The Community Wildfire Protection Plan outlines strategies for mitigating wildfire damage in the community.

3. Community Values, Historic and Special Considerations:

Ware County and the City of Waycross have two historic districts (Downtown Waycross Historic District and Waycross Historic District) and several other properties that are on the National Register of Historic Places, including the U.S. Post Office and Courthouse, Lott Cemetery, the First African Baptist Church and Parsonage, and the Obediah Barber Homestead. There are historic and special considerations that pose significant challenges with regard to mitigating damage.

Worksheet #4: STAPLEE Criteria was completed for each Action Step (see Appendix D Section I).

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

C. Extreme Heat – Mitigation Strategy and Recommendation:

Goal #1: Prevent or reduce damage caused by Extreme Heat in Ware County and in the City of Waycross.

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, and eliminate injury or death residents due to Extreme Heat.

Action Step #1: Identify locations for cooling stations and help set up & promote them during periods of Extreme Heat.

Responsible Department	Ware County EMA, Ware County Public Works Dept., City of Waycross Community Development & Public Works Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #2: Continue to identify and designate emergency shelters in consultation with appropriate organizations (Red Cross, Senior Citizen Centers, hospitals, churches, health department, etc.), and promote their use during extreme heat events.

Responsible Department	Ware County EMA, Ware County Public Health Dept.
Anticipated Cost	Staff Time/\$2,500 per location/event
Existing & Potential Funding Sources	Public Health, State funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High

Status	Ongoing – Extended beyond 5-year time period due to importance.
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D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy:

All sections of the Plan shall be monitored and evaluated annually by the Ware County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission meetings, City Commission meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Unchanged Action Steps:

Objective 1

- Action Step #1
- Action Step #2

G. Amended Action Steps:

- None

H. Completed and Deleted Action Steps:

- None

I. New Action Steps:

- None

Section VI. Tornado

A. Community Mitigation Goals

As previously indicated in Chapter 2, tornadoes may cause substantial damage to life, property, and the economy in Ware County and the City of Waycross. Tornadoes are unpredictable and could happen at any place and at any time. The Ware County HMPUC believes that, because these tornadoes may be extremely powerful and cause great damage, a comprehensive range of Mitigation Goals, Objectives, and Action Steps (contained in Section C below) should be implemented to reduce the threat of tornado damage in Ware County and the City of Waycross.

B. Identification and Analysis of Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include ensuring adequate tie-downs on manufactured homes, and acquiring generators.

Non-structural options include educating the public about shelters and weather alert systems, and developing a system for notifying and checking on at-risk residents.

2. Existing Policies, Regulations, Ordinances and Land Use:

Ware County and the City of Waycross currently operate in compliance with the standards of the 2018 International Building Code. Both jurisdictions have building inspection programs and zoning ordinances. Both jurisdictions are served by the joint Waycross-Ware County Planning Commission.

3. Community Values, Historic and Special Considerations:

Ware County and the City of Waycross have two historic districts (Downtown Waycross Historic District and Waycross Historic District) and several other properties that are on the National Register of Historic Places, including the U.S. Post Office and Courthouse, Lott Cemetery, the First African Baptist Church and Parsonage, and the Obediah Barber Homestead. There are historic and special considerations that pose significant challenges with regard to mitigating damage, especially with regard to the wind retrofitting of historic buildings.

Worksheet #4: STAPLEE Criteria was completed for each Action Step (see Appendix D Section I).

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

C. Tornado – Mitigation Strategy and Recommendation:

Goal #1: Prevent or reduce damage caused by Tornadoes in Ware County and in the City of Waycross.

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, due to Tornadoes.

Action Step #1: Use building inspection program to inspect for adequate tie-downs on manufactured housing in Ware County and the City of Waycross.

Responsible Department	Ware County Planning & Code, Ware County/City of Waycross Building Inspection Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #2: Plan for pre-disaster mitigation in Tornado & other hazard seasons by preparing public service announcements, brochures and solicit business participation in distributing information.

Responsible Department	Ware County EMA
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #3: Promote identification and designation of safe shelter rooms if available in Critical Facilities.

Responsible Department	Ware County EMA, Ware County Planning & Code, City of Waycross Community Development Dept.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #4: Obtain mobile and fixed generators (including transfer switches) to provide back-up power where needed.

Responsible Department	Ware County EMA, Ware County/City of Waycross Fire Depts.
Anticipated Cost	\$500,000 each
Existing & Potential Funding Sources	General Funds, DOHS-GEMA-HS/FEMA & SPLOST
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy:

All sections of the Plan shall be monitored and evaluated annually by the Ware County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission meetings, City Commission meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

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The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Unchanged Action Steps:

Objective 1

- Action Step #1
- Action Step #2
- Action Step #3
- Action Step #4

G. Amended Action Steps:

- None

H. Completed and Deleted Action Steps:

- None

I. New Action Steps:

- None

Section VII. Hail

A. Community Mitigation Goals

As previously indicated in Chapter 2, hail may cause substantial economic, property, and personal damage in Ware County and the City of Waycross. Hail is unpredictable and could happen at any place and at any time. The Ware County HMPUC believes that, due to the damage hail may cause, a comprehensive range of Mitigation Goals, Objectives, and Action Steps (contained in Section C below) should be implemented to reduce the threat of hail damage in Ware County and the City of Waycross.

B. Identification and Analysis of Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include installation of storm windows or ballistic film on critical facilities.

Non-structural options include encouraging the public to include hail damage in their insurance coverage and to store vehicles and other equipment in covered locations.

2. Existing Policies, Regulations, Ordinances and Land Use:

Ware County and the City of Waycross currently operate in compliance with the standards of the 2018 International Building Code. Both jurisdictions have building inspection programs and zoning ordinances. Both jurisdictions are served by the joint Waycross-Ware County Planning Commission.

3. Community Values, Historic and Special Considerations:

Ware County and the City of Waycross have two historic districts (Downtown Waycross Historic District and Waycross Historic District) and several other properties that are on the National Register of Historic Places, including the U.S. Post Office and Courthouse, Lott Cemetery, the First African Baptist Church and Parsonage, and the Obediah Barber Homestead. There are historic and special considerations that pose significant challenges with regard to mitigating damage.

Worksheet #4: STAPLEE Criteria was completed for each Action Step (see Appendix D Section I).

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

C. Hail – Mitigation Strategy and Recommendation

Goal #1: Prevent or reduce damage caused by Hail in Ware County and in the City of Waycross.

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, due to Hail.

Action Step #1: Install storm windows, ballistic film, storm shutters, and/or hurricane doors on new and existing Critical Facilities and encourage their installation on new and existing private buildings in Ware County and the City of Waycross.

Responsible Department	Ware County EMA, Ware County Planning & Code, City of Waycross Community Development Dept., Ware County/City of Waycross Public Works Depts.
Anticipated Cost	\$200,000.00 per building
Existing & Potential Funding Sources	General Funds & SPLOST
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #2: Encourage the public to include hail damage under insurance coverage and store equipment and vehicles under shelters in Ware County and the City of Waycross.

Responsible Department	Ware County EMA, City of Waycross
Anticipated Cost	Staff time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy:

All sections of the Plan shall be monitored and evaluated annually by the Ware County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission meetings, City Commission meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Unchanged Action Steps:

- Action Step #2

G. Amended Action Steps:

- Action Step #1 (Install storm windows, ballistic film, storm shutters, and /or hurricane doors on new and existing...) was changed from a project cost of \$125,000.00 per building to an updated project cost of \$200,000.00 per building.

H. Completed and Deleted Action Steps:

- None

I. New Action Steps:

- None

Section VIII. Hurricanes/Tropical Storms

A. Community Mitigation Goals

As previously indicated in Chapter 2, hurricanes/tropical storms may cause substantial damage to life, property, and the economy in Ware County and the City of Waycross. They are usually accompanied by some advanced notice, giving the community time to prepare and/or evacuate. The Ware County HMPUC believes that, because these hurricanes/tropical storms have the potential to cause great damage, injury, and loss of life, a comprehensive range of Mitigation Goals, Objectives, and Action Steps (contained in Section C below) should be implemented to reduce the threat of hurricane/tropical storm damage in the community.

B. Identification and Analysis of Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include encouraging the design of new educational facilities to the level that they could be used as public shelters; acquiring additional road signage and electronic message boards; and improving unsafe roads for evacuation purposes.

Non-structural options include educating the public about procedures necessary during hurricanes and tropical storms, upgrading 911 capabilities, and purchasing communications equipment.

2. Existing Policies, Regulations, Ordinances and Land Use:

Ware County and the City of Waycross currently operate in compliance with the standards of the 2018 International Building Code. Both jurisdictions have building inspection programs and zoning ordinances. Both jurisdictions are served by the joint Waycross-Ware County Planning Commission. No other trends regarding the relationship between land use/development and this hazard have been identified at this time.

3. Community Values, Historic and Special Considerations:

Ware County and the City of Waycross have two historic districts (Downtown Waycross Historic District and Waycross Historic District) and several other properties that are on the National Register of Historic Places, including the U.S. Post Office and Courthouse, Lott Cemetery, the First African Baptist Church and Parsonage, and the Obediah Barber Homestead. There are historic and special considerations that pose significant challenges with regard to mitigating damage, especially with regard to the wind retrofitting of historic buildings.

Worksheet #4: STAPLEE Criteria was completed for each Action Step (see Appendix D Section I).

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

C. Hurricane/Tropical Storm – Mitigation Strategy and Recommendation

Goal #1: Prevent or reduce damage caused by Hurricanes/Tropical Storms in Ware County and in the City of Waycross.

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, and the public, due to Hurricanes/Tropical Storms.

Action Step #1: Encourage the design of new educational facilities to the level that they could be used as public shelters for emergency purposes; test current shelters and educational facilities for safety and effectiveness in Ware County and the City of Waycross.

Responsible Department	Ware County EMA, Ware County BOE, Ware County Planning & Code, City of Waycross Community Development Dept.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds, DOHS-GEMA-HS/FEMA, Red Cross
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #2: Work with GDOT to improve unsafe roads in Ware County and the City of Waycross that already are, or could be, evacuation routes.

Responsible Department	Ware County/City of Waycross Road Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds, GDOT, FHWA, SPLOST
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Objective #2: Advise the public of health & safety precautions and procedures necessary during Hurricanes/Tropical Storms and other events and on pre-disaster mitigation, in general, in Ware County and in the City of Waycross.

Action Step #1: Acquire and distribute literature from state agencies regarding disaster health & safety issues in Ware County and the City of Waycross.

Responsible Department	Ware County EMA
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #2: Work with GDOT to acquire additional road signage for emergency traffic circulation and publish most efficient routes in advance.

Responsible Department	Ware County EMA, Ware County/City of Waycross Road Depts.
Anticipated Cost	\$20,000.00
Existing & Potential Funding Sources	General Funds & SPLOST
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #3: Distribute information concerning pre-disaster mitigation to area news markets and by speaking at schools and civic clubs in Ware County and the City of Waycross.

Responsible Department	Ware County EMA
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028

Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #4: Order electronic message boards for emergency purposes & evacuations.

Responsible Department	Ware County EMA, Ware County/City of Waycross Road Depts.
Anticipated Cost	\$32,000.00 each
Existing & Potential Funding Sources	General Funds & SPLOST
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	10 acquired; more needed. Ongoing – Extended beyond 5-year time period due to importance.

Objective #3: Ensure reliable electrical power and communications efficiency at Critical Facilities and among agencies during Hurricanes/Tropical Storms and other events in Ware County and the City of Waycross.

Action Step #1: Purchase portable and fixed generators and trailers (including transfer switches) for use at Critical Facilities (serving entire populations) and pre-wire Critical Facilities for generator use in Ware County and the City of Waycross.

Responsible Department	Ware County EMA
Anticipated Cost	\$500,000 each
Existing & Potential Funding Sources	General Funds, DOHS-GEMA-HS/FEMA, Red Cross & SPLOST
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #2: Purchase communications equipment (radios, pagers, batteries and chargers) that have multi-channel capabilities and store them at certain Critical Facilities in Ware County and the City of Waycross.

Responsible Department	Ware County EMA, Ware County Sheriff's Dept., Ware County EMS, Waycross Police Dept.
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Anticipated Cost	\$250,000.00
Existing & Potential Funding Sources	General Funds, DOHS-GEMA-HS/FEMA & SPLOST
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #3: Purchase and install VHF networking system between City and County services.

Responsible Department	Ware County EMA, Ware County Sheriff’s Dept., Ware County EMS, Waycross Police Dept.
Anticipated Cost	\$3,500,000.00
Existing & Potential Funding Sources	General Funds, DOHS-GEMA-HS/FEMA & SPLOST
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #4: Continue and expand Emergency Notification System

Responsible Department	Ware County EMA, Public Safety depts.
Anticipated Cost	\$20,000.00 per year
Existing & Potential Funding Sources	General Funds, Grants, Local/State/Federal
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	Medium
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #5: Construct overpass to/from the Jamestown community in conjunction with Perimeter Road project, in order to speed evacuation if needed.

Responsible Department	GDOT, CSX, Ware County, City of Waycross
Anticipated Cost	\$15,000,000.00
Existing & Potential Funding Sources	GDOT, CSX, Ware County, City of Waycross, State & Federal Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #6: Upgrade/enhance 911 capabilities to the most current technology.

Responsible Department	EMA, Ware County, City of Waycross
Anticipated Cost	\$500,000.00
Existing & Potential Funding Sources	General Funds, Grants, Local/State/Federal
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy:

All sections of the Plan shall be monitored and evaluated annually by the Ware County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission meetings, City Commission meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Unchanged Action Steps:

Objective 1

- Action Step #1
- Action Step #2

Objective 2

- Action Step #1
- Action Step #2
- Action Step #3

Objective 3

- Action Step #1
- Action Step #4
- Action Step #5
- Action Step #6

G. Amended Action Steps:

Objective 1

- None

Objective 2

- Action Step #4: (Order electronic message board for emergency purposes and evacuations.) was changed from 6 acquired to 10 acquired.

Objective 3

- Action Step #2: (Purchase communications equipment (radios, pagers, batteries and chargers) that have multi-channel capabilities...) has been amended to reflect an updated project cost.
- Action Step #3: (Purchase and install a VHF networking system between city and county services.) has been amended to reflect an increased project cost.

H. Completed and Deleted Action Steps:

Objective 1

- Action Step #3: (Designate and attempt to supply new Red Cross Shelters and maintain an operating Red Cross in Ware County and the City of Waycross.) was removed due to infeasibility.

Objective 2

- Action Step #5: (Acquire portable 80-foot communications tower.) was completed and removed.
- Action Step #6: (Acquire 2 new portable restroom/shower trailers) has been completed and removed.
- Action Step #7: (Acquire portable walk-in cooler.) was not completed and removed due to being determined not needed.

Objective 3

- None

I. New Action Steps:

- None

Section IX. Severe Winter Storm

A. Community Mitigation Goals

As previously indicated in Chapter 2, severe winter storms may cause substantial economic, property, and personal damage in Ware County and the City of Waycross. Severe winter storms are usually predictable ahead of time, but they can happen in any part of Ware County and the City of Waycross during the period surrounding the winter months.

Severe winter storms may cause substantial problems. Ware County and the City of Waycross do not have the specialized equipment used during severe winter storms that most northern counties and cities possess. The Ware County HMPUC believes that, due to the damage these severe winter storms have the potential to cause, a comprehensive range of Mitigation Goals, Objectives, and Action Steps (contained in Section C below) should be implemented to reduce the threat of severe winter storm damage in Ware County and the City of Waycross.

B. Identification and Analysis of Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include wrapping exposed pipes and adding insulation at critical facilities, championing new construction being built to appropriate low temperature ratings, and championing existing buildings being retrofitted.

Non-structural options include disseminating information to the public concerning severe winter storms and maintaining temperatures over 32 degrees during freezes in government facilities.

2. Existing Policies, Regulations, Ordinances and Land Use:

Ware County and the City of Waycross currently operate in compliance with the standards of the 2018 International Building Code. Both jurisdictions have building inspection programs and zoning ordinances. Both jurisdictions are served by the joint Waycross-Ware County Planning Commission. No other trends regarding the relationship between land use/development and this hazard have been identified at this time.

3. Community Values, Historic and Special Considerations:

Ware County and the City of Waycross have two historic districts (Downtown Waycross Historic District and Waycross Historic District) and several other properties that are on the National Register of Historic Places, including the U.S. Post Office and Courthouse, Lott Cemetery, the First African Baptist Church and Parsonage, and the Obediah Barber Homestead. There are historic and special considerations that pose significant challenges with regard to mitigating damage, especially with regard to the wind retrofitting of historic buildings.

Worksheet #4: STAPLEE Criteria was completed for each Action Step (see Appendix D Section I).

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

C. Severe Winter Storm – Mitigation Strategy and Recommendation:

Goal #1: Prevent or reduce damage caused by Severe Winter Storms in Ware County and the City of Waycross.

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, due to Severe Winter Storms.

Action Step #1: Continue the policy of wrapping exposed piping with insulation and installing new insulation layers at critical facilities in Ware County and the City of Waycross.

Responsible Department	Ware County City of Waycross Public Works Depts.
Anticipated Cost	\$5,000.00 a year
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	High
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #2: Maintain temperatures above 32 degrees to prevent freezing in government owned occupied and unoccupied structures in Ware County and the City of Waycross.

Responsible Department	Ware County City of Waycross Public Works Depts.
Anticipated Cost	\$15,000.00 a year
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	Medium
Status	Ongoing – Extended beyond 5-year time period due to importance.

Action Step #3: Disseminate information to the public concerning Severe Winter Storms, champion new construction being built to appropriate low temperature ratings and existing buildings being retrofitted in Ware County and in the City of Waycross.

Responsible Department	Ware County Planning & Code, Ware County/City of Waycross Building Inspection Depts.
Anticipated Cost	Staff Time
Existing & Potential Funding Sources	General Funds
Jurisdiction	Ware County, City of Waycross
Timeframe	2023-2028
Priority	Medium
Status	Ongoing – Extended beyond 5-year time period due to importance.

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy:

All sections of the Plan shall be monitored and evaluated annually by the Ware County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission meetings, City Commission meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Unchanged Action Steps:

- Action Step #1
- Action Step #2
- Action Step #3

G. Amended Action Steps:

- None

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H. Completed and Deleted Action Steps:

- None

I. New Action Steps:

- None

Chapter 5. Local Technological/Man-Made Hazard Mitigation Goals and Objectives

Summary of changes:

- This is the first Ware County and City of Waycross Hazard Mitigation Plan Update to include this chapter.

I. Public Health Emergency

A. Community Mitigation Goals

The goal of this plan is to reduce the potential loss of life, health, and productivity that may arise from a public health emergency.

B. Identification & Analysis of Range of Mitigation Options

1. **Structural and non-structural** – The non-structural mitigation options for mitigating this hazard include improving educational and awareness activities to increase the public’s knowledge of the danger and actions to take when they occur. Increase mosquito control efforts, including public awareness with regard to the hazards posed by standing water in containers, tires, etc., is a non-structural option that could help to reduce the likelihood of a severe mosquito-borne illness outbreak.
2. **Existing policies, regulations, ordinances and land use** – As required by Georgia law, Ware County, and the City of Waycross have each adopted comprehensive plans in accordance with the Minimum Planning Standards promulgated by the Georgia Department of Community Affairs. State and federal laws and regulations are applicable with regard to matters of public health.
3. **Community values, historic & special considerations** – none identified.
4. **New buildings and Infrastructure** – The risk from a public health emergency is mainly to the residents of Ware County and not to buildings and infrastructure. Therefore, the mitigation strategy and recommendations that follow include action steps designed to protect the health and safety of the general public, rather than new buildings and infrastructure.
5. **Existing Buildings and Infrastructure** – As noted above, the risk from a public health emergency is mainly to the residents of Ware County and not to buildings and infrastructure.

C. Mitigation Strategy and Recommendation

1. Mitigation Goal – Protect the population of Ware County from the effects of a public health emergency.

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective #1 - Secure external sources of funding and training to help prepare for and respond to events.							
1. Increase Immunization education, prevention and pre-planning efforts, particularly for the homeless and low-income individuals in the community, and host flu shot and other immunization clinics.	Health Department	\$100,000	General Funds, GEMA-HS, FEMA, Health Department	Ware County and City of Waycross	2023-2028 (Ongoing)	High	New
2. Identify vulnerable populations (homeless, migrants, low income, etc.) and identify community groups to work with in order to reach and educate these populations effectively regarding health issues.	EMA, Health Department	Staff time	General Funds, GEMA-HS, FEMA	Ware County and City of Waycross	2023-2028 (Ongoing)	High	New
3. Develop Local Emergency Planning Committee	EMA	Staff time	General Funds	Ware County and City of Waycross	2023-2028 (Ongoing)	Medium	New
4. Approach large businesses about working with the EMA on developing public health emergency plans.	Health Dept.	Staff time	General Funds	Ware County and City of Waycross	2023-2028 (Currently in process)	Medium	New

D. Special Multi-Jurisdictional Strategy and Considerations

All of Ware County and the City of Waycross could be significantly affected by a public health emergency. There are no special considerations with regard to jurisdictional differences. The Action Steps above are to be implemented county-wide and there is no difference in strategy between jurisdictions.

E. Local public information and awareness strategy

The Public Information Officers within each jurisdiction will continue to assist with the public education and awareness aspects of this plan. By utilizing available resources, such as television, radio, newsprint, government websites, and mass communication technology (social media, telephone, email), etc., they will be able to keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

F. Completed, Amended or Deleted Action Steps

- 2. – Develop a plan to identify community locations to contain and distribute water, food, ice, tarps, medical countermeasures, etc.**

Note: All other action steps are either ongoing or in process.

II. Chemical, Biological, Radiological, Nuclear and Explosive (CBRNE) Incidents

A. Community Mitigation Goals

Much of the existing mitigative technology and equipment employed during CBRNE incidents is portable and cost-prohibitive for medium to small communities. For these reasons it is important that the community not only develop local capacity as appropriate, but coordinate capacity-building with other communities to share the associated expenses among a larger user base.

B. Identification and Analysis of Range of Mitigation Options

- 1. Structural and Non-structural** – Although structural and non-structural options are available, structural measures are primarily private sector options while non-structural mitigation options are the public sector’s primary option. The type and mobility of most measures available to the public sector classifies them as non-structural.
- 2. Existing Policies, Regulations, Ordinances and Land Use** – Very little in the way of existing policies and regulations could be identified which affects hazardous materials handling by the private sector. Local entities are required to file Material Safety Data Sheets with the host jurisdiction informing local officials of the types of hazardous chemicals on site. The community does have traffic laws which, when rigidly enforced, are a mitigation tool. Most commercial carriers including railroads employ hazardous materials routing software, but any such transport is usually not shared with the jurisdiction they traverse.
- 3. Community Values, Historic and Special Considerations** – Quality of life is a primary concern to residents, and the threats posed by hazardous materials compromise, and if serious enough, jeopardize local conditions.
- 4. New Buildings and Infrastructure** -- Any new buildings and infrastructure should be built with man-made/technological hazards mitigation incorporated in the design. The mitigative actions for man-made/technological hazards include maintaining contact with other state and local emergency agencies to share expertise on handling man-made/technological hazard events.
- 5. Existing Buildings and Infrastructure** -- Any existing buildings and infrastructure should be improved with technological hazards mitigation incorporated into any renovations. The mitigative actions for technological hazards include maintaining contact with other state and local emergency agencies to share expertise on handling technological hazard events.

C. Mitigation Strategy and Recommendation**1. Mitigation Goal #1 - Be prepared to respond appropriately to any foreseeable Chemical, Biological, Radiological, Nuclear And Explosive (CBRNE) Incidents**

Action Step	Responsible Department	Est. Cost	Funding Sources	Jurisdiction	Timeframe	Priority	Status
Objective #1 - Secure external sources of funding and training to help prepare for and respond to events.							
1.Network with emergency personnel staff at state and federal levels to help identify the “full range” of CBRNE risks and local needs in preparation for the availability of outside funding.	EMA	Staff Time	Annual Budget	All Jurisdictions	2023-2028 (Currently in process)	Medium	NEW
2.Submit competitive applications to fund equipment/training needs when potential funding sources are identified in Ware County	EMA	Staff Time	Annual Budget	All Jurisdictions	2023-2028 (Ongoing)	Medium	NEW
3.Develop a relationship with owners of hazardous materials storage (tires etc.) to educate/encourage them to develop a plan for hazardous events.	EMA	Staff Time	Annual Budget	All Jurisdictions	2023-2028 (Ongoing)	High	NEW
4.Annually review & update mutual aid agreements with neighboring jurisdictions	EMA	Staff Time	Annual Budget	All Jurisdictions	2023-2028 (Ongoing)	High	NEW
5.Provide first responders, fire, EMS and law enforcement with the equipment needed to prepare for and respond to events	EMA, Fire, Law Enforcement, EMS	\$1 M a year	DOJ, GEMA- HS, FEMA	All Jurisdictions	2023-2028 (Currently in process)	High	NEW

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D. Special Multi-Jurisdictional Strategy

These action steps are applicable communitywide but are needed especially where most development occurs and where transportation networks, such as major highways and railroads, intersect.

E. Public Information and Awareness

The Public Information Officers within each jurisdiction will continue to assist with the public education and awareness aspects of this plan. By utilizing available resources, such as television, radio, newsprint, government websites, and mass communication technology (social media, telephone, email), etc., they will be able to keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

F. Completed and deleted action steps

None – all action steps are either ongoing or in process.

G. Unchanged action steps

*All

Chapter 6: **Executing The Plan**

Summary of changes:

- Revised and updated language.

Section I. **Implementation of the Action Plan**

A. Administrative Actions

The meetings, planning process, prioritizing, etc. of the Ware County HMPUC have been overseen by the Ware County Emergency Management Agency. The Southern Georgia Regional Commission contracted with the Ware County Commission to administer and facilitate the planning process. The Ware County Commission and the City of Waycross will adopt the Plan (on approval by GEMA-HS and FEMA) by the resolution(s) contained in Appendix E.

B. Authority and Responsibility

The Ware County Commission and the City of Waycross have authorized the submission of this Plan to both GEMA-HS and FEMA for approval.

As determined by the Ware County Commission, the City of Waycross, and the Ware County HMPUC, the Ware County EMA Director will be responsible for this Plan and its continued usage as a planning document. The EMA Director will oversee implementation, monitoring, and updates for both jurisdictions (Ware County and the City of Waycross). The respective jurisdictions will be responsible for the implementation of the specific mitigation activities proposed in this plan.

C. Prioritization

1. Methodology for Prioritization

In prioritizing the implementing of action steps identified in this plan, those hazards deemed to pose the greatest threat will be given the primary consideration. The vast majority of the Action Steps are listed as “Ongoing” due to their continuous cyclical nature in relation to hazard mitigation activities. The Ware County EMA Director will monitor the status of the Action Steps, consulting with appropriate government authorities, included in the plan and ensure that the Ongoing ones are regularly enacted. Actions Steps that are not listed as “Ongoing” are expected to be completed in the timeframe of the current Hazard Mitigation Plan between 2023-2028 based on grant and budget availability.

In prioritizing the implementation feasibility of the action steps and projects, local governments will take into consideration the additional factors of cost and time.

Those activities requiring little cost and staff time to implement will be given highest implementation priority. Those steps requiring additional funding for equipment or staff time beyond the normal budgets of the communities will be incorporated into the budget process when possible based on the cost-benefit analysis described below.

2. Use of Cost Benefit Analysis

The data provided in Worksheet #3 will be utilized to quantify the number of persons and/or property at risk from each hazard. Combined with the criteria in Worksheet #4, this will allow local governments to assess the potential value of at-risk properties and the resulting benefits from the proposed action steps.

In prioritizing projects, the local governments will also utilize cost benefit analysis (CBA) to evaluate the feasibility of a major project. CBA is a well-established method for quantitatively comparing the benefits and costs of mitigation projects. The end result is a Benefit-Cost Ratio (BCR), which is derived from a project's total net present value of benefits divided by the total project cost estimate, which must include all documented project and maintenance costs. The benefits of mitigation projects are avoided damages, disruptions, losses, and casualties. Examples of common benefits include avoided or reduced damages to buildings, contents or infrastructure; economic impacts of loss of function of buildings; displacement costs for temporary quarters; loss of public services; loss of net business income; economic impacts of loss of function of infrastructure; road or bridge closures; loss of utility services; and deaths and injuries.

3. Use of Other Calculations

Availability of potential funding sources, overall feasibility, measurable milestones, multiple objectives, both public and political support for the proposed actions, and the Social, Technical, Administrative, Political, Legal, Economic, and Environmental (STAPLEE) criteria were additional calculations performed.

4. Use of Other Review Structure

In addition to the cost benefit analysis, other factors that may affect the prioritization of projects include the availability of special tax, grant and/or loan funds which become available on a limited basis to finance implementation, such as SPLOST funds or FEMA Pre-Disaster Mitigation Program funds.

D. Incorporation of local PDM Plan into other plans/planning measures

This Plan will be reviewed by Ware County and the City of Waycross. The requirements of this Hazard Mitigation Plan will be taken into consideration and will be incorporated into Comprehensive Plans, Five Year Work Program, Capital Improvement Plans, Local Emergency Operations Plans, and all other such Plans as appropriate by each individual government entity.

The previous Ware County and City of Waycross Hazard Mitigation Plan was used as a basis for the present update. The HMPUC reviewed all the individual parts of the prior plan and updated these elements through open discussion in which updates were noted by SGRC staff, who then used notes from the workshops to update the new Hazard Mitigation Plan document.

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

To facilitate inclusion of this Plan, the Ware County Commission and the City of Waycross will provide a copy of this Plan to the persons and/or committees responsible for writing and updating plans.

Section II. **Evaluation and Monitoring**

A. Method

The Ware County EMA Director will be charged with ensuring that this plan is monitored and periodically updated in subsequent years. The method that the Waycross-Ware County EMA will use to monitor the plan and evaluate implementation progress will be the following:

- The Ware County EMA will conduct quarterly telephone interviews with the various local governments and area agencies in order to chart their plan progress.
- The EMA Director will hold formal public meetings at least once a year to monitor the progress of the plan implementation and allow the public a forum for expressing concerns, opinions, and ideas.
- Throughout the year, a series of informal meetings will be held in which various aspects of the plan, including monitoring and evaluation, are discussed.

B. Criteria used to monitor and evaluate the Plan

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property.

Section III. **Plan Update and Maintenance**

A. Public Involvement

Because the Hazard Mitigation Plan is intended to help ensure a safe and livable environment for all Ware County and City of Waycross residents, it is imperative that public involvement be an integral part of the planning process.

Since adoption of the original Ware County Pre-Disaster Mitigation Plan, citizens have been kept involved and apprised of plan progress through such forums as regularly scheduled Commissioner meetings, public hearings, and applicable newspaper coverage. This same level of public education and awareness and citizen involvement will continue over the next five years

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until the next required update of the Hazard Mitigation Plan. When specific issues dictate, public hearings will be conducted, and all other community planning efforts (Comprehensive Plan, Regional Plan, etc.) will afford citizens the opportunity to participate in and comment on the need to incorporate hazard mitigation initiatives.

To facilitate the goal of continued public involvement in the planning process, the EMA will assure that the following steps are taken:

- The public will be directly involved in the update and review of the plan as members of the Pre-Disaster Mitigation Planning Committee.
- Copies of the plan will be kept on hand at appropriate agencies throughout Ware County.
- The plan will be available on City, County, and/or Regional Commission websites, and will contain an e-mail address and phone number the public can use for submitting comments and concerns about the plan.
- A public meeting will be held annually to provide the public with a forum for expressing concerns, opinions, and ideas. The EMA will set meeting schedules and dates and use County resources to publicize and host this meeting.

B. Timeframe

Pursuant to the requirements set forth in the Disaster Mitigation Act of 2000, the community is again required to update and evaluate the plan no more than five years after its adoption. At least one year prior to the end of the required five-year update period, the EMA Director will begin the planning process for a new update to this plan. This will consist of establishing a new planning committee that will be tasked with completing the update following the same process used for this update.

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

Chapter 7: **Conclusion**

Summary of changes:

- Revised and updated language.

Ware County and the City of Waycross have suffered considerable damage in the past from natural hazards. Planning ahead and undertaking structural and nonstructural action steps before a disaster occurs can save lives and property. This philosophy has been the driving force behind the preparation of the Ware County Hazard Mitigation Plan.

Education of the population and enhanced warning can decrease the vulnerability of the county's citizens and visitors. Continued and improved public information and communication with the population are important parts of this plan. Because of this planning process, Ware County and City of Waycross officials have gained a better understanding of the natural and man-made hazards affecting our community.

As a result of the planning process described in Chapter 1 and the hazard, risk, and vulnerability assessment in Chapter 2, Ware County and the City of Waycross have a realistic perspective on the hazards to which the community is exposed. With the mitigation strategy outlined in Chapter 4, and the implementation plan included in Chapter 6, the local leaders have an "action plan" to follow when allocating resources to reduce their community's vulnerability to such hazards.

References

Ware County Board of Tax Assessors (<http://www.qpublic.net/ga/ware/>)

City of Waycross (<http://www.waycrossga.com/>)

Ware County (<http://www.warecounty.com/>)

Federal Emergency Management Agency (www.fema.gov)

FEMA National Flood Insurance Program Community Status Book
(<https://www.fema.gov/flood-insurance/work-with-nfip/community-status-book>)

Georgia Emergency Management Agency, Georgia Mitigation Information System
(<https://apps.itos.uga.edu/GEMA.GMIS/>)

Georgia Emergency Management and Homeland Security Agency (<https://gema.georgia.gov/>)

Georgia Forestry Commission (<https://gatrees.org/>)

National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events
Database (<https://www.ncdc.noaa.gov/stormevents/>)

Southern Georgia Regional Commission (www.sgrc.us)

U.S. Drought Monitor (<https://droughtmonitor.unl.edu/>)

United States Census Bureau (<https://www.census.gov/>)

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Appendix G. HAZUS Report