2020 JASPER COUNTY PRE-DISASTER MITIGATION PLAN UPDATE

Prepared by the

Northeast Georgia

Regional Commission

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Chapter 1 Planning Process

1.0 Introduction

The Jasper County Pre-Disaster Mitigation Plan (PDM) was originally approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) and subsequently adopted by resolution of participating local governments in 2008. The Disaster Mitigation Act of 2000 (DMA2K) established mitigation planning requirements under 44 CFR Part 201. Included in the DMA2K is a requirement that each jurisdiction review, update, and resubmit its PDM plan for approval every five years in order to maintain eligibility for mitigation grant funding [44 CFR §201.6(d)(3)]. Federal hazard mitigation funding assistance programs include the following:

- Hazard Mitigation Grant Program
- Pre-Disaster Mitigation
- Flood Mitigation Assistance
- Severe Repetitive Loss

The 2020 update to the Jasper County Pre-Disaster Mitigation Plan is a cooperative effort between the County and the municipalities of Monticello and Shady Dale, and is funded through a grant from the FEMA Hazard Mitigation Grant Program. The County and both municipalities were also participants in the original 2008 Pre-Disaster Mitigation Plan process; therefore, the participating jurisdictions have not changed. In October 2019, the Jasper County Board of Commissioners requested assistance from the Northeast Georgia Regional Commission (NEGRC) to facilitate the planning process and prepare the plan update for submission to GEMA.

A summary table of updates is included at the beginning of each chapter of this document to highlight changes that have been made to the previously adopted plan.

Table 1-1 : Summary of Updates to Chapter 1

Section	Update Summary
1.1 Purpose and Need	Text Revisions
1.2 Methodology	Text Revisions
1.3 Review, Analysis, and Revision Process	Identification of contents of specific chapters; addition of Mitigation Actions Guides for natural and technological hazards; text revisions
1.4 Organization of the Plan	Text revisions
1.5 Multi-Jurisdictional Considerations	Text revisions
1.6 Adoption, Implementation, Monitoring, & Evaluation Process	Text revisions
1.7 Community Data	2019 ESRI Business Analyst data additions; text revisions

1.1 Purpose and Need

Natural and technological (manmade) disasters can occur without warning and may result in damages that extend beyond the initial costs of recovery. Disasters can devastate neighborhoods, the local economy, and infrastructure, posing significant risks to the health and welfare of residents. The intent of

this plan is to provide a set of guidelines for the implementation of hazard mitigation projects with the goal of reducing the losses associated with natural and technological hazards.

1.2 Methodology

All information contained within this document has been obtained through personal knowledge of the committee members as well as research conducted by committee members and the Northeast Georgia Regional Commission (NEGRC), who facilitated the planning process and compiled all of the data into a single planning document.

From the list of identified stakeholders that participated in the previous Plan the Jasper County Emergency Management Agency (EMA) invited a diverse group of community leaders, local and regional experts, and emergency management staff to participate in the development of the plan through email, letters, phone calls and word of mouth. A full planning committee was assembled for the plan update kick-off meeting in November 2019, with a smaller steering committee directly guiding the planning process and providing regular input. Neighboring County EMA Directors were invited to attend the PDM Kickoff Meeting in a personal email from the Jasper County EMA director. The invitation to the PDM kickoff is located in Appendix E. There was no participation by the surrounding counties.

Steering Committee members were responsible for working with NEGRC staff to review and update the list of critical facilities and potential hazards, assess risk and determine potential losses as a result of hazard events, and develop mitigation goals and strategies. The following table lists all Planning Committee members and their affiliated agencies.

Table 1-2 : Planning Committee Members

Planning Committee Member	Affiliation
Mike Benton, County Manager	City of Monticello
Larry Champion, Mayor	City of Shady Dale
Betty Jump, EMA Director	Jasper County EMA
Jeffrey Lee, Joint 911 Authority Chairman	Jasper County Joint 911 Authority
Robert Colvin, Gas Superintendent	City of Monticello
Sharon Robinson, City Clerk	Jasper County BOC
Nichole Howell, ER Manager	Jasper County Memorial Hospital
Lauren Nation, Assistant Manager	Jasper County Health Department
Christa McMillan, Manager	Jasper County Health Department
Donna Holman, Retreat Administration	Jasper County Memorial Hospital
Wayne Jones, Coordinator	Electric Cities of Georgia
Michael Boykin, Electric Superintendent	City of Monticello
Sandra Stovall, Gas Compliance	City of Monticello
Dennis Pate, Finance Director	Jasper County BOC
Preston Campbell, Director Public Works	Jasper County BOC
Chris Finch, Fire Chief	Jasper County Fire/EMS
James Ray, Asst. Fire Chief	Jasper County Fire/EMS
Angela Walsh, Tax Commissioner	Jasper County BOC
Robert Jordan, Engineer	Jordan Engineering
Tim Young, City Manager	City of Monticello
Waymon Cody, Director Public Works	City of Monticello
Brent Strite, Assistant Emergency Coordinator	ARES (Amateur Radio Emergency Service)
Robert Sharpless, Deputy Sheriff	Jasper County Sheriff's Department
Karen Pennamon, City Clerk	City of Monticello

Two public meetings were held for the purposes of soliciting public input on the plan update: one during the drafting stage and the second during the final stage of the planning process, prior to submittal of the plan to GEMA. The meetings were intended to inform the public of the process and its implications for disaster mitigation countywide, as well as to engage the public in identifying community priorities for disaster mitigation. NEGRC staff and the Steering Committee also developed a brief questionnaire that was distributed in print and online following the first public hearing on December 10th, 2019. The purpose of this questionnaire was to gather information from Jasper County residents on their expectations and concerns during and after hazard events. Questionnaire responses were used to assist in determining goals and objectives for the plan update. Many respondents expressed a lack of knowledge about emergency operations, notification systems, and emergency shelters, each of which is addressed in the Mitigation Strategies section of this update. A summary of the questionnaire responses was made available and presented at the second public hearing in January 2020, along with a discussion of the planning process, hazard risk and vulnerability, and mitigation strategies. The meeting dates for the 2020 PDM update process are located in Table 1-3.

TABLE 1-3: MEETING DATES

Date	Type of Meeting
November 12, 2019	PDM Kick Off (Full Planning Committee)
November 26, 2019	Steering Committee Meeting 1
December 10, 2019	Public Hearing 1
December 10, 2019	Steering Committee Meeting 2
December 17, 2019	Steering Committee Meeting 3
January 7, 2020	Steering Committee Meeting 4
January 28, 2020	Public Hearing 2
March 17, 2020	PDM Draft Review, Last Comments on PDM (Full Planning Committee) (Postponed due to COVID-19)
August 3, 2020	Make a recommendation to adopt the PDM

NEGRC staff utilized a Story Map webpage[1] to post relevant meeting and planning process information for the Planning Committee and general public. This site included meeting notes, the public questionnaire, and plan updates. Upon FEMA approval, the plan will be posted to the NEGRC website so that the citizens of Jasper County can comment and make recommendations that will be considered at the annual review of the PDM. Comments and feedback on the plan were solicited from the citizens of Jasper County, and from EMA Directors of neighboring jurisdictions.

Additionally, the planning process included a review of existing planning mechanisms within Jasper County to ensure consistency and to inform the development of the PDM's goals, strategies, and recommended actions. The following table describes the applicable planning mechanisms and how they were incorporated into the mitigation plan update:

Table 1-4: Record of Review

Existing Planning Mechanisms	Reviewed	Method of use in Hazard Mitigation Plan
Jasper County Comprehensive Plan	Yes	Development trends, future growth
Local Emergency Operations Plan	Yes	Identifying hazards; assessing vulnerabilities
Storm Water Management / Flood Protection Ordinance	Yes	Mitigation strategies, capability assessment
Building Code and Zoning Ordinance	Yes	Development trends; future growth, capability assessment, mitigation strategies
Mutual Aid Agreements	Yes	Assessing vulnerabilities
State Hazard Mitigation Plan	Yes	Risk assessment
Jasper County Flood Insurance Study	Yes	Risk assessment
Critical Facilities Maps	Yes	Locations
Community Wildfire Protection Plan	Yes	Mitigation strategies, risk assessment
Flood Mitigation Assistance Plan	No	None exists for Jasper County

[1] https://storymaps.arcgis.com/stories/c3bf34cace2d4dbbaf0c749ba6970798

1.3 Review, Analysis, and Revision Process

Chapter One (Introduction to the Planning Process) was revised and updated to reflect a reorganized Steering Committee and new public participation techniques.

With input from the Steering Committee, NEGRC staff reviewed the text and data included in Chapters Two and Three (Local Hazard, Risk and Vulnerability) and made updates and revisions where necessary. The methodology for completing an assets inventory (see GEMA Worksheet #3 in Appendix A) was developed based on the availability of data for Jasper County. The Tax Assessor provided the numbers and values of structures by type for the entire county. Those land parcels containing a portion of the flood hazard area, or floodplain, were counted to determine the number of structures in the flood area; it was assumed that each land parcel contained one structure. Values for these affected structures were determined by multiplying the total value in the community by the percentage of structures in the hazard area.

The Steering Committee reviewed and revised the mitigation goals, objectives, and action items from the 2013 Plan for each hazard (Chapters Four and Five). While most of the goals and objectives were left unchanged, action items carried over from the 2013 Plan update were revised, and several new items were added. The Steering Committee then utilized the Social, Technical, Administrative, Political, Legal, Economic, Environmental (STAPLEE) method to prioritize the action items by hazard. Additional detail on this process is included in Section 6.1 of this document.

Chapter Six was updated in cooperation with members of the Steering Committee that will be directly involved in implementing, evaluating, and monitoring the Jasper County Pre-Disaster Mitigation Plan, including representatives from Jasper County Emergency Services and Jasper County Code Enforcement.

1.4 Organization of the Plan

Chapter Two contains a Hazard, Risk, and Vulnerability (HRV) assessment identifying the most prevalent natural hazards that have occurred or are most likely to occur in Jasper County. Chapter Three identifies and evaluates potential technological hazards. Each of the hazards is profiled based on historic occurrences in the county. The vulnerability of critical facilities is examined for each of the identified hazards to determine an estimate of potential loss and total impact resulting from a hazard event.

Chapters Four and Five present Mitigation Goals, Objectives, and Strategies for natural and technological hazards. Following these sections are Mitigation Actions Guides for natural and technological hazards. These guides have been designed as stand-alone resources to be used for project development and guidance in grant-seeking efforts supporting the implementation of mitigation goals over the next five years.

Chapter Six outlines roles, responsibilities and a schedule for implementing, evaluating, monitoring, and updating this plan. The governing bodies of Jasper County, the City of Monticello, and the City of Shady Dale will all adopt this update of the Jasper County Hazard Mitigation Plan by resolution after approval from FEMA. Chapter Seven summarizes the plan, providing a list of relevant references and additional sources of information.

In order to determine appropriate mitigation actions, a risk assessment was performed, identifying the probability of various natural and technical disasters affecting Jasper County. This assessment analyzed historical data relating to disaster occurrences within Jasper County and estimated the probability of future occurrences.

The hazard identification process produced six natural hazards and one technological hazard that may affect Jasper County and its municipalities in the future. Appendix A provides a profile of each of the hazards and the supportive historical data illustrating the probability of future hazard occurrences. For purposes of clarity, the historical hazard event data has been analyzed in order to provide a better understanding of which hazards have the potential to impact the community most significantly. To this end, events that were reported to have caused no injury or loss of life and no property or crop damage were not included. For a complete listing of all recorded hazard events, please see the reference information at the end of Appendix A.

The vulnerability of Jasper County and its municipalities was determined by first updating the list of critical facilities identified in the 2013 Plan update. These critical facilities and existing land use were then mapped along with the most current floodplain data. This allowed NEGRC staff and the Steering Committee to identify structures and neighborhoods potentially exposed to these "mappable" hazards. Additionally, potential financial losses were determined based on an examination of values of critical facilities, as provided by the Jasper County Tax Assessor and the HAZUS report. This information is discussed in greater detail in Chapter Two.

The HRV assessment informed the development of mitigation goals and objectives for each identified hazard in Jasper County. Under these goals and objectives, NEGRC and the Steering Committee identified implementation actions, including responsible agencies, approximate costs, potential financial resources, and an estimated timeline for completion in the Mitigation Actions Guides that comprise Chapters Six and Seven.

1.5 Multi-Jurisdictional Considerations

The cities of Monticello and Shady Dale have participated in the 2020 planning process. None of the hazards identified and profiled are limited to specific jurisdictional boundaries. Therefore, each of the hazards apply equally to Jasper County and its municipalities. Where appropriate, goals, objectives, and mitigation actions are tailored specifically to a jurisdiction's need, otherwise the goals, objectives and mitigation actions are considered to be countywide.

1.6 Adoption, Implementation, Monitoring, and Evaluation Process

The governing bodies of Jasper County, the City of Monticello, and the City of Shady Dale will all adopt this update of the Jasper County Hazard Mitigation Plan by resolution after approval from FEMA. Copies of the adoption resolutions will be located in Appendix D. All jurisdictions will be responsible for coordinating the implementation of the identified mitigation actions. In accordance with DMA2K, Jasper County and its municipalities will review and update the PDM on a five-year interval and address the implementation schedule of the identified mitigation actions annually. In order to ensure that multiple jurisdictions, as well as multiple agencies, are implementing common goals related to disaster mitigation, it is important that the recommendations originating from this planning document are incorporated into the County's Comprehensive Plan and Short-Term Work Program and reflect those found in the newest Emergency Management Agencies Local Emergency Operations Plan.

1.7 Community Data

Jasper County's total population (according to ESRI Business Analyst 2019 estimates) was 14,501, which represented a 4.32% increase from 2010 Census figures (13,900).

The 2019 ESRI Business Analyst report showed little change in the racial and ethnic composition of Jasper County. Around 75.5% of the population identified themselves as white, up slightly from 70% in 2010. Roughly 20% of the population identified themselves as black or African-American in 2019, which is down 3% from the 2010 Census figures (23%). The percentage of Hispanic or Latino persons stayed at 4.1% from 2010 to 2019. The population of Jasper County aged between 2010 and 2019. The median age for the county in 2010 was 39 years of age and, in 2019, the median age of the county was 40.5 years. This may result in the need for additional outreach services to ensure the safety of all residents in the event of a natural or technological hazard occurrence.

According to 2019 ESRI Business Analyst estimates, the median household income in Jasper County was $42,275, which is below the state median ($56,183). In 2019, approximately 19.4% of Jasper County residents were living below the poverty level, which is higher than the Georgia poverty rate (16.9%).

More detailed information on the demographics of Jasper County, including the municipalities of Monticello and Shady Dale, can be found in Appendix B.

Chapter 2 Natural Hazard, Risk, & Vulnerability

The Steering Committee was responsible for reviewing and updating the list of hazards likely to affect Jasper County. The goal was to utilize local knowledge, experience, and expertise to determine whether the hazards identified and profiled in the 2013 Plan Update were still relevant to Jasper County. As a result of this process, the Steering Committee retained all hazards from the previous plan.

Table 2-1: Summary of Updates to Chapter 2

Hazard Type	Section	Update Summary
Severe Thunderstorms and Tornados	**2.1.1 Hazard Identification**	Text revision; addition of HAZUS data
	2.1.2 Hazard Profile	Text revisions; incorporated HAZUS report
	2.1.3 Assets Exposed to Hazard	Text revisions
	2.1.4 Estimate of Potential Losses	Text revisions
	2.1.5 Land Use & Development Trends	Text revisions
	2.1.6 Multi-Jurisdictional Concerns	No changes
	2.1.7 Hazard Effects Summary	Text revisions
Drought	**2.2.1 Hazard Identification**	Text revisions
	2.2.2 Hazard Profile	Text revisions
	2.2.3 Assets Exposed to Hazard	Text revisions
	2.2.4 Estimate of Potential Losses	Text revisions
	2.2.5 Land Use & Development Trends	Text revisions
	2.2.6 Multi-Jurisdictional Concerns	Text revisions
	2.2.7 Hazard Effects Summary	Text revisions
Wildfire	**2.3.1 Hazard Identification**	Text revisions
	2.3.2 Hazard Profile	Text revisions
	2.3.3 Assets Exposed to Hazard	Text revisions
	2.3.4 Estimate of Potential Losses	Text revisions
	2.3.5 Land Use & Development Trends	Text revisions
	2.3.6 Multi-Jurisdictional Concerns	No changes
	2.3.7 Hazard Effects Summary	Text revisions
Winter Storms	**2.4.1 Hazard Identification**	Text revisions
	2.4.2 Hazard Profile	Text revisions; updated relevant data for hazard occurrences and frequency
	2.4.3 Assets Exposed to Hazard	Text revisions
	2.4.4 Estimate of Potential Losses	Text revisions; updated relevant data
	2.4.5 Land Use & Development Trends	Text revisions; updated relevant data
	2.4.6 Multi-Jurisdictional Concerns	No changes
	2.4.7 Hazard Summary	Text revisions
Floods	**2.5.1 Hazard Identification**	Text revisions
	2.5.2 Hazard Profile	Text revisions
	2.5.3 Assets Exposed to Hazard	Text revisions
	2.5.4 Estimate of Potential Losses	Text revisions
	2.5.5 Land Use & Development Trends	Text revisions
	2.5.6 Multi-Jurisdictional Concerns	No changes
	2.5.7 Hazard Summary	Text revisions

Hazard Type	Section	Update Summary
Earthquakes	**2.6.1 Hazard Identification**	Text revisions
	2.6.2 Hazard Profile	Text revisions; updated relevant data for hazard occurrences and frequency
	2.6.3 Assets Exposed to Hazard	Text revisions
	2.6.4 Estimate of Potential Losses	Text revisions; updated relevant data
	2.6.5 Land Use & Development Trends	Text revisions; updated relevant data
	2.6.6 Multi-Jurisdictional Concerns	No changes
	2.6.7 Hazard Summary	Addition to the 2020 Plan Update

2.1 Severe Thunderstorms (Includes Thunderstorms, Lightning, Hail, Tornado)

2.1.1 Hazard Identification

Thunderstorms can bring heavy rains, strong winds, hail, lightning, and tornados, depending on the weather conditions. All of these events have been classified together as a Severe Thunderstorms, which pose the greatest threat to the population, property, and resources of Jasper County. These events are briefly described below and additional information on thunderstorms and tornados is accessible via the FEMA website.

Additional hazards associated with Severe Thunderstorms include Flooding and Wildfires; these hazard types will be described in subsequent sections of this Chapter.

Thunderstorm

A thunderstorm is formed from a combination of moisture, rapidly rising warm air, and a force capable of lifting air such as a warm or cold front, a sea breeze, or a mountain. The rising air forms a low-pressure zone underneath the forming thunderstorm. All thunderstorms contain lightning. Thunderstorms may occur singly, in clusters, or in lines, making it possible for several thunderstorms to affect a single location over the course of a few hours. Some of the most severe weather occurs when a single thunderstorm affects one location for an extended time.[2]

Hail

Hail is produced by many strong thunderstorms. Hail can be smaller than a pea or as large as a softball and can be very destructive to crops and property.

Lightning

Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a "bolt." This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning reaches a temperature approaching 50,000 degrees Fahrenheit in a split second. Rapid heating and cooling of air near the lightning causes thunder.[3]

[2] Additional information about thunderstorms is accessible from the FEMA website at www.training.fema.gov/emiweb/downloads/07-thunderstorm-ig-rev2.doc.

[3] Additional information about lighting is accessible from the Ready.gov website at: http://www.ready.gov/thunderstorms-lightning.

Tornado

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm (or sometimes as a result of a hurricane) when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tornado is a result of high-velocity winds and wind-blown debris.[4] Additional hazards associated with Severe Thunderstorms include Flooding and Wildfires; these hazard types will be described in subsequent sections of this Chapter.

2.1.2 Hazard Profile

Thunderstorms can occur at any time of the year, throughout the country. However, they are more common in the central and southern states, with severe thunderstorms (with the potential for hail and tornados) most prevalent between the months of March and August.

The National Climatic Data Center (NCDC) organizes climate data related to thunderstorms into several possible categories: gusty winds, hail, heavy rain, high winds, lightning, thunderstorm winds, and tornado. Of these, the most frequently recorded events since 1950 are thunderstorm winds (141 occurrences). Since the 2015 Plan Update, there have been 29 occurrences of thunderstorm winds and lightning and 0 tornado events in Jasper County.

The National Weather Service issues a severe thunderstorm watch when conditions are likely to generate damaging winds in excess of 58 mph or hail in excess of three-fourths of an inch. Straight-line winds in excess of 100 mph are responsible for the majority of thunderstorm damage. According to the United States Wind Zone map, Jasper County is located in Zone III, indicating the possibility of 200 mph design wind speeds.[5] Therefore, the potential extent for this hazard is a possible category EF4 (166-200 mph) tornado, as measured by the Enhanced Fujita Scale. [6] Both of these graphics are in Appendix A listed as figure 1 and figure 2. Historic hail events in Jasper County reported hail sizes of 0.75 inches to 2.5 inches in diameter. On the National Oceanic and Atmospheric Administration (NOAA) Estimating Hail-Size Chart, these sizes amount to marble-sized to baseball-sized hail. According to the Tornado and Storm Research Organization (TORRO)[7], these sizes would result in significant damage to fruit, crops, and vegetation, on the low end (H2), to severe roof damage and risk of serious injuries (H7).

Since 1950, severe thunderstorm events have resulted in a total of approximately $4.9 million in damage to property and crops and 2 personal injuries in Jasper County. [8] Based on historic frequency, Jasper County might expect a hail event every 1.38 years; thunderstorm, wind, or lighting event every 0.46 years; and a tornado event every 16.25 years. For additional information on severe thunderstorm events, see the Jasper County Hazard Events table in Appendix D, which lists all hazard events recorded in Jasper County.

2.1.3 Assets Exposed to Hazard

There is no methodology to predict where a thunderstorm event is going to occur and, therefore, the entire county is vulnerable. Additionally, all identified critical facilities are susceptible to damages.

2.1.4 Estimate of Potential Losses

Historically, Jasper County has not experienced a tornado above an EF1 on the Enhanced Fujita scale. Tornados ranging from F0 to F1 have resulted in up to $267,000 in property damage per occurrence within

5 Additional information about tornadoes is accessible from the Ready.gov website at http://www.ready.gov/tornadoes 5 Retrieved on December 5, 2013, from the FEMA website at www.fema.gov/graphics/library/wmap.gif

6 The Enhanced F-scale is a set of wind estimates (not measurements) based on damage. Its uses three-second gusts estimated at the point of damage based on a judgment of 8 levels of damage to 28 unique indicators. These estimates vary with height and exposure. Retrieved on October 31, 2019 from the NOAA National Weather Service websiteat: www.spc.noaa.gov/efscale/ef-scale.html

7 Additional information about hail size and potential extent is available TORRO websites at: www.torro.org.uk/site/hscale.php 8 Inflation adjusted for 2011 Dollars.

the county. Since Jasper County lies in a wind zone associated with EF3 tornados, it is possible that future events could result in more serious and widespread damages.[9] According to the HAZUS report, 289 buildings could be damaged in a potential tornado for a loss of $13 million. All public and private facilities were determined to be at risk of damage from severe thunderstorms. Worksheet 3A - Severe Thunderstorms, Winter Storms, Wildfire, Drought, Earthquake, and Hazardous Material Spills (included in Appendix A) details the estimated value of property and number of people at risk. Because of the consolidated tax assessment system in place in Jasper County, division of this data by jurisdiction is not possible at this time.

2.1.5 Land Use and Development Trends

Most land use and development trends will not inform the strategies identified to mitigate the possible effects of severe thunderstorms and associated hazards, as the entire county is at equal risk for these types of events. The number of mobile or manufactured homes in Jasper County has remained relatively unchanged since the last Pre-Disaster Mitigation Plan was adopted, with a decrease from 1,056 in 2008 to 1,001 in 2013. This trend is expected to continue for the foreseeable future. However, residents of mobile and manufactured homes throughout the county are still at greater risk from thunderstorm and tornado events. These structures are susceptible to severe damage and possible destruction from strong thunderstorm winds and tornados. Jasper County manufactured and mobile home regulations require that all manufactured homes be anchored according the State Building Code and the Federal Manufactured Housing Construction and Safety Standards Act. Jasper County also requires that manufactured homes be placed on an appropriate foundation and skirted with finished masonry at least 4 inches thick.

2.1.6 Multi-Jurisdictional Concerns

All of Jasper County is vulnerable to the effects of severe thunderstorms. All mitigation goals, objectives, and strategies are applicable to the entire county and each city.

2.1.7 Hazard Effects Summary

Based on the quantifiable data, thunderstorms present the most prevalent disaster in Jasper County and have generated the largest financial losses in property and crop damages, exceeding $126 million. As the risk for thunderstorms is equal throughout the county, most mitigation strategies will need to address the community as a whole. Additional measures may be necessary for areas with concentrations of mobile homes.

2.2 Drought

2.2.1 Hazard Identification

Drought cannot be characterized as a single event, but rather a prolonged period without sufficient precipitation. The Georgia Automated Environmental Monitoring Network website defines drought as "a period of insufficient rainfall for normal plant growth, which begins when soil moisture is so diminished that vegetation roots cannot absorb enough water to replace that lost by transpiration."[10]

According to the 2003 Georgia Drought Management Plan, Jasper County is located in Climate Division 5. For this Climate Division, the Georgia Environmental Protection Division (EPD) monitors the following indicators for drought triggers or specific values. If any one of the indicators reaches or passes a trigger

9 Retrieved on October 31, 2019 from the FEMA website at http://www.fema.gov/graphics/library/wmap.gif
10 Retrieved on October 31, 2019 from the Georgia Automated Environmental Monitoring Network website at www.georgiaweather.net

value for two consecutive months, a preliminary evaluation is conducted to determine the appropriate response.

- Standard Precipitation Index: This figure compares precipitation levels during the last three, six, and twelve months with historical figures to determine net loss or increase.
- Groundwater Levels: Water level is measured at well 21T001 in Spalding County.
- Streamflow: Annual and monthly discharge levels are monitored and compared with historical figures along the Oconee River at Dublin and the Ocmulgee River at Macon.

A drought event is not considered to be over until all of the indicators for the Climate Division are at an acceptable stress level for at least four consecutive months.[11]

Another hazard often associated with Drought is Wildfires, which will be described in subsequent sections of this Chapter.

2.2.2 Hazard Profile

Due to the lengthy nature of a drought event, the adverse impacts can affect a community for extended periods of time. The severity of impacts increases as the drought event is prolonged and many may still be felt long after the drought is declared over.

Drought conditions are typically associated with the dry summer months, but they may persist throughout the winter months as well. Over the past 68 years, there have been 28 occurrences of drought conditions in Jasper County recorded by the NCDC, as illustrated in the Jasper County Hazard Events table in Appendix D, which lists all hazard events recorded in Jasper County. All of the recorded events occurred between 1950 and 2018, reflecting a period of statewide drought-like conditions.

Based on the historic frequency recorded by the NCDC, Jasper County has a 43.08% chance of experiencing a drought event in any given year. However, the multiple variables involved in declaring a drought event challenge the accuracy of this estimation.

A better assessment of the extent of the hazard that a drought event may pose to Jasper County analyzes both frequency and severity. Data on drought severity is collected and reported by the U.S. Drought Monitor.[12] The U.S. Drought Monitor 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 is a synthesis of multiple indices and impacts that represents a consensus of federal and academic scientists. It is designed to represent the spatial location and severity of drought conditions on a weekly basis. Based on this model, when drought conditions are present their severity is classified into one of five categories, outlined in Table 2-2:

11 Retrieved on December 5, 2013 from the DCA Planning & Quality Growth website at: www.georgiaplanning.com
12 U.S. Drought Monitor website for the State of Georgia can be found at: droughtmonitor.unl.edu

Table 2-2: U.S. Drought Monitor Severity Levels

Category	Description	Possible Impacts
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies

Available historical data on drought severity in Jasper County was gathered from the U.S. Drought Monitor's website. From January of 2015 through January of 2020, the drought conditions in Jasper County have been rated at D1-or-above 43 out of 60 months, or approximately 71.6% of the time.[13] According to the available data, which is summarized in the table below, the severity of historical drought events is fairly evenly distributed between the moderate, extreme, and severe categories. A 20 year time series drought graphic is located in Appendix A, listed as figure 7.

Table 2-3: Severity of Historical Drought Events 2015-2020(Jasper County)

Total Months at D1 or above	D1 Moderate Drought	D2 Severe Drought	D3 Extreme Drought	D4 Exceptional Drought
43	43	12	5	3
	71.6%	20.0%	8.3%	5%

Historically, occurrences of drought conditions are evenly distributed throughout the year; however, the severity varies between months. On average, the least-severe conditions occur in April and the most-severe typically occur in the month of September. Average severity of conditions is presented in the table above.

2.2.3 Assets Exposed to Hazard

Droughts typically do not affect critical facility structures, directly. Instead, droughts have the most significant impact on the agricultural community and the residential population, particularly those that utilize groundwater wells.

2.2.4 Estimate of Potential Losses

Drought events are anticipated to generate the largest impact on crop and livestock farmers countywide. Yields of crops have been documented at a total loss during the worst drought seasons. Row/forage crops and ornamental horticulture are a significant part of Jasper County's agricultural output, with an annual farm-gate value of approximately $20.55 million.[14] The most directly identified loss is illustrated in reduced yields and livestock.

13 Retrieved August 13, 2014 from: droughtmonitor.unl.edu
14 Retrieved October 31, 2019 from: http://farmgate.caes.uga.edu/CountyAnnualReport.aspx

Decreased yields of hay and silage reduce the amount of feed available for the livestock population, which has a number of ramifications that are often prolonged beyond the drought event. Cattle may have difficulty maintaining their weight during a drought event due to unproductive pastureland and they may also have difficulty breeding. In addition to creating an obvious burden on the animal population, drought events may result in reduced economic viability of cattle farming and poultry production.
Worksheet 3A - Severe Thunderstorms, Winter Storms, Wildfire, Drought, Earthquake, and Hazardous Material Spills (located in Appendix A) details the estimated value of property and number of people at risk. Because of the consolidated tax assessment system in place in Jasper County, division of this data by jurisdiction is not possible at this time.

2.2.5 Land Use and Development Trends

Jasper County's population grew by an estimated 4.32% between the 2010 Census and the 2019 ESRI Business Analyst estimates. While agriculture remains a primary industry, the continued growth of the county places a major increase in demand for residential and commercial water supplies. The increased demand from new development, coupled with the demands from agricultural uses, enhances the potential effects of prolonged drought conditions on the local economy.

2.2.6 Multi-Jurisdictional Concerns

The effects of prolonged drought conditions are felt countywide. Although agricultural production typically occurs outside municipal boundaries, a decrease in the sector's economic productivity will have an effect on the entire county. Therefore, it is important that the three jurisdictions cooperate on the implementation of drought mitigation strategies to assist the agricultural community withstand drought conditions.

2.2.7 Hazard Summary

It is often difficult to assess the impacts of drought because the negative effects are distributed over a prolonged period of time. Drought may have effects on residential and commercial water supplies, but the most immediate impacts are felt in the agricultural industry and the increased risk of wildfires. No changes have occurred since the last plan was completed that affect the vulnerability of Jasper County to the hazards of a drought.

2.3 Wildfires

2.3.1 Hazard Identification

Wildfires (or wildland fires) present threats to people and property living or recreating near undeveloped wilderness areas. Drought and dry weather conditions contribute to an increased potential for wildfires.

Wildfires are classified under three different types:

1. **Surface Fire**: Burns rapidly at a low intensity
2. **Ground Fire**: Most infrequent, characterized by intense blazes destroying all vegetation and organic matter
3. **Crown Fire**: Generally resulting from ground fires, occurs in upper sections of trees [15]

The most dangerous conditions are extended periods of drought (typically during the summer months) and high winds (typically during late winter and early spring). Drought conditions create an adverse environment for containing fires because of the dry condition of the forest on a regional scale.

15 Retrieved on October 31, 2019 from a report on the U.S. Fire Administration website, entitled, "Wildland Fires: A Historical Perspective" at: https://www.hsdl.org/?view&did=9716

2.3.2 Hazard Profile

There are 5 recorded wildfire events in Jasper County reported in the NCDC database between 2009 and 2019. These events resulted in approximately $27,000 in total damage. Additionally, the Georgia Forestry Commission has recorded the number and location of wildfires in Jasper County between 2005 and 2016. During that time period there was an average of 19 wildfires per year. The data reported by the Georgia Forestry Commission includes all of the wildfires in Jasper County, while the NCDC Database only reports wildfires with damages or were large enough to report. According to the 2016 Jasper County Community Wildfire Protection Plan (CWPP), developed by the Georgia Forestry Commission, the leading cause (50%) of wildfires is debris burning.[16] A copy of the 2016 CWPP can be found in Appendix C of this plan.

The wildland fire risk assessments, conducted in 2010 by the Jasper County Fire Department and the Georgia Forestry Commission, returned an average score of 91, placing Jasper County in the "moderate risk" hazard range. The risk assessment instrument used to evaluate wildfire hazards to Jasper County was the Hazard and Wildfire Risk Assessment Checklist. The instrument takes into consideration accessibility, vegetation (based on fuel models), roofing assembly, building construction, availability of fire protection resources, placement of gas and electric utilities, and additional rating factors.[17] For information about the location of identified hazard areas, see pages 9-10 and 14-15 of the 2016 CWPP (Appendix C).

Over the past five years, Jasper County has averaged 19 reported wildfires per year, which is 7 fires less than the previous PDM update. The occurrence of these fires is fairly uniform throughout the year, with a slight peak in the months of February and March and a slight decrease during the fall months. These fires have burned an average of 122.6 acres annually. While frequency of fires remains fairly consistent throughout the year, there is a marked difference in the monthly acreage lost. The monthly acres lost during the late-winter through summer period show a tenfold increase over the acres lost during the fall and early winter. Additionally, while the annual numbers of fires have not changed noticeably during the 5-year period that records are available, the annual acreage lost appears to have decreased in recent years. This is likely a result of the increase in prescribed burning on private lands. The local Georgia Forestry Commission office has adopted an aggressive prescribed burning regiment and dedicated an impressive amount of time and resources to the cause. The Jasper/Jones County Unit lead their district in Central Georgia for burning. Despite their progressive campaign, new homes are being permitted outside of traditional communities, into the area between developed lands and undeveloped lands. This encroachment of people could hinder the ability to properly execute prescribed burns and increases the potential for a wildfire disaster. The probability of future occurrences of wildfire events cannot be estimated based on the relatively small sample size of historical data. However, based on the relative consistency of the data available, wildfire events are expected to continue at the same rate as they have in the past (approximately 19 events per year).

The leading cause of wildfires in Jasper County has been careless debris burning, resulting in almost 50% of all fires reported. Georgia Forestry Commission Wildfire Records show that, in the past 5 years, 23 homes, along with 3 outbuildings, were damaged by wildfire in Jasper County, resulting in estimated losses of 1.2 million dollars. Additionally, 3 vehicles were lost. The total value of the 3 vehicles were $40,000. This is a substantial loss of non-timber property attributed to wildfires in Jasper County.[18]

16 Georgia Forestry Commission (2016) "Community Wildfire Protection Plan: An Action Plan for Wildfire Mitigation and Conservation of Natural Resources, Jasper County, Georgia," p. 5

17 Georgia Forestry Commission (2016) "Community Wildfire Protection Plan: An Action Plan for Wildfire Mitigation and Conservation of Natural Resources, Jasper County, Georgia," p. 9-10

18 Ibid. p.4-5

2.3.3 Assets Exposed to Hazard

All of Jasper County is potentially vulnerable to wildfires, either large blazes affecting expansive tracts of forestland or multiple small fires damaging individual lots. Both are potentially extremely dangerous and may escalate quickly depending on the prevailing weather conditions. The current Jasper County 2016 CWPP does not include a map of wildfire occurrences, but there are maps in Appendix A, figures 8, 9, and 10, highlighting the Fire Intensity Scale for Monticello, Shady Dale, and Jasper County.

2.3.4 Estimate of Potential Losses

Monticello and Shady Dale are equipped with pressurized water systems and fire hydrants throughout each jurisdiction. Fire departments are active in both cities, and five stations are located in unincorporated areas. Even with the best protections, the possible losses from a wildfire event could be significant. According to the 2011 Jasper County CWPP, between 2005 and 2011, wildfires burned an average of 122 acres annually and were responsible for estimated losses of $1.2 million of property.[19] The 2016 CWPP did not contain updated numbers for damages. Worksheet 3A - Severe Thunderstorms, Winter Storms, Wildfire, Drought, Earthquake, and Hazardous Material Spills (found in Appendix A) details the estimated value of property and number of people at risk. Because of the consolidated tax assessment system in place in Jasper County, division of this data by jurisdiction is not possible at this time.

2.3.5 Land Use and Development Trends

Development in Jasper County has often been seen in areas that may be referred to as the wildland urban interface (WUI). WUIs are defined as areas "where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels."[20] Jasper County is predominantly comprised of two of the three main categories of WUI, as follows:

Boundary: Classic type of WUI, with a clearly-defined boundary between suburban and rural areas.
Intermix: Structures, such as rural homes, are scattered in wildland (undeveloped) areas.[21]

Identified land use and development factors (from the woodland fire risk assessments, conducted in 2016 by the Jasper County Fire Department and the Georgia Forestry Commission) contributing to Jasper County's designation in the "moderate risk" category include:

- Dead-end roads with inadequate turn-arounds
- Narrow roads without drivable shoulders
- Long, narrow, and poorly labeled driveways
- Limited street signs and homes not clearly addressed
- Thick, highly flammable vegetation surrounding many homes
- Minimal defensible space around structures
- Homes with wooden siding and roofs with heavy accumulations of vegetative debris
- No pressurized or non-pressurized water systems available
- Above ground utilities
- Large, adjacent areas of forest or wildlands
- Heavy fuel buildups in adjacent wildlands
- Undeveloped lots comprising half the total lots in many rural communities
- High occurrence of wildfires in the several locations
- Distance from fire stations

19 Ibid. p.4-5
20 Retrieved on December 12, 2013 from a report by the U.S. Fire Administration entitled, "Fires in the Wildland/Urban Interface" at: www.usfa.dhs.gov
21 Georgia Forestry Commission (2016) "Community Wildfire Protection Plan: An Action Plan for Wildfire Mitigation and Conservation of Natural Resources, Jasper County, Georgia," p. 7

The National Fire Protection Association (NFPA) is responsible for developing and updating standards for fire protection. Relevant land use and development issues are addressed in *NFPA 1141: Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas.*[22]

Three general approaches should be taken for development in the WUI: 1) design developments to be defensible against wildfires, 2) design fire-resistant landscapes and structures, and 3) incorporate fuel-reduction treatments to reduce vegetative hazards.[23]

2.3.6 Multi-Jurisdictional Concerns

Though the majority of heavily wooded areas are located outside of the municipal jurisdictions, a small fire burning uncontained within either of the cities may create more damage because of the increased density of development. It is imperative that all three jurisdictions work closely with the Georgia Forestry Commission to continue their joint efforts in combating wildfires countywide.

2.3.7 Hazard Summary

It is difficult to forecast total losses as a result of wildfires because the extent of damages depends on the severity of the fire and the types of structures and/or property that are impacted. To guide wildfire mitigation efforts, the 2016 CWPP identified several priorities in the following categories: Hazard and Structural Ignitability Reduction, Wildland Fuel Reduction, Wildland Fire Response, and Education and Outreach. Mitigation actions will vary, as wildfires may be classified as both a natural and a technological, or manmade, hazard. Increased residential development outside of traditional communities and into the wildland urban interface increases the potential for a wildfire disaster in Jasper County. Like communities across the country, Jasper County saw a significant slowdown in residential and other types of development due to a sluggish economy brought about by the great recession. As economic recovery continues and development pressures grow, special attention should be paid to development located and proposed within the wildland urban interface.

2.4 Winter Storms

2.4.1 Hazard Identification

Winter storms include snow, freezing rain, sleet, freezing temperatures, or a combination thereof.[24] The most prevalent occurrences of winter storms in Jasper County are accumulations of ice as the result of freezing rain and temperatures dropping below the freezing point. Ice storms, in particular, can generate extensive damage to trees and power lines, as well as create unsafe driving conditions that limit citizens' access to healthcare, goods, and services.

2.4.2 Hazard Profile

The severity and characteristics of winter storms vary greatly, but all winter storms are capable of causing extensive damages. Temperatures in Jasper County rarely reach the extreme cold experienced in northern climates, but freezing temperatures accompanied by high winds can produce a wind chill factor that may be dangerous if overexposed.

22 This document is available for purchase through the NFPA website at: www.nfpa.org

23 U.S Department of Commerce, National Institute of Standards and Technology, Wildland-Urban Interface Fire Research Needs. Retrieved on October 31, 2019 from: https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1150.pdf

24 Additional information about winter storms is accessible from the FEMA website at https://www.fema.gov/media-library-data/8a3791d53642aa08eb41a705e3c505b5/FEMA_FS_winterstorm_508.pdf

Winter storms in Jasper County are most prevalent during the months of December through February. Southern winter storms are usually the result of northern cold fronts moving southward, which typically affords the local EMA and general population ample time to prepare for adverse conditions.

Over the past 68 years there have been 45 occurrences of winter storms in Jasper County recorded by the NCDC, detailed in Jasper County Hazard Events table in Appendix D. The worst recorded event was a winter storm that occurred in March of 1960 and caused approximately $538,000 in damages. Based on the historic frequency recorded by the NCDC, the county can expect a winter storm event every 1.44 years. Data on the magnitude of winter storm events was not reported in the NCDC data collected for Jasper County; therefore, the extent of this hazard is difficult to define. The previous PDM identifies events in January of 2005 when ice and freezing rain caused power outages for 70% of the county's population and, in March of 1993, three and one half inches of snow fell, leaving thousands of citizens without power. In addition, numerous structures and hundreds of trees were damaged as a result of the winter weather. Jasper County again experienced widespread power outages and extensive damage to trees in February of 2014, as the result of a winter storm that left 0.75 inches of ice in its wake.

2.4.3 Assets Exposed to Hazard

There is no methodology to predict where a winter storm event is going to occur and, therefore, the entire county is vulnerable. Additionally, winter storms generally affect very large areas. All identified critical facilities are susceptible to damages caused by winter storms. Due to the relative infrequency of winter weather in the southeast, Jasper County may be more susceptible to structural and non-structural damages.

2.4.4 Estimate of Potential Losses

All critical facilities were determined to be at risk of damage from winter storms. Additionally, crops throughout the county are susceptible to losses.

Damages from winter storms are typically caused by an accumulation of ice on trees, tree limbs, or power lines that can result in loss of power and property damage. Winter weather also creates adverse road conditions that pose an increased risk to motorists. The accident rate can be much higher during winter storm events, particularly to a resident population that is not accustomed to driving under these conditions. The accumulation of snow or ice beyond the typical winter weather months can result in crop losses and have a devastating impact on the agricultural industry. The 45 winter storm events recorded by the NCDC resulted in a reported loss of $1,619,135 in property and crop damage. Worksheet 3A - Severe Thunderstorms, Winter Storms, Wildfire, Drought, Earthquake, and Hazardous Material Spills, found in Appendix A, details the estimated value of property and number of people at risk. Because of the consolidated tax assessment system in place in Jasper County, division of this data by jurisdiction is not possible at this time.

2.4.5 Land Use and Development Trends

Most land use and development trends will not inform the strategies identified to mitigate the possible effects of winter storms, as the entire county is at equal risk for these types of hazard events.

2.4.6 Multi-Jurisdictional Concerns

All of Jasper County is vulnerable to the effects of winter storms. All mitigation goals, objectives, and strategies are applicable to each jurisdiction.

2.4.7 Hazard Summary

Based on frequency and reported damage, winter storms pose a significant threat to Jasper County. Winter storms have the potential to immobilize the entire county. Extended periods of power outages due to down power lines pose a risk to residents who primarily heat their homes with electricity. Roads that are blocked or covered in ice may delay any needed assistance as well as put motorists at risk. As the risk for winter storms is equal throughout the county, most mitigation strategies will need to address the community as a whole. The Jasper community's greatest vulnerability is reliable access to auxiliary power from backup generators. To date, sufficient funding has not been secured for the purchase and placement of generators at emergency shelters. This item was identified as a mitigation work item in the previous PDM update, and carries over into this plan. There have been no changes to the county's development pattern since the previous plan that could affect vulnerability to the hazard of winter storms.

2.5 Floods

2.5.1 Hazard Identification

A flood is a partial or complete inundation of water on normally dry areas. The causes of flooding include: severe thunderstorms, tropical cyclones, seasonal rains, run-off from snow or ice, and other weather-related conditions.[25] The severity of flooding is also a function of environmental variables, such as topography, ground saturation levels, soil types, vegetative cover, impervious surface cover, and drainage patterns.

Flash flooding is characterized by rapid accumulation or runoff of surface waters. Flash flooding impacts smaller rivers, creeks, and streams and can occur when the soil becomes oversaturated or when excess volumes of water collect on impervious surfaces.

2.5.2 Hazard Profile

Flooding in Jasper County is most commonly associated with severe thunderstorms that typically generate during the Atlantic hurricane season, which runs from June to November. However, due to the southeastern climate, flooding may occur year-round due to the potential for prolonged periods of precipitation during any month.

During the past 68 years, there have been 7 flood events in Jasper County recorded by the NCDC, detailed in the Hazard Frequency Table (Appendix A). In the City of Monticello it is uncertain how many flood events have occurred due to a lack of data.

Based on the historic frequency recorded by the NCDC, the county can expect a flood event every 9.29 years in Jasper County. However, as illustrated by the level of activity during particular years, the number of occurrences is directly related to the severity of the storm season. The best available data indicate that the extent of hazards associated with a flood event is most accurately represented by the boundary of the delineated 0.2% annual-chance floodplain (also known as the 500-year floodplain) from the most recent Digital Flood Insurance Rate Map (DFIRM). A map depicting this boundary can be found in Appendix A. Based on historical stream gauge data from the USGS, the major flood stage for the Ocmulgee River, south of Jackson Lake, is 26 feet. (Jackson Lake and the Ocmulgee make up the county's western border.) The highest historical crest at this location was 26.9 feet on July 6, 1994. [26]

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25 Additional information about thunderstorms is accessible from the FEMA website at https://www.fema.gov/media-library-data/2607c3fe71a68fe165a53ec189fba37e/FEMA_FS_thunderstorm_508.pdf

26 Retrieved 10/31/2019 from the National Weather Service Advanced Hydrologic Prediction Service Webpage at : water.weather.gov

In an older study from the U.S Geological Survey, Murder Creek, listed 8 miles north of the City of Monticello, had a flood depth recurrence in intervals of 8.5 feet for 10 years, 10.5 feet for 50 years, and 11.5 feet for the 100 year interval.[27] Due to the lack of flood data for the City of Monticello, there is no clear way to predict the flooding frequency rate for the city. Based on local knowledge, the City can expect a flood event every 3-5 years

2.5.3 Assets Exposed to Hazard

In June of 2010, FEMA completed a Flood Insurance Study (FIS) for Jasper County, which included creation of DFIRMs for Jasper County and its incorporated areas. The FIS identified principal flood problems in Jasper County as low-lying areas adjacent to major creeks that are subject to periodic flooding which accompanies major storm events.[27] The Jasper County DFIRM delineates specific flood insurance risk zones that correspond with 1-percent-annual-chance floodplains (also known as the 100-year floodplain) and 0.2-percent-annual-chance floodplains (also known as the 500-year floodplain), as well as areas outside of these floodplain zones.

Approximately 3.83% of Jasper County is covered by either 100-year or 500-year floodplains. Based on the HAZUS report, 111 buildings are in the 1% flood boundary. If every building was damaged during a 100-year flood event, the total loss would be $3.5 million. No critical facility structures are within the delineated floodplains. Because the HAZUS report uses GIS locations to determine which structures are in each jurisdiction, the lack of results for the municipalities means the HAZUS software estimated that there would be no damage to the municipalities in a 100 year flood (Appendix D). This would not be the case and there will still be vulnerable areas and structures within Shady Dale and Monticello that were not included in the HAZUS report.

2.5.4 Estimate of Potential Losses

The potential losses from flooding are difficult to predict due to the variable intensity of rainfall associated with each storm event in Jasper County. The largest direct potential loss in the county is related to the repeated damage of the local road network. Additionally, because of the large amount of agriculturally productive land, there is a possibility that extreme flood damage could have a major adverse impact on agricultural production. The result of the 7 flood events recorded by the NCDC is a reported loss of $54,543 in property and crop damage.

There is only one identified repetitive loss property within Jasper County. The property is a residential structure. Repetitive loss properties are defined as a National Flood Insurance Program (NFIP)-insured property or structure that has had at least two paid flood losses of more than $1,000 each within any 10-year period since 1978.[28] Worksheet 3A – Flood, found in Appendix A, details the estimated value of property and number of people at risk.
Because of the consolidated tax assessment system in place in Jasper County, division of this data by jurisdiction is not possible at this time.

2.5.5 Land Use and Development Trends

Jasper County has experienced a mix of both rural and suburban development. Increased development throughout the county may cause an increased risk of flooding. Not only can new development in areas already prone to flooding result in potential losses, but development of impervious surfaces and urban infrastructure elsewhere in the county may result in increased risks. The construction of new roads, parking lots, roof-tops, and other impervious surfaces typically increases surface runoff volumes beyond pre-

[27] Retrieved from the U.S Geological Survey Water Resources Investigations 77-90 https://pubs.usgs.gov/wri/wri77-90/pdf/wri77-90.pdf

development levels, thereby creating a greater risk of flooding downstream in the watershed and potentially enlarging floodplains.

Jasper County and the City of Monticello participate in the NFIP and all jurisdictions currently have FEMA-approved DFIRMs. Additionally, all construction is required to meet the standards set forth by the Georgia State Minimum Standard Codes (Uniform Code Act) and the International Building Code. Minimum standards established by these codes provide reasonable protection for persons and property within structures that comply with the regulations for most natural hazards.

2.5.6 Multi-Jurisdictional Concerns

Each jurisdiction is subject to the potential damages caused by floods, due to flooding's effects on roads and other key infrastructure. However, those areas lying within the defined flood hazard boundary, as illustrated in Appendix A, are subject to increased vulnerability to flood hazards.

2.5.7 Hazard Summary

The occurrences of flood events in Jasper County are typically correlated with the occurrences of severe thunderstorms that carry excessive amounts of rainfall. As indicated in the flood hazard boundary map in Appendix A, each of the jurisdictions has varying levels of vulnerability to flooding. There have been no changes that would affect the overall vulnerability of Jasper County residents to the negative impacts of a flood event since the previous plan update was completed.

27 Retrieved on October 31, 2019, from the Georgia Floodplain Mapping Program website at www.georgiadfirm.com

28 Retrieved on October 31, 2019 from the FEMA website at https://www.fema.gov/national-flood-insurance-program

2.6 Earthquakes

2.6.1 Hazard Identification

An earthquake is a sudden shaking of the earth caused by a fault slip, resulting in a release of energy that travels away from the fault surface as seismic waves. Seismic waves are elastic shocks that travel through the earth. Faults slip to release stress that is created as tectonic plates move around the surface of the earth. Earthquakes can cause buildings and bridges to collapse, telephone and power lines to fall, and cause fires, explosions, and landslides.[29]

There are currently three scales that measure earthquakes: the Richter Magnitude Scale, the Moment Magnitude Scale, and the Modified-Mercalli Intensity Scale.

1. The Richter Magnitude Scale is logarithmic and expresses earthquake size as a magnitude, using whole numbers and decimal fractions. The Richter Magnitude Scale measures the energy released by an earthquake, not the damage caused by an earthquake.[30] The Richter Magnitude Scale has no theoretical upper limit; however, the practical upper limit lies just below 9.0 and 10.0 for local or surface-wave magnitudes and moment magnitudes, respectively.[31]
2. The Moment Magnitude Scale provides the most reliable estimate of the size of an earthquake when the earthquake exceeds 6.0 on the Richter Magnitude Scale.[30] The Moment Magnitude scale is the preferred magnitude scale.
3. The Modified-Mercalli Intensity Scale is a measure of the strength of shaking of an earthquake at a specific location and is normally represented in roman numerals.[32] The Modified-Mercalli Intensity Scale ranges from one (I) to twelve (XII) with one (I) meaning that shaking could not be felt and twelve (XII) meaning total damage.[33]

2.6.2 Hazard Profile

According to the map below, Jasper County is listed as one of several counties in the state that is at risk for an earthquake event. The map displays all of the report earthquakes in Georgia form 1872-2010. The map was published in the Georgia Earthquake Awareness Guide in 2011.

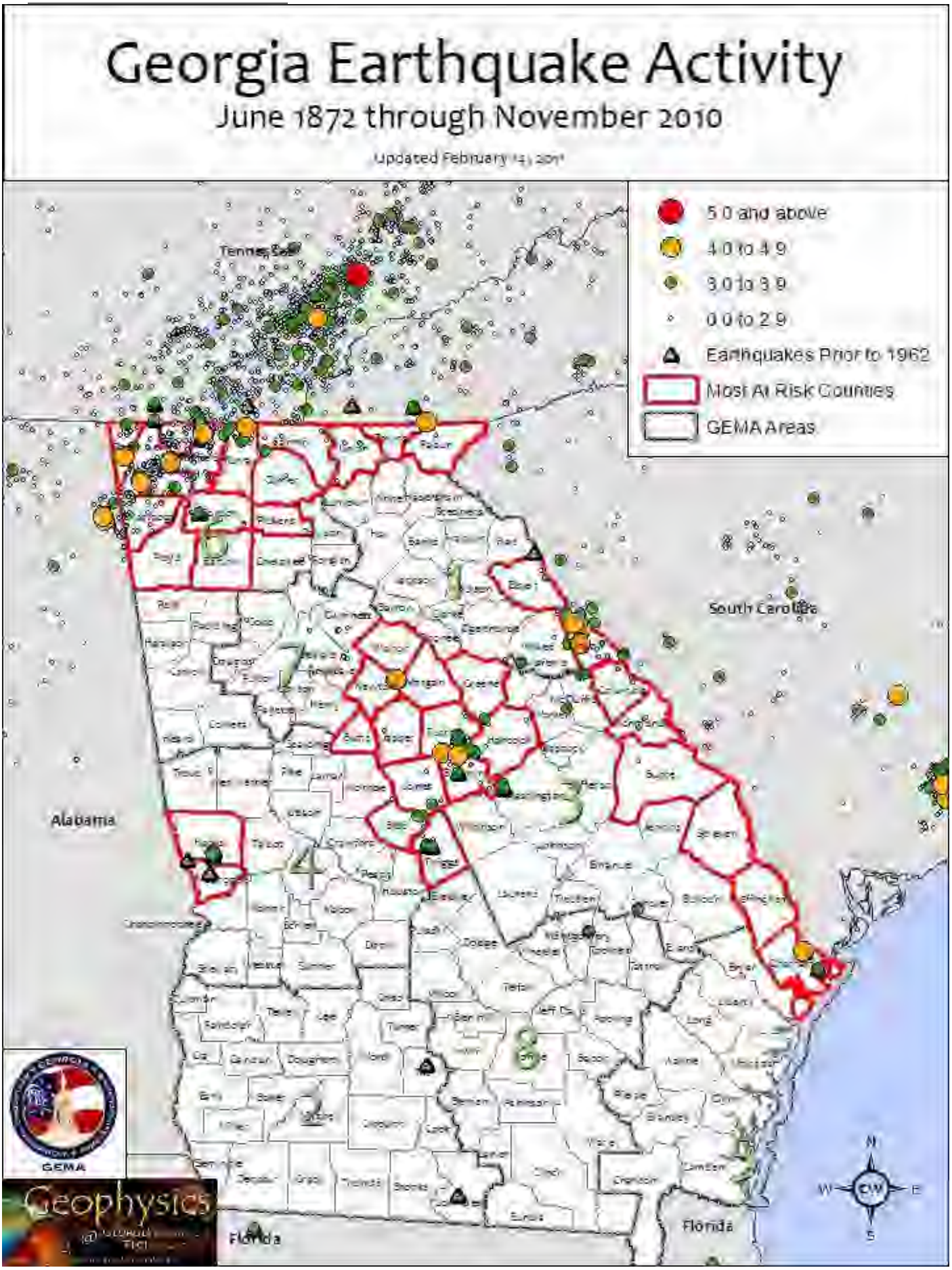
On April 29, 2003, a moderate earthquake, rated 4.9 on the Richter scale, shook most of the northwest corner of Georgia, south to Atlanta. The epicenter was located in Menlo, Georgia. In Jasper County, slight trembles were felt and rumbles heard. There are no incidents reported in any damage history; these accounts come from personal testimonies from citizens. Historic data records indicate that Jasper County can expect an earthquake to affect their county every fifty years, with a 1.54% chance of an earthquake occurring in any given year (see the Hazard Frequency Table in Appendix A).

Based on historic occurrences, Jasper County may be susceptible to a level VII earthquake on the Modified-Mercalli Intensity scale, which may result in minor damage to well-designed structures and significant damage to poorly-built structures.[34] The Richter scale is not used to express damage.[35]

2.6.3 Assets Exposed to Hazard

All critical facilities and personal and public property in Jasper County are susceptible to damage caused by an earthquake.

29 Georgia Emergency Management Agency, Georgia Earthquake Awareness Guide, April 2011, pg. 3
30 Georgia Emergency Management Agency, Georgia Earthquake Awareness Guide, April 2011, pg. 6
31 Retrieved on November 1, 2019 from the United States Geological Survey (USGS) website at https://earthquake.usgs.gov/learn/topics/
32 Georgia Emergency Management Agency, Georgia Earthquake Awareness Guide, April 2011, pg. 7
33 Retrieved on October 31, 2019, from the United States Geological Survey (USGS)website at earthquake.usgs.gov/learn/topics/mercalli
34 Retrieved on October 31, 2019 from the USGS Earthquake Hazard Program website at: earthquake.usgs.gov/learn/topics/mercalli
35 Retrieved on November 1, 2019 from the USGS Earthquake Hazard Program website at: https://www.usgs.gov/natural-hazards/earthquake-hazards/science/science-earthquakes?qt-science_center_objects=0#qt-science_center_objects


Georgia Earthquake Activity
June 1872 through November 2010
Updated February 14, 2011
5.0 and above
4.0 to 4.9
3.0 to 3.9
0.0 to 2.9
Earthquakes Prior to 1962
Most At Risk Counties
GEMA Areas
Tennessee
South Carolina
Alabama
Florida
Florida
GEMA
Geophysics
N
W
E
S

2.6.4 Estimate of Potential Losses

There are no damage records available in relation to Earthquakes. Loss would be determined based on intensity and magnitude and would vary in each case. The potential losses from an earthquake event are difficult to determine due to the variable intensity and magnitude associated with each earthquake event. The most readily identifiable damages from a significant earthquake event would be fallen trees, downed power lines, and ruptured gas lines. Structural damage can also occur during an earthquake event, depending upon the intensity and magnitude of the earthquake. At a level IV on the Modified Mercalli Intensity scale, windows and doors are disturbed and walls make cracking sound.[36] Within a structure, a sensation like a heavy truck striking the building can be felt. Standing motor cars are rocked noticeably. In a significant earthquake event, cracks in structural foundations can occur, as well as the cracking and/or buckling of sidewalks, driveways, and roads.

The fatality and injury rate may increase during and following an earthquake event, particularly for a resident population that is not accustomed to these conditions. Worksheet 3A - Severe Thunderstorms, Winter Storms, Wildfire, Drought, Earthquake, and Hazardous Material Spills (Appendix A) details the estimated value of property and number of people at risk. Because of the consolidated tax assessment system in place in Jasper County, division of this data by jurisdiction is not possible at this time.

2.6.5 Land Use and Development Trends

When evaluating the resilience of existing structures or the construction of new structures, it is important to consider that the following land and building characteristics are particularly susceptible to damage during an earthquake event: soft ground, weak slopes, and structures of poor quality that contain un-reinforced masonry or are built with earth, rubble, and/or stone. Structures with heavy roofs and above-ground infrastructure are also vulnerable to damage from an earthquake event.

2.6.6 Multi-Jurisdictional Concerns

Because there are no clearly defined faults in Georgia, it is difficult to predict where an earthquake event is going to occur and, therefore, the entire county is equally vulnerable.

2.6.7 Hazard Summary

Earthquakes can pose numerous risks to a community, including loss of life and injury, as well as significant economic loss. Depending on the location, magnitude, and intensity of an earthquake event, road conditions could be unsafe, resulting in a disruption to food supply and overall continuity of business.

Structural damage to critical facilities can result in the delay of deployment and receipt of lifeline services, including hospitals, nursing homes, and schools.

Overall, Jasper County has the potential, though moderate, to experience damage in relation to earthquakes. Because of this, specific mitigation goals have been developed and should receive adequate consideration. There have been no changes that would affect the overall vulnerability of Jasper County to the damage from earthquakes since the last plan update was completed.

36 Further details of the Modified Mercalli Intensity Scale are available at the USGS Earthquake Hazard Program website at: earthquake.usgs.gov/learn/topics/mercalli

Chapter 3 Technological Hazard, Risk, & Vulnerability

TABLE 3-1: SUMMARY OF UPDATES TO CHAPTER 3

Hazard	Section	Update
Hazardous Material Releases	**3.1.1 Hazard Identification**	Text revisions
	3.1.2 Hazard Profile	Text revisions; updated information
	3.1.3 Assets Exposed to Hazard	Text revisions, updated information
	3.1.4 Estimate of Potential Losses	Text revisions
	3.1.5 Land Use & Development Trends	Text revisions
	3.1.6 Multi-Jurisdictional Concerns	Text revisions
	3.1.7 Hazard Effects Summary	Text revisions

3.1 Hazardous Material Releases

3.1.1 Hazard Identification

Hazardous materials are chemical substances that, if released or misused, can pose a threat to the environment and the health and welfare of the population. These products are used in industry, agriculture, medicine, research, and consumer goods. They can take the form of explosives, flammable and combustible substances, poisons, and radioactive materials. The release of these substances into the environment is most often a result of transportation accidents or because of chemical spills in industrial areas.

The Jasper County Hazard Mitigation Planning Committee reviewed data from the Environmental Protection Division of the Georgia Department of Natural Resources in researching hazardous material spills in Jasper County. A major source of hazardous material accidents are spills along roadways, railways, and pipelines. Hazardous materials are substances that are harmful to the health and safety of people and property. Jurisdictions with facilities that produce, process, or store hazardous materials are at risk, as are facilities that treat, store, or dispose of hazardous wastes.

3.1.2 Hazard Profile

Transportation-related hazardous material releases carry the greatest exposure to risk and are nearly unpredictable because they typically involve an accident of some kind. There were 32 reported hazardous material releases in Jasper County between 2000 and 2013, as recorded by the Georgia Department of Natural Resources (DNR) Emergency Response Team (see the Jasper County Hazardous Events table in Appendix D). Since 2013, there have been no reported incidents of hazardous materials being released within the county. The majority of these incidents were the result of individuals, businesses, or utility departments (knowingly or unknowingly) releasing hazardous materials in or near waterways.

Based on the historic frequency recorded by DNR, the county can expect a hazardous material release event every 1.6 years. As DNR only records reported events through its complaint tracking system, this figure may misrepresent the actual number of individual releases. Due to the variable nature of the release of hazardous materials, defining the extent of this hazard is not practical.

3.1.3 Assets Exposed to Hazard

In identifying which assets are exposed to hazardous materials, we evaluated areas with facilities that might house or use hazardous materials. A half-mile-radius buffer was delineated around each facility

either known or suspected to use hazardous agents. All critical facilities located within these buffers would have the potential to be affected. 12 of the critical facilities are within .5 miles of a railroad, therefore, they are at risk for a hazardous spill.

While not as frequent as transportation-related spills, fixed facility releases are also possible in Jasper County. There are several sites within the County where significant quantities of hazardous materials are used or stored. Hazardous material releases can also pose a threat to the portions of the population that utilize wells for drinking water supplies and harm waterways throughout the County.

3.1.4 Estimate of Potential Losses

Jasper County has no recorded instances of critical facilities or property being damaged as a result of hazardous material spills. Due to this lack of data and the uniqueness of each situation, it is difficult to estimate the potential losses that could occur. The unpredictable nature of hazardous material releases makes it impossible to accurately estimate the specific time, conditions, amount, and concentration of many of the materials that pass through Jasper County daily. These variables make estimating future damages extremely difficult. Because of this hazard's unpredictability, it is important for the community to continue to monitor, learn about, and train to respond to these incidents. Worksheet 3A - Severe Thunderstorms, Winter Storms, Wildfire, Drought, Earthquake, and Hazardous Material Spills, found in Appendix A, details the estimated value of property and number of people at risk. Because of the consolidated tax assessment system in place in Jasper County, division of this data by jurisdiction is not possible at this time.

3.1.5 Land Use and Development Trends

Jasper County currently has no land use and development trends relative to hazardous materials spills.

3.1.6 Multi-Jurisdictional Concerns

Jasper County, including the municipalities, is vulnerable to the impact of hazardous materials release. While the county is likely most vulnerable to fixed facility releases due to the higher number of manufacturing facilities in the unincorporated areas of the county, there is also vulnerability county-wide to transportation-related releases due to the presence of highways and railways throughout. The City of Monticello may have a higher vulnerability to fixed facility releases than Shady Dale because of the concentration of fuel stations. For purposes of mitigation planning, however, all areas of the county are considered to be vulnerable to both fixed facility and hazardous materials release.

3.1.7 Hazard Summary

Although there is no apparent threat of a major hazardous materials release, the potential effects must be considered and mitigated. Spills can occur at points of operation, but greater potential damage, both to property and people, exist as these materials move through the county. The PDM Planning Committee identified roads, bridges, and rail lines where hazardous materials travel; mitigation actions that reduce potential losses resulting from hazardous materials are identified in chapter 5. In general, an increase in partnership and communication between facilities that store and use potentially hazardous materials and local emergency management personnel will help to reduce the likelihood of a release and allow a timely and appropriate response should one occur. Since the last plan update was completed, Jasper County has taken several steps to decrease the vulnerability of the population to the threats posed by hazardous material spills. A specific plan and protocols for dealing with a spill have been developed and implemented by the Emergency Management Department. The EMA also offers hazardous material operations and material training to all emergency personnel. In addition, a public awareness campaign

was implemented to inform the public about what types of incidents should be reported along with what information the person reporting needs to relate to 911 communications so the response to an incident can be as effective as possible.

Chapter 4 Natural Hazard Mitigation Goals & Objectives

TABLE 4-1: SUMMARY OF UPDATES TO CHAPTER 4

Hazard Type	Section	Update Summary
Introduction To Mitigation Strategy	**4.0.1 Mitigation Priorities**	Text revisions
	4.0.2 Capability Assessment	Text revisions
Severe Thunderstorms	**4.1.1 Community Mitigation Goals**	Text revisions
	4.1.2 Identification & Analysis of Range of Mitigation Options	Text revisions
	4.1.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
Drought	**4.2.1 Community Mitigation Goals**	Text changes
	4.2.2 Identification & Analysis of Range of Mitigation Options	Text changes
	4.2.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
Wildfire	**4.3.1 Community Mitigation Goals**	Text changes
	4.3.2 Identification & Analysis of Range of Mitigation Options	Text changes
	4.3.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
Winter Storms	**4.4.1 Community Mitigation Goals**	Text changes
	4.4.2 Identification & Analysis of Range of Mitigation Options	Text changes
	4.4.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
Floods	**4.5.1 Community Mitigation Goals**	Text changes
	4.5.2 Identification & Analysis of Range of Mitigation Options	Text changes
	4.5.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
Earthquakes	**4.5.1 Community Mitigation Goals**	Text revisions
	4.5.2 Identification & Analysis of Range of Mitigation Options	Text revisions
	4.5.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
All Hazards	**4.6 Mitigation Strategy and Recommendations**	Multiple changes/revisions

4.0 Introduction to Mitigation Strategy

4.0.1 Mitigation Priorities

Priorities have not changed significantly since the previous PDM update was adopted. The Planning Committee has determined that public awareness of hazards and increasing knowledge of notification systems are of increasing importance.

4.0.2 Capability Assessment

Jasper County and its municipalities' current mitigation capabilities include those listed below. All current mitigation capabilities apply to the entire county and its municipalities equally based on the 2018 Service Delivery Agreement Update, located in Appendix C.

1. **Planning and regulatory capabilities**
   a. Comprehensive Plan
   b. Local Emergency Operations Plan
   c. Community Wildfire Protection Plan
   d. Building Code (ICC – 2006, NEC – 2011); BCEGS Score: Commercial and Residential Class 7
   e. Fire Department ISO rating: 5/9
   f. Site plan review requirements
   g. Zoning, subdivision, floodplain, wildfire, stormwater ordinances
   h. Flood insurance rate maps
2. **Administrative and Technical Capabilities**
   a. Mitigation Planning Committee
   b. Public Works maintenance programs
   c. Mutual aid agreements for emergency response (Between Jasper County and its cities)
   d. Mutual aid agreements for emergency response (Between Jasper and all surrounding counties)
   e. Chief Building Official, Floodplain Administrator, Emergency Manager, Civil Engineer (ind. contractor)
   f. Tornado sirens, mass notification call system
3. **Financial Capabilities**
   a. Capital improvements project funding
   b. Community Development Block Grant
   c. Other federal funding programs
   d. State funding program
4. **Education and Outreach Capabilities**
   a. Local citizen groups, CERT
   b. Ongoing public education programs (annual fire safety and preparedness education programs)
   c. Natural disaster and safety-related school programs
   d. Firewise Communities certification (Turtle Creek subdivision)
   e. Public-private partnership initiatives addressing disaster-related issues (formed in 2013)

4.1 Severe Thunderstorms

4.1.1 Community Mitigation Goals

Severe Thunderstorms, which include hail, lightning, and tornados, pose the most serious threat to Jasper County and its residents based on the historic frequency of events discussed in Chapter 2. The extent and severity of a thunderstorm event are difficult to predict, making the identification of appropriate and effective mitigation strategies difficult. The highest priority for the county is to increase public awareness of the county's notification systems, CodeRed, prior to the development of a severe thunderstorm event.

4.1.2 Identification and Analysis of Range of Mitigation Options

Thunderstorms require both structural and non-structural mitigation strategies due to the widespread impacts these events may have. The most important mitigation strategy relates to public awareness, particularly for vulnerable populations. To this end, several mitigation actions relating to public education, engagement, and notification relating to all potential hazards in Jasper County have been identified in addition to mitigation opportunities to increase structural resistance to severe thunderstorms.

Mitigation options relating to new buildings and infrastructure primarily target new manufactured and mobile homes, ensuring they are reinforced to maintain their structural resistance during severe thunderstorms. Mitigation options for existing buildings and infrastructure address the vulnerability of critical facilities to lightning strikes and the reinforcements required to reduce the vulnerability of existing manufactured and mobile homes during severe thunderstorms.

4.1.3 Mitigation Strategy and Recommendations

The goals, objectives, and action steps for severe thunderstorms from the 2014 PDM Update were evaluated by Steering Committee members. The goals and objectives were updated to improve clarity and each "Action Step" was categorized as "completed," "in progress," "cancelled," or "postponed" (see Appendix D for this document). With the 2014 plan's "in progress" and "postponed" Action Steps as a starting point, the Steering Committee formulated a new list of mitigation Action Items. Updated mitigation Action Steps for severe thunderstorms are coded "ST."

Goal: Minimize the loss of life and damage to property due to severe thunderstorms throughout Jasper County and its municipalities

Objective 1: Educate the public on potential impacts and increasing public awareness of emergency preparations and procedures.

Objective 2: Provide means for advanced public notification through multiple outlets in the event of severe thunderstorms and tornados and significantly increase public registration for notification.

Objective 3: Improve preparedness and response measures to mitigate potential structural damage from severe thunderstorms and tornados.

Objective 4: Identify and protect vulnerable populations from the effects of severe thunderstorms and tornados.

TABLE 4-2: SEVERE THUNDERSTORMS AND TORNADO ACTION ITEMS

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party	Applicable Jurisdiction
ST 1	Work with private land owners to construct a shelter near mobile homes park	**3**	2023	Staff Time	General Fund	Jasper Co. EMA, Jasper Planning and Zoning	Jasper Co., Monticello, Shady Dale
ST 2	Continue to promote and encourage the use of CodeRed mass notification system to alert the public in the case of immediate threats	**1**	2020-2025	Staff Time	General Fund	Jasper Co. EMA, BOC and Sheriff's Office	Jasper Co., Monticello, Shady Dale
ST 3	Use local newspapers and social media to encourage the public to purchase weather radios and turn on weather alerts on their phones	**4**	2020-2025	Staff Time	General Fund	Jasper Co. EMA	Jasper Co., Monticello, Shady Dale
ST 4	Continue to raise awareness of tornado siren protocol through local newspapers	**5**	2020-2025	Staff Time	General Fund	Jasper Co. EMA/E-911, BOC, and	Jasper Co., Monticello, Shady Dale

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party	Applicable Jurisdiction
	and social media, with emphasis on social media					Sheriff's Office	
ST 5	Continue to conduct regular assessments of zoning and building codes to combat damages from severe thunderstorms	**5**	2020-2025	Staff Time	General Fund	Jasper Co. EMA and Jasper Co. Planning & Zoning	Jasper Co., Monticello, Shady Dale
ST 6	Develop a prioritized list of critical facilities in need of backup power sources	**2**	2021	Staff Time	General Fund	Local Emergency Planning Committee	Jasper Co., Monticello, Shady Dale

4.1.4 Special Multi-Jurisdictional Strategy and Considerations

Severe thunderstorm and tornado events can occur throughout the county and all areas are equally vulnerable, therefore all actions are applicable to Jasper County and the Cities of Monticello and Shady Dale.

4.1.5 Local Public Information and Awareness Strategy

A primary mitigation strategy involves the County's ability to quickly notify its residents of severe thunderstorm and tornado occurrences because of the rapid development of those storm events. It is also imperative that part of the mitigation strategy involves educating the public on preparedness to increase the safety of the population.

4.1.6 Action Steps Revisions

Appendix D includes a Report of Accomplishments table that indicates which Action Steps from the 2014 PDM Update were completed, postponed, in progress, or cancelled. Several of these "in progress" or "postponed" Action Steps were used as a starting point for the Action Items in this plan update. However, all of these Action Steps were revised and updated for increased clarity, readability, and usability.

Unchanged Action Steps: There were no unchanged Action Steps from the 2014 plan.

New Action Steps: All Action Items in this plan update are new, although several are based on Action Steps from the 2014 plan.

4.2 Drought

4.2.1 Community Mitigation Goals

As discussed in Chapter 2, droughts are prolonged events that affect the agricultural community and public and private water supplies. In addition to actions supporting livestock production during drought occurrences, the Steering Committee identified regulatory and resource-sharing Action Steps. Some actions relating to public education, engagement, and notification overlap with other hazards and are included in Section 4.6.

4.2.2 Identification and Analysis of Range of Mitigation Options

The Steering Committee considered the potential effects of drought and considered potential mitigation options. These options involve primarily non-structural mitigation in preventing any potential losses by

providing information to the public. It is possible that some structural options could be identified at a later date as drought effects are monitored and as the county continues to grow. Additionally, potential new sources of water were discussed.

Jasper County has adopted a water conservation ordinance and imposes watering restrictions during periods of drought. New construction within the county conforms to existing building codes and no special codes relating to drought are limited to xeriscaping guidelines.

Droughts may also greatly affect crop and livestock production. The Steering Committee considered mitigation options aimed at lessening the effects of drought on the local agricultural economy.

4.2.3 Mitigation Strategy and Recommendations

The goals, objectives, and Action Steps for drought from the 2014 PDM update were evaluated by Steering Committee members. The goals and objectives were updated to improve clarity, and each "Action Step" was categorized as "completed," "in progress," "cancelled," or "postponed" (see Appendix D of this document). With the 2014 plan's "in progress" and "postponed" Action Steps as a starting point, the Steering Committee formulated a new list of mitigation Action Items. Updated mitigation Action Steps for drought are coded with "D."

Goal: Minimize the impact of droughts on the local population, agriculture, economy, and water supply.

Objective 1: Through proactive education, ensure that all residents and workers in Jasper County are aware of the potential effects of prolonged droughts and strategies to conserve water.

Objective 2: Assist the community in developing mitigation strategies minimizing the impacts of droughts on the county's crops, livestock, water supply, and economy.

TABLE 4-3: DROUGHT ACTION ITEMS

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party	Applicable Jurisdiction
D1	Develop and conduct regular educational programs about water conservation, especially in regards to the effects of water shortages on the agricultural community	**2**	2020-2025	Staff Time	General Fund	Jasper Co. EMA, Jasper Co. Extension Office	Jasper Co. Monticello, Shady Dale
D2	Educate farmers to work with Farm Bureau on feed supply sharing programs during droughts	**1**	2021	Staff Time	General Fund	Jasper Co. Extension Office, Jasper Co. EMA	Jasper Co. Monticello, Shady Dale

4.2.4 Special Multi-Jurisdictional Strategy and Considerations

Though prolonged drought affects the entire county, the majority of the impacts are felt within the agricultural community.

4.2.5 Local Public Information and Awareness Strategy

The primary mitigation strategy involves increased public education and awareness to reduce the inefficient use of water by individual households. Key action steps relating to public information and awareness that apply to all hazards ("AH") are described in detail in Section 4.6.

4.2.6 Action Steps Revisions

Completed Action Steps, Unchanged Action Steps, and Deleted and/or Revised Action Steps

The 2014 PDM update included limited Action Steps for droughts. All Action Items in the plan update have been revised.

4.3 Wildfire

4.3.1 Community Mitigation Goals

The Committee determined that, while Droughts and Wildfire were considered as a single hazard in the 2014 plan, the mitigation goals and strategies were sufficiently distinct to warrant separate consideration in this plan update.

Although wildfires are categorized as randomly occurring events, in Jasper County they are most often associated with the following: dry weather due to seasonal conditions, human carelessness with burning of debris, machine use, lightning, children, campfires, smoking, and arson.

The highest mitigation priority is to maintain a cooperative relationship among municipalities, fire departments, and the Georgia Forestry Commission to minimize the potential damage to lives, property, natural resources, and the economy.

4.3.2 Identification and Analysis of Range of Mitigation Options

Uncontrolled fires can have devastating impacts on natural resources, property, and structures. Mitigation measures relating to structural impacts are largely related to fire protection services and increased training for local firefighters. Non-structural strategies are related to public education and awareness to increase fire prevention.

Water plays a major role in the county's ability to combat wildfires. The County's water service districts are designed to accommodate new growth in the county to ensure adequate access to water. This includes adequate fire protection service to new residential and commercial developments.

Every community has natural and built features that shape the community's identity. These areas are known as character areas. Wildfires pose a threat to community character areas near developed areas, including the County's incorporated areas. A wildfire can harm the natural and built features that makes a community unique.

Even though there are no specific mitigation strategies for new buildings or infrastructure, it is recommended to guide new development to areas in and around existing development, leaving significant buffer areas so that prescribed burns can continue and, in the event of a wildfire, they can establish control lines to protect development.

Mitigation options relating to existing buildings and infrastructure are targeted towards the increased training of all firefighters reducing the vulnerability of land, life, and property countywide.

4.3.3 Mitigation Strategy and Recommendations

The goals and objectives from the 2014 plan were evaluated and analyzed by the Steering Committee, and the goals and objectives were unchanged.

Goal: Reduce the potential for damage to the general population and personal and public property resulting from the impacts of wildfires.

Objective 1: Protect lives, property, the environment, and the economy in Jasper County through continued implementation of the CWPP.

TABLE 4-4: WILDFIRE ACTION ITEMS

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party	Applicable Jurisdiction
WF 1	Create and implement fire safety awareness programs for county/city employees	**2**	2022	Staff Time	General Fund	Jasper Co. Fire, Jasper Co Sheriff's Office	Jasper Co., Monticello, Shady Dale
WF 2	Inform the public, through social media, of the importance of clearing underbrush a safe distance from house	**3**	2020-2025	Staff Time	General Fund	Jasper Co. EMA, Jasper Co Fire	Jasper Co., Monticello, Shady Dale
WF 3	Inform the public, through Jasper County FD Facebook page, of 911 signs available through the Jasper County Fire Department	**4**	2022	Staff Time	General Fund	Jasper Co. Fire	Jasper Co., Monticello, Shady Dale
WF 4	Collaborate with state and county agencies to develop and conduct regular educational programs addressing the risks of wildfire and potential mitigation action	**5**	2023	Staff Time	General Fund	Jasper Co. Fire, Georgia Forestry Comm.	Jasper Co., Monticello, Shady Dale
WF 5	Work to increase the awareness of the Community Wildfire Protection Plan among the public and county/city employees	**5**	2020-2025	Staff Time	General Fund	Jasper Co. Fire	Jasper Co., Monticello, Shady Dale
WF 6	Purchase truck with skid unit for local wildland firefighting	**1**	2025	$110,000	General Fund or Grants	Jasper Co. Fire	Jasper Co., Monticello, Shady Dale
WF 7	Develop a protection plan for critical facilities in wildfire hazard areas	**5**	2020-2025	Staff Time	General Fund	Jasper Co. EMA	Jasper Co., Monticello, Shady Dale

4.3.4 Special Multi-Jurisdictional Strategy and Considerations

There are no discernible patterns in the location of wildfires throughout the county and, therefore, each jurisdiction is equally susceptible.

4.3.5 Local Public Information and Awareness Strategy

The primary mitigation strategy involves increased public education and awareness to increase individual responsibility in preventing unnecessary wildfires. Key action steps relating to public information and awareness that apply to all hazards ("AH") are described in detail in section 4.7.

4.3.6 Action Steps Revisions

Completed, Unchanged, and Deleted and/or Revised Action Steps

The 2014 PDM update included no Action Steps for wildfires. All Action Items in this update are new.

4.4 Winter Storms

4.4.1 Community Mitigation Goals

Although winter storms do not occur as frequently as in northern climates, they can still impact Jasper County. As discussed in Chapter 2, winter storms may bring about accumulated ice on roads, trees, and power lines that create dangerous conditions and cause structural damage. While there is little that can be done to mitigate the accumulation of ice, increasing public education and awareness regarding safety procedures during winter storm events is the highest priority in reducing the population's vulnerability.

4.4.2 Identification and Analysis of Range of Mitigation Options

The majority of damage related to winter storm events is structural in nature, resulting from fallen tree limbs. Structural damage is also the most difficult to mitigate. Local power companies have a power line right-of-way (ROW) cutting strategy in place, and the County has an ordinance prohibiting planting trees in rights-of-way or utility easements.

The primary focus for reducing the county's vulnerability is to increase public awareness, particularly related to the dangers associated with driving during winter storm conditions. Mitigation actions relating to public education, engagement, and notification pertaining to all potential hazards in Jasper County have been identified, and are located in Section 4.6 of this document.

There are few other policies, regulations, ordinances, or land use trends that relate directly to the mitigation of winter storm events. With this in mind, the mitigation strategies formulated by the Steering Committee are focused on awareness and adequate preparation. Many winter storm-related mitigation measures also mitigate the impacts of other hazards; these measures are included in Section 4.7.

Every community has natural and built features that shape the community's identity. These areas are known as character areas. There are no immediate threats to any community character areas as a result of winter storms.

There are no specific mitigation strategies for new buildings or infrastructure.

Mitigation options relating to existing buildings and infrastructure are targeted towards ensuring that emergency power sources are adequate, operational, and efficient at all critical facilities.

4.4.3 Mitigation Strategy and Recommendations

The goals, objectives, and Action Steps for winter storms from the 2014 PDM update were evaluated by Steering Committee members. The goals and objectives were updated to improve clarity, and each "Action Step" was categorized as "completed," "in progress," "cancelled," or "postponed" (see

Appendix D for this document). With the 2014 plan's "in progress" and "postponed" Action Steps as a starting point, the Steering Committee formulated a new list of mitigation Action Items. Updated mitigation action steps for winter storms are coded with "WS."

Goal: Minimize the impacts of winter storms on lives, property, and the economy throughout the county.

Objective 1: Educate the public and government staff on potential impacts of winter storms and increase public awareness of emergency preparations and procedures.

Objective 2: Improve preparedness and response measures to mitigate potential damage from winter storms, including protecting critical facilities.

TABLE 4-5: WINTER STORM ACTION ITEMS

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party	Applicable Jurisdiction
WS 1	Install a new generator at the local hospital	**1**	2020	$150,000	General Fund or Grant	Jasper Co. EMA	Jasper Co., Monticello, Shady Dale
WS 2	Continue to educate public about the dangers posed by winter storms, utilizing social media and PDM website	**3**	2021	Staff Time	General Fund	Jasper Co. EMA	Jasper Co., Monticello, Shady Dale
WS 3	Ensure adequate supplies of winter storm response materials, such as sand, salt, chainsaws, and safety gear	**2**	2021	Staff Time	General Fund	Jasper Co. Public Works, Jasper Co Fire	Jasper Co., Monticello, Shady Dale
WS 4	Develop and implement a county-wide winter storm sheltering plan	**2**	2020	Staff Time	General Fund	Jasper Co. EMA	Jasper Co., Monticello, Shady Dale

4.4.4 Special Multi-Jurisdictional Strategy and Considerations

Winter storms affect all of Jasper County and mitigation strategies are applicable to the entire county and all municipalities.

4.4.5 Local Public Information and Awareness Strategy

The primary mitigation strategy involves increased public education and awareness to reduce the potential for personal injury resulting from vehicular crashes. The nature of winter storms (typically predictable events with weather conditions building throughout the day) allows for a greater timeframe to generate public warnings. The immediacy of public safety warnings is not as critical as during rapidly occurring events, such as tornados.

Key Action Steps relating to public information and awareness that apply to all hazards ("AH") are described in detail in Section 4.6.

4.4.6 Action Steps Revisions

Completed Action Steps: All Action Steps identified in the 2014 PDM update were not fully completed due to their ongoing nature. The Steering Committee modified the language of these Action Items to be more defined and measurable, where possible.

Unchanged Action Steps: There were no unchanged Action Steps from the 2014 plan.

New Action Steps: All Action Steps from the 2014 plan will carry over to this update with revised wording.

4.5 Floods

4.5.1 Community Mitigation Goals

Flooding has occurred in Jasper County and is typically associated with severe thunderstorms during the Atlantic hurricane season (June–November). The majority of flood damage is limited to facilities within the floodplains of streams and rivers. Jasper County remains a mix of suburban and rural areas, with limited concentrations of urbanized areas containing high percentages of impervious surfaces. The highest priority in the county is mitigating flood damage to roadways lying within the flood hazard boundary.

4.5.2 Identification and Analysis of Range of Mitigation Options

The major implications resulting from flood events relates to structural damages. It is important that the County and each of the cities continue to monitor development adjacent to flood-prone areas (as indicated on floodplain maps) to minimize the impacts of flooding.

Jasper County and the City of Monticello currently participate in the National Flood Insurance Program (NFIP). Because of the lack of identified floodplains within the city limits, Shady Dale does not participate. All municipalities are aware of the County's compliance with NFIP standards, as addressed under the Jasper County Comprehensive Plan, which is supported by all municipalities within the county. There are no immediate threats to any community character area as a result of flooding.

Mitigation options relating to new buildings and infrastructure are targeted toward the enforcement of ordinances directing all new construction and development away from identified flood hazard areas.

Mitigation options relating to existing buildings and infrastructure are targeted towards monitoring and recording flood conditions and taking actions to reduce recurring flood damage to facilities (specifically roadways) located within identified hazard areas.

4.5.3 Mitigation Strategy and Recommendations

The goals, objectives, and Action Steps for flooding from the 2014 PDM update were evaluated by Steering Committee members. The goals and objectives were updated to improve clarity, and each "Action Step" was categorized as "completed," "in progress," "cancelled," or "postponed" (see Appendix D of this document). With the 2014 plan's "in progress" and "postponed" Action Steps as a starting point, the Steering Committee formulated a new list of mitigation Action Items. Updated mitigation Action Steps for flooding are coded "FL."

Goal: Reduce the impact of floods throughout the county through floodplain management and mitigation strategies

Objective 1: Minimize damage to lives and property resulting from floods through policy and mitigation efforts

Objective 2: Pursue policies that work toward protecting new development from the effects of flooding

TABLE 4-6: FLOOD ACTION ITEMS

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party	Applicable Jurisdiction
FL 1	Develop county-wide policies to use floodplain areas for forestry, recreation, and green space preservation while limiting new construction	**2**	2022	Staff Time	General Fund	Jasper Co. EMA, BOC & Planning & Zoning	Jasper Co., Monticello, Shady Dale
FL 2	Continue to identify and replace deficient bridges and culverts in flood-prone locations including: 1. River Rd. 2. Wicker RD. 3. New Hope Church Rd. 4. Kinard Creek Rd. 5. Cook Rd. 6. Old Adgateville Rd. 7. Ozborne Rd. 8. Benton Rd. 9. Clay Tillman Rd.	**1**	2020-2025	$5,000,000	General Fund, Grants	Jasper Co. Public Works	Jasper Co., Monticello, Shady Dale
FL 3	Continue to enforce and update floodplain maps and ordinances	**3**	2020-2025	Staff Time	General Fund	Jasper Co. Planning & Zoning	Jasper Co., Monticello, Shady Dale
FL 4	Continue compliance with NFIP criteria by enforcing Land Development Regulations	**4**	2020-2025	Staff Time	General Fund	Jasper Co. Planning & Zoning	Jasper Co., Monticello, Shady Dale

4.5.4 Special Multi-Jurisdictional Strategy and Considerations

Flood events are typically constrained by the delineation of flood hazard boundaries; however, those boundaries can expand based on the intensity of the flood event. Monticello, Shady Dale, and unincorporated Jasper County all contain areas where, given the right conditions, flooding could occur.

4.5.5 Local Public Information and Awareness Strategy

In order to increase public awareness of the risks associated with flood events it is important that the jurisdictional maps illustrating the flood hazard boundaries be publicized and on display in public areas to allow the population to develop a better understanding of the risks associated with construction in flood-prone areas. The nature of floods (typically slow-building events) allows for a greater timeframe to generate public warnings. The immediacy of public safety warnings is not as critical as during rapidly occurring events, such as tornados.

4.5.6 Action Steps Revisions

Completed Action Steps: All Action Steps from the 2014 PDM update were determined to be "ongoing" and were used as the basis for this plan's Action Items.

Unchanged Action Steps: There were no unchanged Action Steps from the 2014 plan.

Deleted and/or Revised Action Steps: All Action Steps identified in the 2014 plan were not fully completed due to their ongoing nature. The Steering Committee modified the language of these Action Items to be more defined and measurable, where possible.

4.6 Earthquakes

4.6.1 Community Mitigation Goals

There is a low probability that an earthquake will occur within Jasper County. Earthquake risk is due, primarily, to proximity to seismic activity zones in the Appalachian Mountains and fault lines off the shore of South Carolina. In more recent years, minor earthquakes have been felt, although no damage has been reported. Due to a relatively low risk factor, the primary focus for earthquake mitigation in Jasper County is outreach and education. Actions relating to public education, engagements, and notification pertinent to all potential hazards, including earthquakes, are included in Section 4.7.

4.6.2 Identification and Analysis of Range of Mitigation Options

Mitigation measures relating to structural impacts of earthquake events are related to identifying structures within the county that could sustain significant damage. Non-structural strategies are related to public education and awareness of the risk of earthquakes within the county.

There are no existing policies, regulations, ordinances, and/or land use restrictions relating to earthquakes.

4.6.3 Mitigation Strategy and Recommendations

The goal, objectives, and Action Steps for earthquakes were developed by Steering Committee members. The mitigation action step for earthquakes is coded with "EQ," and is applicable for all jurisdictions in Jasper County.

Goal: Minimize the loss of life and property in the event of an earthquake.

Objective 1: Educate the public on its role in earthquake preparation and response measures.

Objective 2: Protect critical facilities and other structures from damage in the event of an earthquake.

TABLE 4-7: EARTHQUAKE ACTION ITEMS

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party	Applicable Jurisdiction
EQ 1	Identify and implement new ways to educate the public on earthquake preparedness.	**1**	2020-2025	Staff Time	General Fund	Jasper Co. EMA	Jasper Co., Monticello, Shady Dale
EQ 2	Continue to evaluate building codes' ability to protect against earthquake damage and update as needed.	**2**	2020-2025	Staff Time	General Fund	Jasper Co. EMA and Planning & Zoning	Jasper Co., Monticello, Shady Dale

4.7 All Hazards

The following Action Items apply to of the hazards found in sections 4.1-4.5.

TABLE 4-8: ALL HAZARDS ACTION ITEMS

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party	Applicable Jurisdiction
AH 1	Host educational outreach activities through a variety of channels, including schools, public meetings, and social media.	**1**	2020-2025	Staff Time	General Fund	Jasper Co. EMA & Local Emergency Planning Committee	Jasper Co., Monticello, Shady Dale
AH 2	Develop a county-wide sheltering plan in coordination with DFACS and the Red Cross.	**2**	2022	Staff Time	General Fund	Jasper Co. EMA	Jasper Co., Monticello, Shady Dale
AH 3	Develop a storm spotter training program for county employees.	**3**	2025	Staff Time	General Fund	Jasper Co. EMA	Jasper Co., Monticello, Shady Dale
AH 4	Develop emergency response training programs for all appropriate county employees.	**2**	2021	Staff Time	General Fund	Jasper Co. EMA	Jasper Co., Monticello, Shady Dale
AH 5	Develop a county-wide social media policy.	**3**	2020	Staff Time	General Fund	Jasper Co. BOC	Jasper Co., Monticello, Shady Dale
AH 6	Utilize the public awareness site with information on emergencies, including contact numbers, shelters, and home safety procedures.	**4**	2020	Staff Time	General Fund	Jasper Co. BOC and EMA	Jasper Co., Monticello, Shady Dale
AH 7	Provide weather radios to elderly citizens and those in high-risk areas.	**4**	2021	$1,000	General Fund or Grants	Jasper Co. EMA	Jasper Co., Monticello, Shady Dale
AH 8	Place signs along the roadway to alert people of to the County's emergency preparedness information.	**4**	2020-2025	$3,000	General Fund or Grants	Jasper Co. EMA and Public Works	Jasper Co., Monticello, Shady Dale
AH 9	Run a coordinated campaign to significantly increase the percentage of County residents registered for CodeRed alerts.	**1**	2020-2025	Staff Time	General Fund	Jasper Co. EMA	Jasper Co., Monticello, Shady Dale
AH 10	Work with Tax Assessors Office to update critical facilities values, square footage and GIS information	**3**	2020-2025	Staff Time	General Fund	Jasper Co. EMA, Jasper Co. Tax Assessors	Jasper Co.
AH 11	Acquire backup generators for all critical facilities.	**1**	2020-2025	$100,000	General Fund and Grants	Jasper Co. EMA, Jasper Co. BOC, City of Monticello, City of Shady Dale	Jasper Co., Monticello, Shady Dale

Chapter 5 Technological Hazard Mitigation Goals & Objectives

TABLE 5-1: SUMMARY OF UPDATES TO CHAPTER 5

Hazard	Section	Update
Hazardous Material Releases	**5.1.1 Community Mitigation Goals**	Text Revisions
	5.1.2 Identification & Analysis of Range of Mitigation Options	No changes
	5.1.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
	5.1.4 Special Multi-Jurisdictional Strategy and Considerations	No changes
	5.1.5 Local Public Information and Awareness Strategy	Text Revisions
	5.1.6 Action Steps Revisions	Text Revisions

5.0 Introduction to Mitigation Strategy

5.0.1 Mitigation Priorities

Priorities have not changed significantly since the 2014 PDM update. The Steering Committee has determined that public awareness of technological hazards and increasing knowledge of notification systems are of increasing importance.

5.0.2 Capability Assessment

Jasper County and its municipalities' current mitigation capabilities include those listed below. All current mitigation capabilities apply to the entire county and its municipalities.

1. **Planning and regulatory capabilities**
   a. Comprehensive Plan
   b. Local Emergency Operations Plan
   c. Community Wildfire Protection Plan
   d. Building Code (ICC – 2006, NEC – 2011); BCEGS Score: Commercial and Residential Class 7
   e. Fire Department ISO rating: 5/9
   f. Site plan review requirements
   g. Zoning, subdivision, floodplain, wildfire, storm water ordinances
   h. Flood insurance rate maps
2. **Administrative and Technical Capabilities**
   a. Mitigation Planning Committee
   b. Public Works maintenance programs
   c. Mutual aid agreements for emergency response (Between Jasper County and its cities)
   d. Mutual aid agreements for emergency response (Between Jasper and all surrounding counties)
   e. Chief Building Official, Floodplain Administrator, Emergency Manager, Civil Engineer (ind. contractor)
   f. Tornado sirens, mass notification call system
3. **Financial Capabilities**
   a. Capital improvements project funding
   b. Community Development Block Grant (eligible but not received)
   c. Other federal funding programs
   d. State funding program
4. **Education and Outreach Capabilities**
   a. Local citizen groups, CERT
   b. Ongoing public education programs (annual fire safety and preparedness education programs)
   c. Natural disaster and safety-related school programs
   d. Firewise Communities certification (Turtle Creek subdivision)
   e. Public-private partnership initiatives addressing disaster-related issues (formed in 2013)

5.1 Hazardous Material Releases

5.1.1 Community Mitigation Goals

Hazardous material releases are difficult to predict because those producing the greatest damages are typically associated with spontaneous transportation accidents (tractor trailers overturning or train derailment). Because of the location of major transportation corridors (both road and rail) intersecting the county and in proximity to key critical facilities, the highest priority is to develop an assessment of the county's vulnerability to hazardous material releases.

The Planning Committee considered mitigation of the effects of a hazardous material release (the most significant technological hazard that may affect the county) and identified measures to address training and awareness concerns, with a focus toward prevention of incidence and protection of the environment.

5.1.2 Identification and Analysis of Range of Mitigation Options

In addressing mitigation for hazardous materials, both structural and non-structural actions were considered and, ultimately, no structural projects were deemed feasible over the five-year life of this plan update. All of the goals that were established were short-term goals.

Hazardous material releases have the potential to occur with greater frequency on or near roads, rail lines, and bridges, making collaboration and communication with both the public and private entities that store and transport hazardous materials a high priority.

There are no policies, regulations, ordinances, or land use trends that relate to the mitigation of hazardous material releases.

Every community has natural and built features that shape the community's identity. These areas are known as character areas. There are no immediate threats to any community character area as a result of hazardous material releases.

There are no specific mitigation strategies for new buildings or infrastructure.

There are no specific mitigation strategies for existing buildings or infrastructure outside of emergency response facilities.

5.1.3 Mitigation Strategy and Recommendations

The goal, objectives, and Action Steps for winter storms from the 2014 PDM Update were re-evaluated by Steering Committee members. The goal and objectives were revised for increased clarity, applicability, and organization. The Steering Committee completed a report on mitigation actions identified in the previous plan (see Appendix D of this document) and revised those actions, as necessary. Updated mitigation Action Steps for Hazardous Material Releases are coded with "HR."

Goal 1: Mitigate the potential loss of life and property resulting from the release of hazardous materials.

Objective 1: Ensure proper training of city and county response personnel for hazardous material releases.

Goal 2: To reduce the negative impacts of hazardous materials releases on lives, property, and the environment.

Objective 2: Ensure that warning and communication systems are able to meet the needs of response personnel and the public.

TABLE 5-2: HAZARDOUS MATERIAL RELEASE ACTION ITEMS

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party	Applicable Jurisdiction
HM 1	Identify known Hazmat Materials within Jasper County and conduct preplanning for possible mitigation of hazards for known material.	**3**	2020-2021	Staff Time	General Fund	Jasper Co. Fire	Jasper Co., Monticello, Shady Dale
HM 2	Conduct and engage in Hazmat Material training with local, state, and federal partners to establish common level of response up to the Hazmat Operation level for Fire Department members. (Decon Operations)	**6**	2020-2025	Staff Time	General Fund	Jasper Co. Fire	Jasper Co., Monticello, Shady Dale
HM 3	Conduct yearly refresher Hazmat Training for the Fire Department.	**5**	2020-2025	Staff Time	General Fund or Grants	Jasper Co. Fire	Jasper Co., Monticello, Shady Dale
HM 4	Purchase/Obtain Hazmat tools and equipment needed for safe operations up to the operations level to include such equipment for common Hazmat incidents. (Gas leaks, fuel spills, detection)	**1**	2021	$15,000	Grants and General Fund	Jasper Co. Fire	Jasper Co., Monticello, Shady Dale
HM 5	Continue to evaluate and review hazardous materials response plan.	**4**	2020-2025	Staff Time	General Fund	Jasper Co. Fire	Jasper Co., Monticello, Shady Dale
HM 6	Obtain a transport vehicle for Hazmat trailer to respond to Hazmat incidents.	**2**	2014-2019	$45,000	General Fund and Grants	Jasper Co. Fire	Jasper Co., Monticello, Shady Dale

5.1.4 Special Multi-Jurisdictional Strategy and Considerations

There are no special multi-jurisdictional requirements necessary for hazardous material releases. A potential event is most likely to occur near transportation lines, but is nevertheless possible in any jurisdiction.

5.1.5 Local Public Information and Awareness Strategy

The Steering Committee recommends utilizing the local media and emergency response agencies in a coordinated effort to provide Public Service Announcements, make available persons to publicly address the dangers associated with and any applicable preventative measures for hazardous materials release, and to provide contact information to facilitate communication with the public.

5.1.6 Action Steps Revisions

Completed Action Steps: The majority of Action Steps identified in the 2014 PDM update were discarded and replaced with achievable strategies.

New Action Steps: Almost all of the Action Steps are new to this update. The new steps set realistic actions for the Jasper County Fire Department to take over the next 5 years, and were developed by the Fire Chief.

Chapter 6: Executing the Plan

TABLE 0-1: SUMMARY OF UPDATES TO CHAPTER 6

Section	Update Summary
6.1 Implementation Action Plan	Text revisions
6.2 Evaluation, Monitoring, Updating	Text revisions
6.3 Multi-Jurisdictional Strategy and Considerations	Text revisions
6.4 Plan Update and Maintenance	Text revisions

6.1 Implementing the Action Plan

The Jasper County Emergency Management Agency served as the primary local contact during the development of the 2020 Jasper County Pre-Disaster Mitigation Plan Update. The Northeast Georgia Regional Commission (NEGRC) assisted by facilitating the planning process and assembling the relevant information into the updated document. Upon review and approval by the Georgia Emergency Management Agency (GEMA), all participating jurisdictions will formally adopt the planning document by resolution.

Under the direction of the Jasper County Board of Commissioners, the Director of the Jasper County Emergency Management Agency (EMA) assumes responsibility for the maintenance of the plan and for coordinating the pursuit of implementation strategies set forth within the document. Following a timeframe of no more than five years (2020-2025), the EMA Director will convene a planning committee to update and revise the planning document, as well as the mitigation strategies, following the same process that was used to prepare this update, contingent on FEMA standards in place at the time of the update.

It is imperative that the EMA monitors the progress of the plan and the implementation of the identified strategies to ensure that pre-disaster mitigation efforts are maximized throughout the county.

Mitigation strategies within this document were revised, developed, and prioritized by the Steering Committee. NEGRC facilitated a quantitative prioritization process using the STAPLEE (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) method. For every identified mitigation action, the Steering Committee was charged with assigning a rating under each STAPLEE component with a "+" for favorable, a "-" for less favorable, and "N/A" for not applicable. These symbols were then assigned numerical values as follows: "+" = 1, "-" = -1, and "N/A" = 0. NEGRC staff calculated the scores for each mitigation action and presented them to the Steering Committee.

Jasper County and all municipalities will work to incorporate the updated PDM Action Plan into their joint Comprehensive Plan (including individual Short Term Work Program Updates) to create a more cohesive planning document. During the Comprehensive Plan update process, the PDM should be distributed to county and municipal agencies, as well as made available at the public input meetings to inform residents and staff of the PDM's strategies and priorities. Additionally, the PDM Planning Committee should be consulted during the Comprehensive Plan update process to ensure that the PDM is adequately incorporated into the Comprehensive Plan and local Short Term Work Programs.

Mitigation strategies from the previous PDM update were incorporated into County regulations and protocol, most notably with regard to land use. The actions identified in the mitigation strategy for flooding in the 2014 PDM update have been incorporated into Jasper County's development review procedure to regulate new development. Additionally, the County has worked with land owners to steer development away from identified floodplains and instead utilize that land for forestry, recreation, and greenspace preservation. The 2014 PDM's communication and outreach Action Items have also guided the way that the County and the Cities of Monticello and Shady Dale communicate with residents about other potential hazards.

6.2 Evaluation, Monitoring, Updating

The Jasper County Pre-disaster Mitigation Plan will be updated throughout the five-year cycle from 2020-2025. The updates will include updating potential hazards within the county, updating action steps, and updating the NCDC storm data. The organizational framework of PDM Planning Committee will be used to solicit input from representative county and municipal departments. These departments and their staff are knowledgeable about PDM Planning and can assist in monitoring plan implementation. The overall responsibility for coordinating this process will be the Director of the Jasper County Emergency Management Agency (EMA).

The Jasper County EMA Director will schedule required meetings, as needed, to facilitate the review and evaluation process. The extent and level of participation of these meetings will be based on the prior year's mitigation activities, as determined by the EMA Director. Involvement will include the County and all municipalities. The plan will be evaluated for its perceived or actual effectiveness in mitigating the negative impacts of hazard events. The action steps and goals will be evaluated to determine if the PDM Update goals and action steps are achievable. The results of these plan evaluation meetings will be recorded and any required changes or amendments to the plan reported to GEMA by the Jasper County EMA.

It is anticipated that regular updates will be submitted to the GEMA On-line Tool. The GMIS tool is an online platform operated by GEMA and the Information Technology Outreach Service (ITOS) of the University of Georgia, which allows the planner to update critical facilities and other information. These updates will include amendments and additions to existing critical facilities. In some cases, information on selected sites was unavailable during this plan's preparation. The Jasper County EMA will oversee the addition of new critical facility information to the GEMA On-line Tool, as it becomes available. New information will include the addition of "points" (or critical facilities) that exist as secondary structures within governmental facilities and the update of critical facilities' dollar valuations as new assessments occur (to provide an accurate estimate of potential losses).

6.3 Multi-Jurisdictional Strategy and Considerations

All goals, objectives, and strategies set forth in this planning document are relevant to Jasper County as well as the cities of Monticello and Shady Dale, unless specifically stated otherwise. Each of the jurisdictions participated in the planning process and has authorized the Jasper County EMA to act on its behalf with regard to disaster mitigation, as set forth in the Service Delivery Strategy.

6.4 Plan Update and Maintenance

During the PDM update process, public involvement and participation was encouraged. The purpose of this involvement was to inform and educate the public about the PDM and receive local expertise about hazard events, critical facilities, and mitigating any potential losses. The locals have the best knowledge on hazards due to their experience of living in Jasper County.

In maintaining this PDM document, public involvement will be solicited through public notification via newspapers. Social media, CodeRed, and story maps. Any required or special meetings will be scheduled, as required, at the discretion of the Jasper County EMA, in coordination with the Jasper County Manager's Office. The Jasper County EMA will facilitate regular administrative updates to the PDM, as well as updates to the GEMA On-line Tool. More specifically, new and updated data will be added to the critical facilities list. Updates will account for all jurisdictions. The Planning and Steering Committees will meet again in May of 2024 to begin the full PDM Update process.

Chapter 7 Conclusion

TABLE 7-1: SUMMARY OF CHANGES TO CHAPTER 7

Section	Update Summary
7.1 Conclusion Summary	Text revisions
7.2 References	Revised to reflect updated references

7.1 Conclusion Summary

The planning process has provided Jasper County officials, emergency personnel, staff, and the general public with a greater understanding of the county's vulnerability to natural and technological hazards. This process has allowed the community to identify and refine mitigation measures that minimize the adverse impacts resulting from hazard events.

As the community moves forward in implementing the identified mitigation strategies, periodic reviews will be conducted to assess the continued relevance of the established goals and objectives and define new projects worthy of funding. Although the implementation of mitigation measures requires the expenditure of funds in some cases, it has been proven throughout the nation and the world that dollars spent on hazard mitigation can reduce long-term expenditures by minimizing the community's vulnerability to natural and technological hazards by protecting people and property. It is essential that the pre-disaster mitigation planning process retain strong political and public support, thereby ensuring that the identified implementation strategies will be pursued.

The Jasper County PDM should guide the planning and implementation of future mitigation actions. It represents the involvement and contributions of key governmental departments, their representatives, as well as the general public. The PDM is intended as a 'living document,' used on a daily basis and adjusted with changes in the community. As the county continues to grow and develop, this plan's information will be updated to address changes and accommodate additional local needs, as necessary.

7.2 References

Documents/Publications

- Federal Emergency Management Agency Local Multi-Hazard Mitigation Planning Guidance (2013)
- FEMA Multi-Jurisdictional Pre-Disaster Mitigation Plan Update Guidance Template (2013)
- FEMA State and Local Mitigation Planning How-To Guide (2015)
- 2019 State of Georgia Hazard Mitigation Strategy
- 2018 Jasper County Comprehensive Plan

Websites

- Federal Emergency Management Agency: www.ready.gov
- Georgia Emergency Management Agency: www.gema.state.ga.us
- Georgia Department of Natural Resources: www.dnr.state.ga.us/dnr/environ
- Office of Hazardous Materials Safety: hazmat.dot.gov/index.html
- National Climatic Data Center: www.ncdc.noaa.gov/oa/ncdc.html
- Georgia Forestry Commission: www.gfc.state.ga.us
- Federal Emergency Management Agency: www.fema.gov
- Georgia Department of Community Affairs: www.dca.state.ga.us
- State of Georgia Government: www.georgia.gov

Appendix A:

Hazard Identification, Risk Assessment, & Vulnerability

Severe Thunderstorms

Referenced in Chapter 2 – Section 2.1

As discussed in Chapter 2 – Section 2.1 Severe Thunderstorms include Tornados, Hail, and Lightning, each described in the following section.

Description

Thunderstorms are most prevalent in the central and southern United States. Each year, an average of 100,000 thunderstorms occur. A thunderstorm forms from rapidly rising warm air that is lifted by either a warm or cold front. Moisture must also be present under these conditions to produce a thunderstorm that can occur singly, in clusters, or in lines. A thunderstorm can also produce other hazards that include: heavy rain, strong winds, hail, lightning, and tornados.

The National Weather Service provides information about thunderstorms through watches and warnings. A thunderstorm watch means that winds in excess of 58 miles per hour and/or hail are likely to develop. A warning means a thunderstorm has been sighted and everyone should proceed to a safe location. In general, thunderstorms can cause significant damage and disruption of services. Power outages can occur and traffic flows can be severely disrupted. Thunderstorms also pose a high risk for loss of life; advisories help protect the public from this hazard.

Hail:

A hailstone is a product of the updrafts and down-drafts that develop inside the cumulonimbus clouds of a thunderstorm, where super-cooled water droplets exist. The transformation of droplets to ice requires not only a temperature below 32F (0C), but also a catalyst in the form of tiny particles of solid matter, or freezing nuclei. Continued deposits of super-cooled water cause the ice crystals to grow into hailstones. What we generally call hailstones have passed through several stages of accretion, from the first stage, called graupel, to small hail, to hailstones. Sometimes, only the first stage is reached; at other times, hailstones from two or more stages may fall to earth simultaneously. By scientific agreement, an icy conglomeration is called a hailstone when it reaches a diameter of 1/5 inch (5 mm). In all its forms, hail usually occurs in relatively short episodes as opposed to steady precipitation.

Lightning:

By definition, all thunderstorms contain lightning, which occurs when the difference between the positive and negative charges becomes great enough to overcome the resistance of the insulating air and to force a conductive path for current to flow. Electrical potential can be as much as 100 million volts and strikes can occur from cloud to cloud, cloud to ground, or from ground to cloud. The summer months of June through August represent the peak of lightning strikes in the state of Georgia.

Tornadoes:

Tornados' strength is determined by their wind speeds, which range from 40-318 miles per hour. All tornados come from the same conditions: a violent column of air reaching from a thunderstorm to the ground. This column of air can also travel across land, reach up to one-mile diameter over a distance of up to fifty miles. The path a tornado travels is unpredictable.

In Georgia, tornado season occurs from March through August. However, a tornado can occur in any given month if the right atmospheric conditions exist. In most cases, tornados strike in the afternoon and evening hours. A tornado's conditions typically involve a layer of cold air overriding a layer of warm air that forces the warm air to rise quickly. This combination of air temperatures is most often produced from the results of thunderstorms and hurricanes, but can also result from wildfires.

The destructive capacity of tornados and their inherent high winds can be severe. Their winds can remove buildings, structures, and vegetation that lie in their path. A tornado's wind can also carry debris, causing serious damage when impacted with other objects or people. Each year, approximately 1,000 tornados are reported nationwide, resulting in an average of 80 deaths and over 1,500 injuries.

A tornado's winds typically travel at 30 miles per hour and vary between 0-70 miles per hour. In many instances, a tornado's path moves from southwest to northeast, but the direction can shift or change at any moment. A tornado's classification is determined by its speed, as listed below:

Category F0: Gale Tornado (40-72 mph). Light Damage
Category F1: Moderate Tornado (73-112). Moderate Damage
Category F2: Significant Tornado (113-157 mph). Considerable Damage
Category F3: Severe Tornado (158-206). Severe Damage
Category F4: Devastating Tornado (207-318 mph). Devastating Damage
Category F5: Incredible Tornado (261-318 mph). Incredible Damage

This classification system is known as the Fujita Damage Scale, or "F Scale," and is used to measure the potential damage caused by a tornado. For each category, certain damages can be expected, as listed below:

Category F0: Damage to chimney, tree limbs, and outdoor signs.
Category F1: Damage to roofing materials, mobile homes, and cars blown off road.
Category F2: Roofs torn from houses, boxcars overturned, and large trees uprooted.
Category F3: Roof and walls torn away, trains overturned, and cars lifted off ground.
Category F4: Houses leveled, structures removed, and large objects become airborne.
Category F5: Houses lifted off foundations and swept away, automobiles moved over 100 meters, and trees debarked.

While this scale is used only as a guide, it does provide a rating system that qualifies a tornado's destructive potential.

Flooding

Referenced in Chapter 2 – Section 2.5

Description

Flooding is a natural event that occurs in any given geographical area and is largely dependent on topographic and physical characteristics, such as elevation, vegetative cover, and drainage. An area is likely to flood if these characteristics are present and when large amounts of rainfall occur over short

and/or long periods of time. When a large amount of rain falls in a short period of time, flash floods can result, but typically cause minimal damage. When rain continuously falls over an extended period of time, soils become saturated and/or supersaturated and lose their ability to absorb water. In this set of circumstances, conditions are conducive to flooding as water moves to low-lying areas. It is the type of flooding that causes the most significant damage. Extended drought can also result in flash flooding because dry soil doesn't absorb water well either.

The potential for floods to occur can also increase as more and more land is developed and made impervious to water. Roads, rooftops, parking lots, and driveways, for example, prevent the ground from absorbing water. If this water is not adequately transferred or contained, it can cause flooding. Stormwater management is intended to mitigate the effects of runoff water from developed areas, reducing the potential for flooding and other effects.

Flooding, more generally, is a natural event for rivers and streams that occurs as increased flows of water extend above banks and into floodplains. These floodplains lie adjacent to rivers and streams and are subject to reoccurring floods. Flooding is the most common natural hazard as it occurs each year, to varying extents. Property within the floodplain is similarly susceptible to damage and destruction. Many homes throughout the United States exist within these floodplains and are vulnerable to floods. With nine million homes recorded within floodplains nationally, the effects of flooding can also result in loss of life and significant property damage. Each year, an average of 150 deaths occur from flooding. When property damage and loss of life are combined, flooding is one of the most devastating hazards confronting many communities.

Winter Storms

Referenced in Chapter 2 – Section 2.4

Description

Winter storms are characterized by the threat of freezing rain and ice storms. When surface temperatures fall below 32F, freezing rain develops. Freezing rain glazes surfaces, objects, and vegetation with ice, causing dangerous conditions. Heavy accumulations of ice on power lines and trees can result in power outages, property damage, and extremely hazardous conditions for motorists and pedestrians. The public is advised on these conditions through winter storm "watches" and "warnings." A winter storm watch means that severe winter weather may affect your area while a winter storm warning means a winter storm is expected.

Sleet can also be associated with winter storms. It is appears as frozen rain drops or ice pellets that bounce after hitting the ground. Unlike ice associated with winter storms, sleet does not accumulate on utility lines or trees. It does, however, result in hazardous driving conditions along roadways.

Wildfires

Referenced in Chapter 2 – Section 2.3

Description

The uncontrollable spreading of fire through vegetated or forested areas occurs across the United States and is known as a wildfire. Georgia is located in one of the nation's highest danger zones for wildfires, due to the large amount of forested areas. Wildfires are grouped into three different classes:

1. **Surface Fire**: The most common type that burns slowly on the forest floor and damages or kills trees.
2. **Ground Fire**: A fire caused by lightening burning on or below the forest floor.
3. **Crown Fire**: A rapidly spreading fire that spreads by moving across the tops of trees.

Wildfires are typically recognized by dense smoke that covers many miles. Droughts can create conditions suitable for a wildfire and weather conditions (e.g., temperature, humidity, and wind) affect a wildfire's severity. Wildfires result from both human and natural causes. The leading cause is human, where people start fires accidentally or by arson. Lightning that strikes and ignites vegetative fuel is the second leading cause of wildfires.

Drought

Referenced in Chapter 2 – Section 2.2

Description

Drought is a hazard caused by the absence of water and/or moisture over an extended period of time. The severity of a drought is categorized by its duration, as listed below:

1. **Short Term**: 1-3 months
2. **Intermediate**: 4-6 months
3. **Long Term**: > 6 months

Agriculture and the cultivation of crops are particularly threatened by a drought event, as well as livestock. The threat of wildfires is also heightened during a period of drought. More generally, any period of drought can affect water quality and availability to communities. Local water restrictions typically go into effect during period of drought. Extended drought can also result in flash flooding because dry soil doesn't absorb water well either.

Worksheet 3A- Flood Hazard

Flood

Proportion of buildings, the value of buildings, and the population in each jurisdiction that is located in a flood hazard area.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	In Community	In Hazard Area	% In Hazard Area	In Community	In Hazard Area	% In Hazard Area	In Community	In Hazard Area	% In Hazard Area
Residential	5,368	111	.53%	$765,882,000	$3,497,949	4.5%	14,501	713	4.8%
Agricultural	2	-	-	-	-	0%	0	0	0%
Commercial	195	-	-	-	-	0.0%	0	0	0%
Industrial	99	-	-	-	-	0.0%	0	0	0%
Public Utilities	20	-	-	-	-	0.0%	0	0	0%
Total	**10,159**	**1,364**	**13.7 %**	**$765,882,000**	**$3,497,949**	**4.5%**	**14,501**	**713**	**4.8%**

	Yes	No
1. Do you know where the greatest damages may occur in your area?	✓	
2. Do you know whether your critical facilities will be operational after a hazard event?	✓	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	✓	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	✓	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	✓	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?		✓
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		✓

Multiplier for persons per household = 2.61 (2010 Census)
Utilized LUCA residential address points to determine # households by jurisdiction
For people hazard area - # people based on those properties which have a portion of land in the floodplain (not necessarily the structure itself)
For # structures in hazard area, utilize those parcels which have a portion of land in the floodplain, assume one structure per parcel
For value of structures in hazard area, assume same percentage of structures in hazard area with total value in community

Information is presented for jurisdiction as a whole due to the nature and format of the Jasper County Tax Assessors available data. For specific locations of areas potentially affected by flood please refer to the maps on pages 56-58.

Worksheet 3A - Severe Thunderstorms, Winter Storms, Wildfire, Drought, Earthquake, and Hazardous Material Spills

Severe Thunderstorms, Winter Storms, Wildfire, Drought, Earthquake, Hazardous Material Spills
Proportion of buildings, the value of buildings, and the population in each jurisdiction that is located in a hazard area.

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	In Community	In Hazard Area	% In Hazard Area	In Community	In Hazard Area	% In Hazard Area	In Community	In Hazard Area	% In Hazard Area
Residential	6,484	6,484	100%	$795,882,000	$795,882,000	100%	14,501	14,501	100%
Agricultural	2	2	100%	$17,571,000	$17,571,000	100%	-	-	-
Commercial	195	195	100%	$19,182,000	$19,182,000	100%	-	-	-
Industrial	99	99	100%	$33,275,000	$33,275,000	100%	-	-	-
Public Utilities	20	20	100%	$23,852,000	$23,852,000	100%	-	-	-
Total	**6,800**	**6,800**	100%	**$889,762,000**	**$889,762,000**	100%	**14,501**	**14,501**	100%

	Yes	No
1. Do you know where the greatest damages may occur in your area?	✓	
2. Do you know whether your critical facilities will be operational after a hazard event?	✓	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	✓	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	✓	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	✓	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?		✓
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		✓

Information is presented for jurisdiction as a whole due to the nature and format of the Jasper County Tax Assessors available data. All of these hazards have the potential to impact each jurisdiction equa

FIGURE 1: Enhanced Fujita Scale Graphic

EF Rating	Wind Speeds	Expected Damage		
EF-0	65-85 mph	'Minor' damage: shingles blown off or parts of a roof peeled off, damage to gutters/siding, branches broken off trees, shallow rooted trees toppled.		
EF-1	86-110 mph	'Moderate' damage: more significant roof damage, windows broken, exterior doors damaged or lost, mobile homes overturned or badly damaged.		
EF-2	111-135 mph	'Considerable' damage: roofs torn off well constructed homes, homes shifted off their foundation, mobile homes completely destroyed, large trees snapped or uprooted, cars can be tossed.		
EF-3	136-165 mph	'Severe' damage: entire stories of well constructed homes destroyed, significant damage done to large buildings, homes with weak foundations can be blown away, trees begin to lose their bark.		
EF-4	[illegible]	'Extreme' damage: Well constructed homes are leveled, cars are thrown significant distances, top story exterior walls of masonry buildings would likely collapse.		
EF-5	[illegible]	'Massive/incredible' damage: Well constructed homes are swept away, steel-reinforced concrete structures are critically damaged, high-rise buildings sustain severe structural damage, trees are usually completely debarked, stripped of branches and snapped.		

FIGURE 2: U.S Wind-zone Map

FIGURE 3: 500-YEAR FLOOD MAP OF JASPER COUNTY

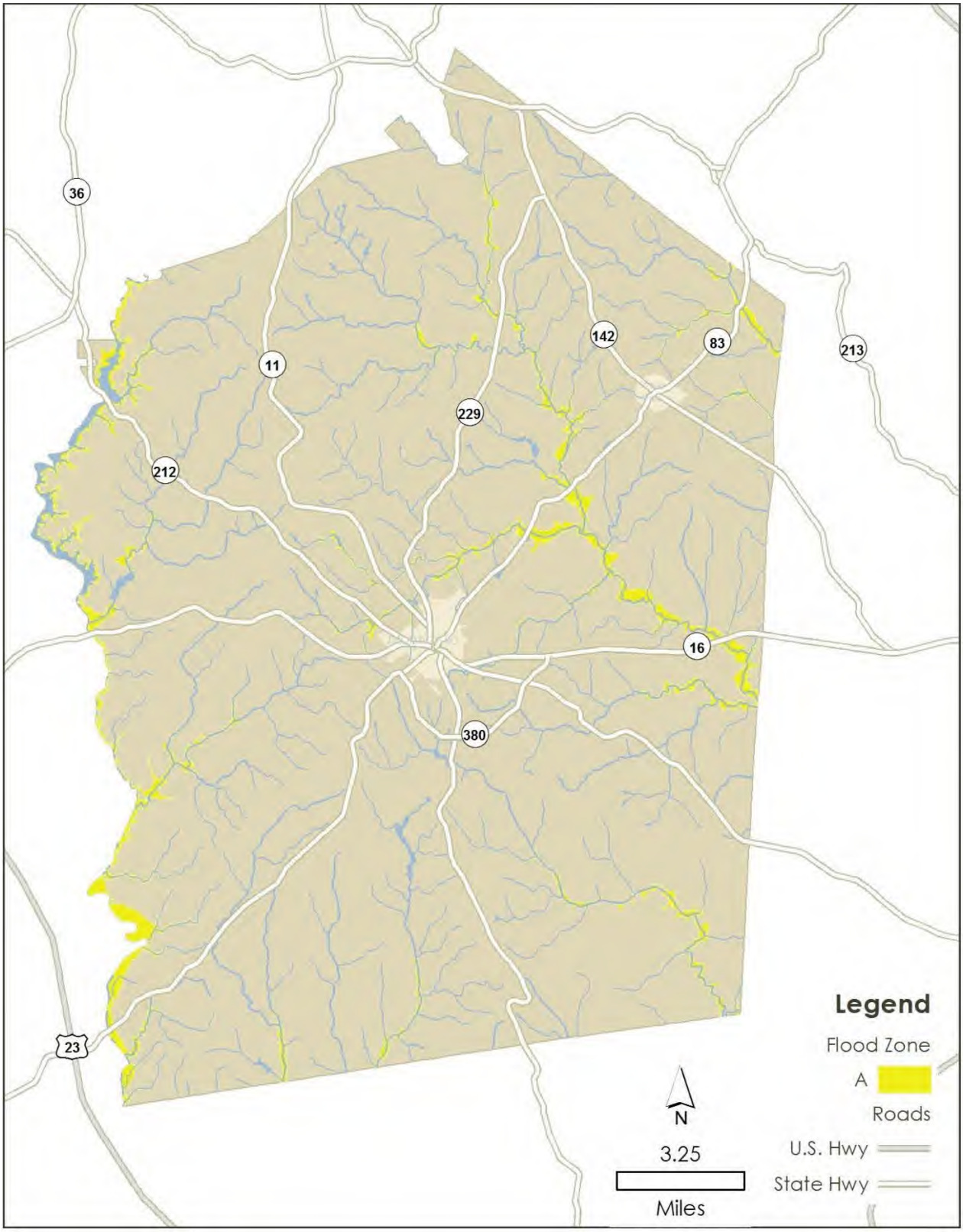


FIGURE 4: 500-YEAR FLOOD MAP OF THE CITY OF MONTICELLO

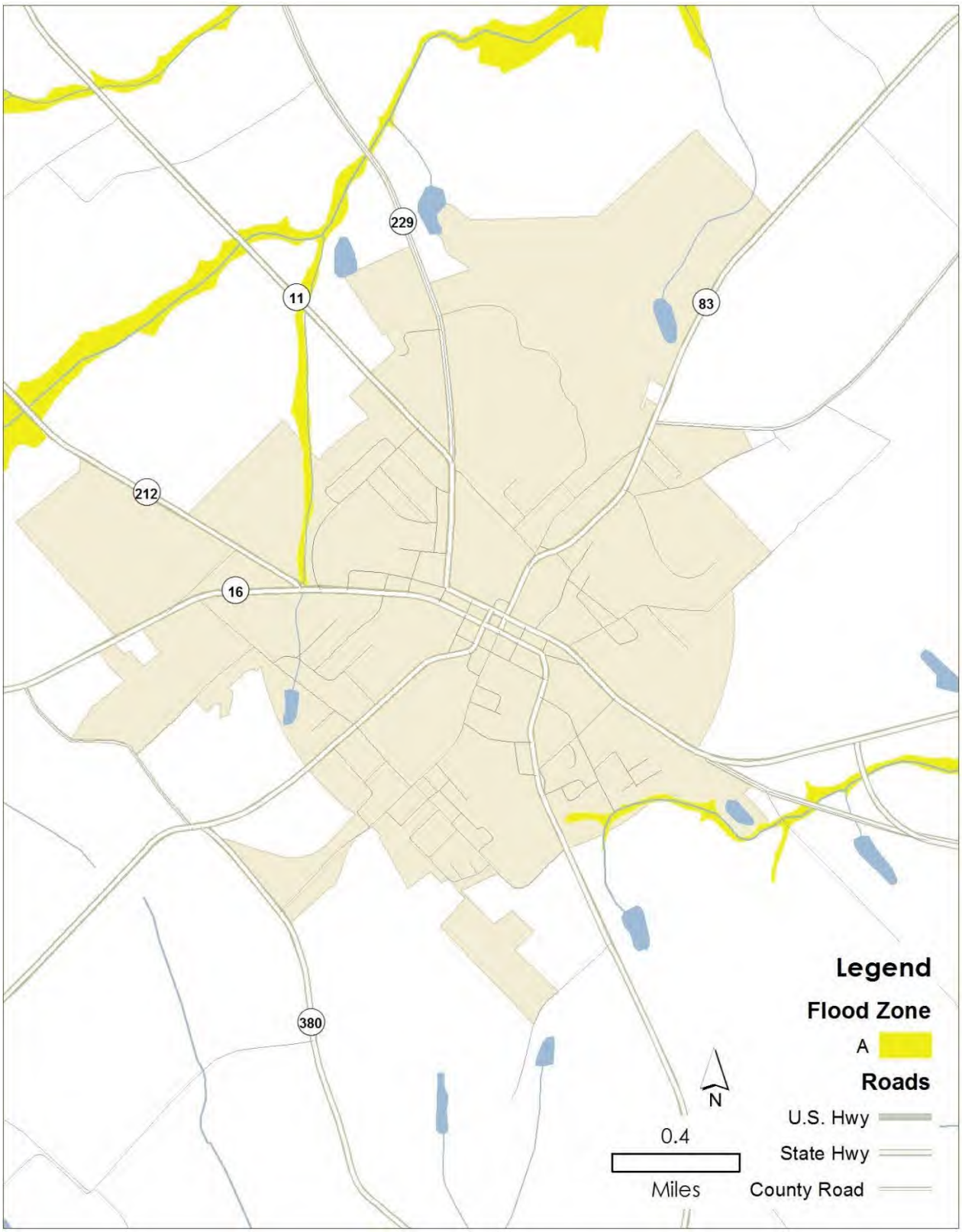


FIGURE 5: 500-YEAR FLOOD MAP OF THE TOWN OF SHADY DALE

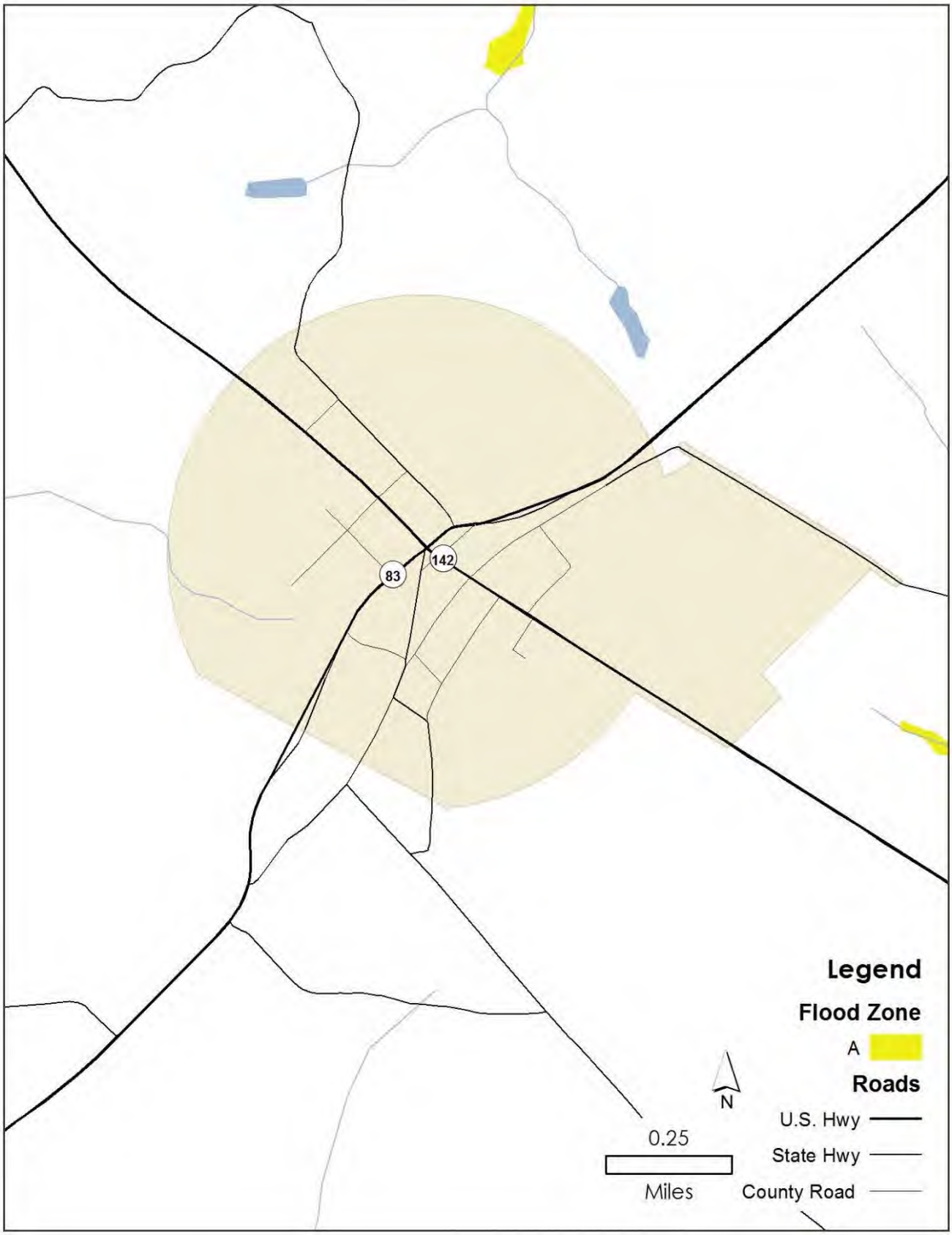


FIGURE 6: Critical Facility Map

FIGURE 7: 20 Year Time Series Drought USDM Graphic

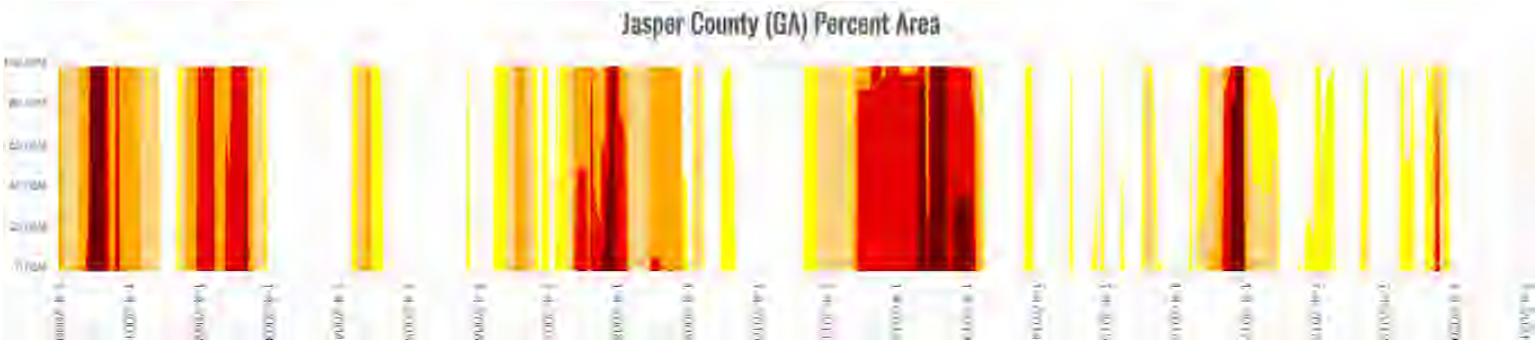


FIGURE 8: Shady Dale Fire Intensity Map

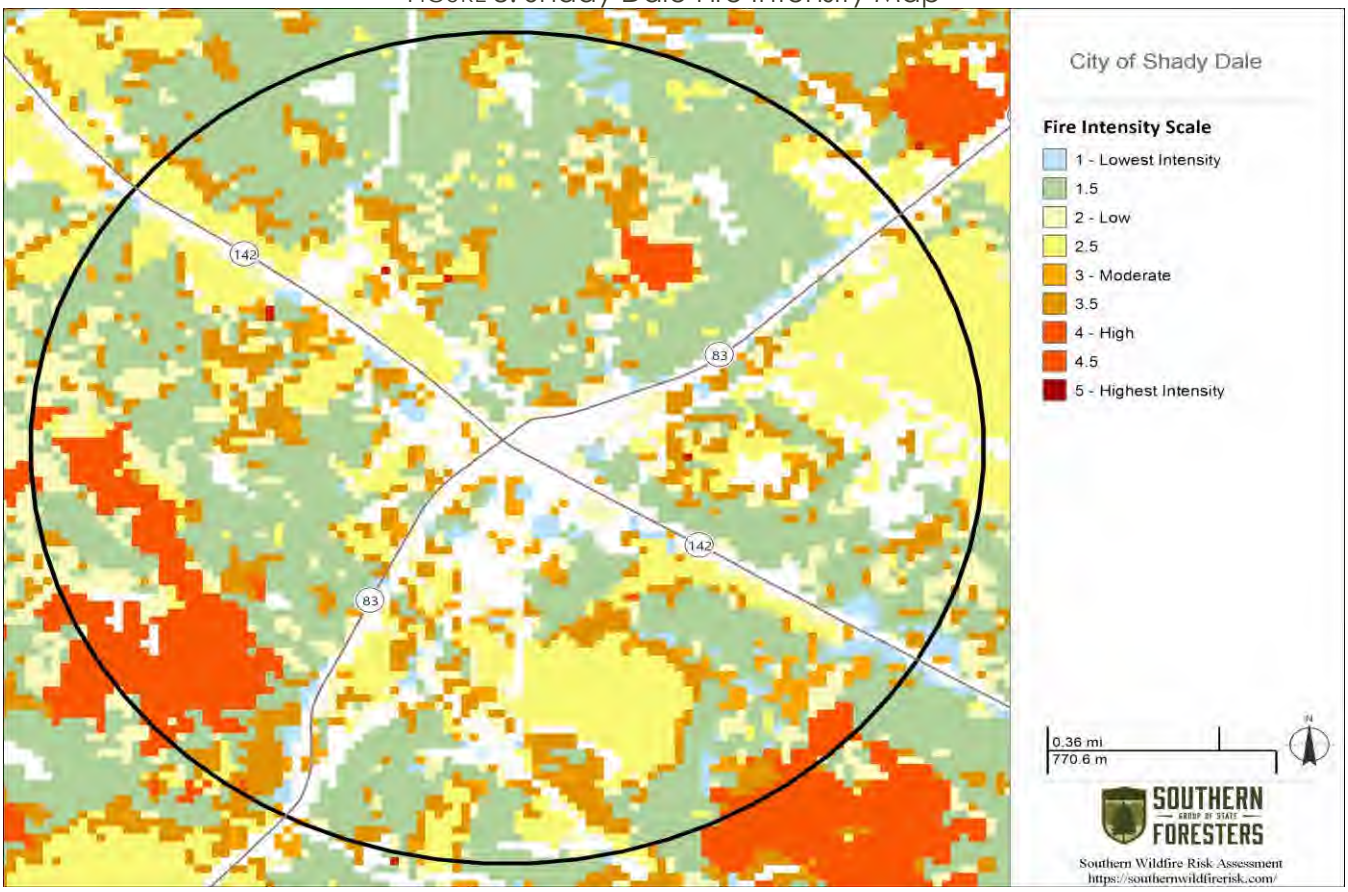


FIGURE 9: Monticello Fire Intensity Map

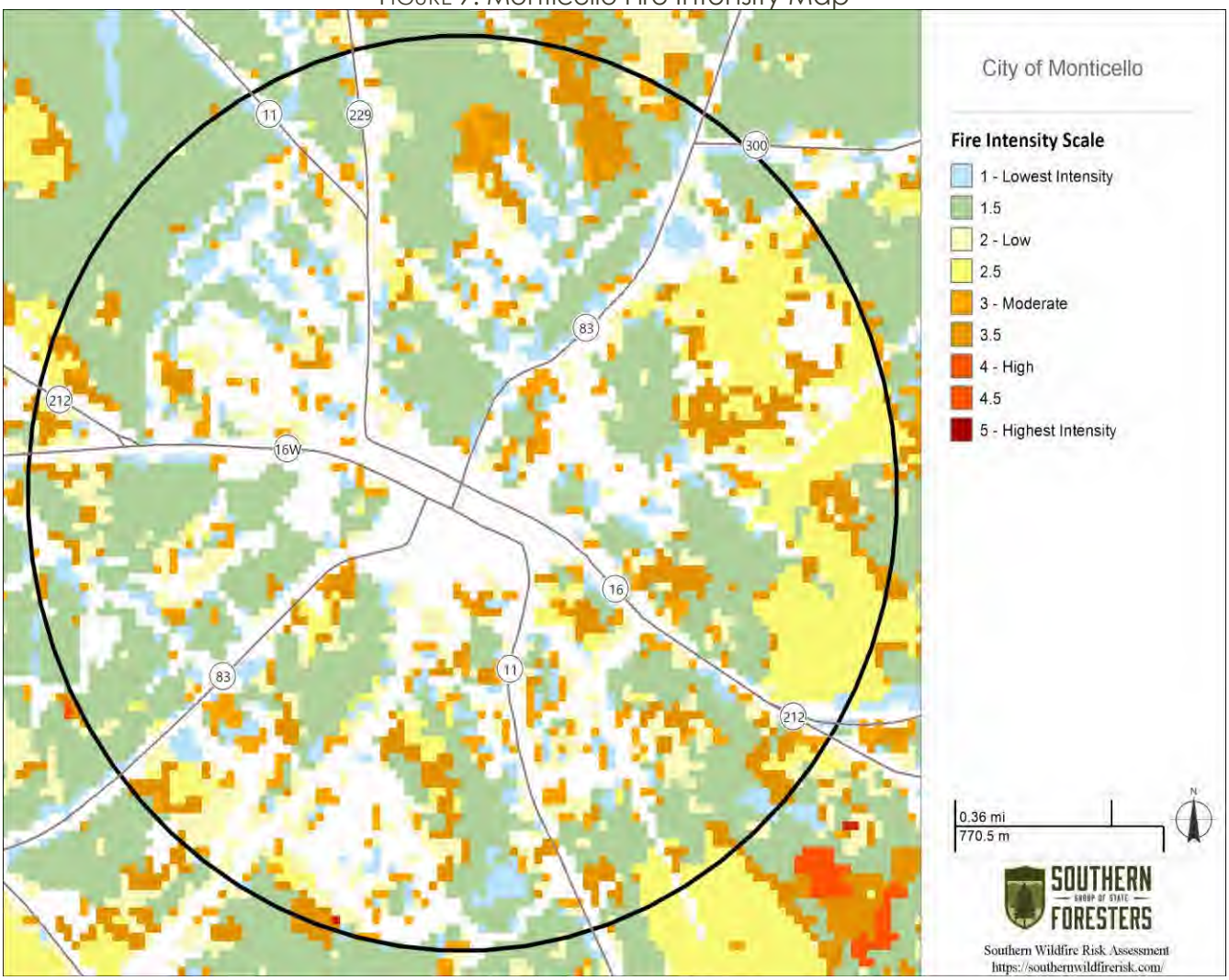
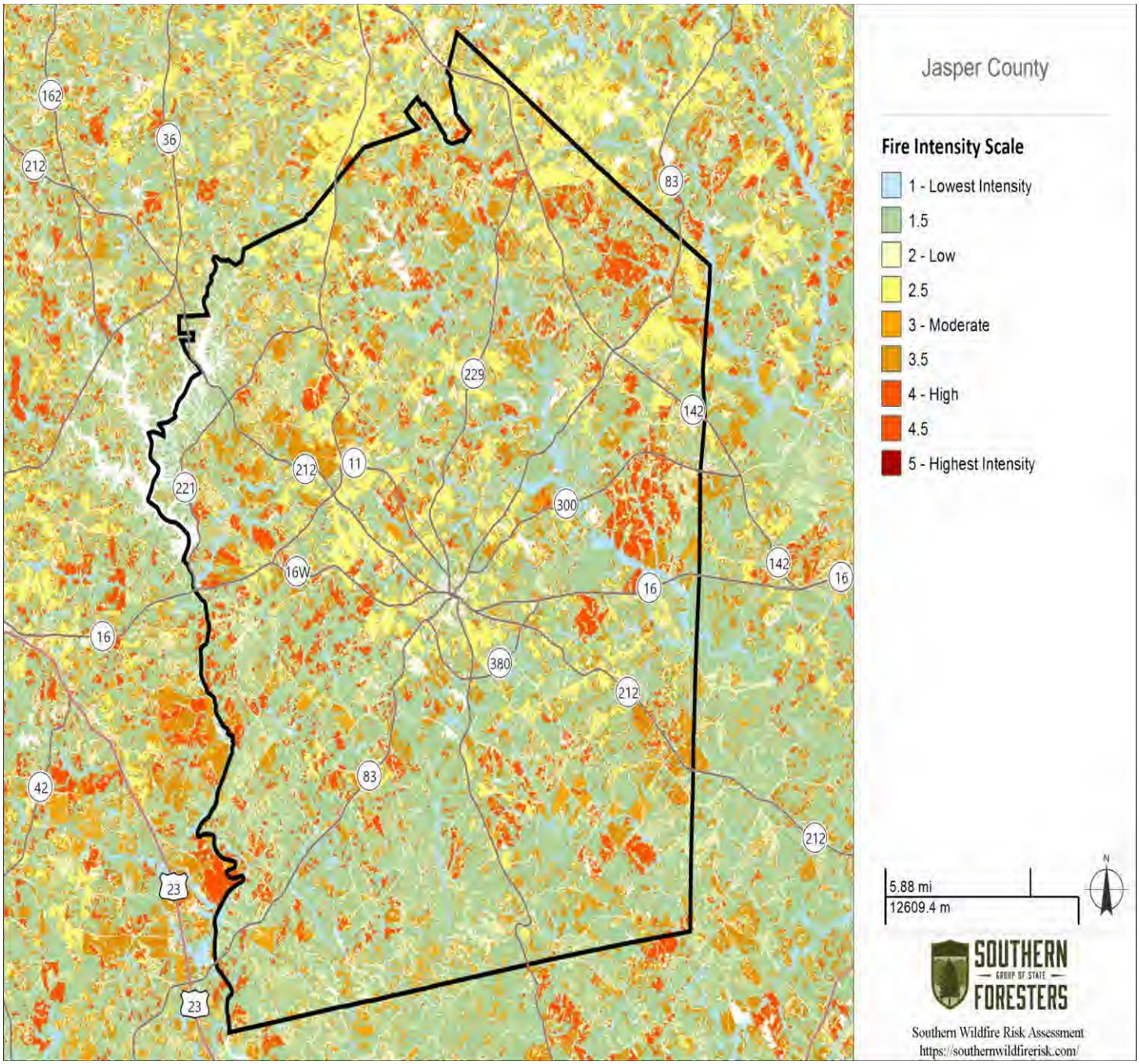


FIGURE 10: Jasper County Fire Intensity Map



2020 Critical Facilities

Facility Name	Essential	Transportation	Lifeline	Important	Vulnerable Population
Jasper County 911	✓		✓	✓	
Jasper County High School				✓	
Jasper County Health Department				✓	
Jasper County Public Works		✓			
Jasper Memorial Hospital	✓		✓	✓	✓
Jasper County Library				✓	
Jasper County Airport	✓	✓	✓	✓	
Jasper Co. Primary School				✓	✓
Piedmont Academy, Inc.				✓	✓
Jasper Co. Sheriff's Office/Jail	✓		✓	✓	✓
Monticello City Hall				✓	
Shady Dale City Hall				✓	
Jasper County Courthouse				✓	
Washington Park Elementary School				✓	✓
Hillsboro Volunteer Fire Dept.	✓		✓	✓	
Jackson Lake Volunteer Fire Dept.	✓		✓	✓	
Monticello Fire Department	✓		✓	✓	
North Alcovy Volunteer Fire Dept.	✓		✓	✓	
Piedmont Volunteer Fire Dept.	✓		✓	✓	
Shady Dale Volunteer Fire Dept.	✓		✓	✓	
Jasper County Middle School				✓	✓
Senior Center					✓
Farrar Volunteer Fire Station	✓		✓	✓	
Monticello Water Treatment Plant	✓		✓	✓	
U.S Renal Care	✓		✓	✓	✓

The Georgia Mitigation Information System (GMIS) is a web-based tool used by GEMA and local emergency management personnel to map and report the location of critical facilities, mitigated, and repetitive loss properties within the state. A score for each facility's risk, with respect to each hazard, is generated through geospatial analysis of the facility's location in relationship to the likelihood of a hazard affecting it.

Jasper County Critical Facility Report for Wildfire

Jurisdiction	Name	Hazard Score	Replacement Value 2014	Building size ft²	Content value 2020	Estimated Functional Use value per day	Facility type	Risk
Jasper County	Jasper County 911	2	$125,000	2000	$311,100	$2,886	Emergency Services, Communications	Essential, Lifeline, Important
Jasper County	Jasper County High School	2	$13,379,633	135240	$25,456,400	$15,118	Education, K - 12	Important
Jasper County	Jasper County Public Works	2	$269,800	13490	$38,755	$4,016	Government, Government Offices	Transportation
Jasper County	Jasper Co. Sheriff's Office/Jail	2	$923,067	17955	$3,944,646	$5,932	Law Enforcement, Sheriff	Essential, Lifeline, Important, Vulnerable Population
Jasper County	Monticello Water Treatment Plant	2	$535,000	10700	$3,347,200	$2,381	Government, Water/Sewer	Essential, Lifeline, Important
Totals for Jasper County Hazard Score 2			**$15,232,500**		**$33,098,101**	**$30,334**		
Jasper County	Hillsboro Volunteer Fire Dept.	1	$41,700	2780	$159,204	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Jasper County	Jackson Lake Volunteer Fire Dept.	1	$73,350	4890	$258,473	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Jasper County	North Alcovy Volunteer Fire Dept.	1	$81,600	5440	$123,242.00	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Jasper County	Piedmont Volunteer Fire Dept.	1	$86,115.00	5741	$179,805.00	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Jasper County	Farrar Volunteer Fire Station	1	$60,300.00	4020	$46,825.00	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Totals for Jasper County Hazard Score 1			**$343,065**		**$767,549**	**$524**		
Monticello city	Jasper County Middle School	2	$2,319,135	124468	$13,621,000	$15,118	Education, K - 12	Important, Vulnerable Population
Totals for Monticello city Hazard Score 2			**$2,319,135**		**$2,319,135**	**$15,118**		
Monticello city	Jasper County Health Dept.	1	$328,900	4572	$785,000	$130	Medical, Clinics	Important
Monticello city	Jasper Memorial Hospital	1	$2,297,767	14950	$2,487,200	$9,052	Medical, Hospital	Essential, Lifeline, Important, Vulnerable Population

Jasper County Critical Facility Report for Wildfire

Jurisdiction	Name	Hazard Score	Replacement Value 2014	Building size ft²	Content value 2020	Estimated Functional Use value per day	Facility type	Risk
Monticello city	Jasper Co. Primary School	1	$5,841,600	97360	$14,796,500	$15,118	Education, K - 12	Important, Vulnerable Population
Monticello city	Piedmont Academy, Inc.	1	$3,180,240	53004	$2,916,100	$8,219	Education, Private	Important, Vulnerable Population
Monticello city	Monticello City Hall	1	$88,000	8280	$5,875,800	$1,959	Government, City Hall	Important
Monticello city	Jasper County Courthouse	1	$6,185,400	36339	$11,270,694	$5,442	Government, Court House	Important
Monticello city	Washington Park Elementary School	1	$5,696,400	94490	$14,665,700	$15,118	Education, K - 12	Important, Vulnerable Population
Monticello city	Monticello Fire Department	1	$75,450	5030	$336,919	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Totals for Monticello city Hazard Score 1			**$23,729,557**		**$53,133,913**	**$56,562**		
Shady Dale town	Shady Dale City Hall	1	$36,000	1200	$94,000	$33	Government, City Hall	Important
Shady Dale town	Shady Dale Volunteer Fire Dept.	1	$60,210	4014	$131,111	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Totals for Shady Dale town Hazard Score 1			**$96,210**		**$225,111**	**$138**		

Jasper County Critical Facility Report for Flood

Jurisdiction	Name	Hazard Score	Replacement Value 2014	Building size ft²	Content value 2020	Estimated Functional Use value per day	Facility type	Risk
Jasper County	Jasper County 911	0	$125,000	2000	$311,100	$2,886	Emergency Services, Communications	Essential, Lifeline, Important
Jasper County	Jasper County High School	0	$13,379,633	135240	$26,456,400	$15,118	Education, K - 12	Important
Jasper County	Jasper County Public Works	0	$269,800	13490	$38,754	$4,016	Government, Government Offices	Transportation
Jasper County	Jasper Co. Sheriff's Office/Jail	0	$923,067	17955	$3,944,646	$5,932	Law Enforcement, Sheriff	Essential, Lifeline, Important, Vulnerable Population
Jasper County	Hillsboro Volunteer Fire Dept.	0	$41,700	2780	$159,204	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Jasper County	Jackson Lake Volunteer Fire Dept.	0	$73,350	4890	$258,473	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Jasper County	North Alcovy Volunteer Fire Dept.	0	$81,600	5440	$123,242	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Jasper County	Piedmont Volunteer Fire Dept.	0	$86,115.00	5741	$179,805	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Jasper County	Farrar Volunteer Fire Station	0	$60,300.00	4020	$46,825	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Jasper County	Monticello Water Treatment Plant	0	$535,000	10700	$3,347,200	$2,381	Government, Water/Sewer	Essential, Lifeline, Important
Totals for Jasper County Hazard Score 0			**$15,575,565**		**$34,865,649**	**$30,858**		
Monticello city	Jasper County Health Dept.	0	$328,900	4572	$785,000	$130	Medical, Clinics	Important
Monticello city	Jasper Memorial Hospital	0	$2,297,767	14950	$2,487,200	$9,052	Medical, Hospital	Essential, Lifeline, Important, Vulnerable Population
Monticello city	Jasper Co. Primary School	0	$5,841,600	97360	$14,796,500	$15,118	Education, K - 12	Important, Vulnerable Population
Monticello city	Piedmont Academy, Inc.	0	$3,180,240	53004	$179,805	$8,219	Education, Private	Important, Vulnerable Population
Monticello city	Monticello City Hall	0	$88,000	8280	$5,875,800	$1,959	Government, City Hall	Important
Monticello city	Jasper County Courthouse	0	$6,185,400	36339	$11,270,694	$5,442	Government, Court House	Important
Monticello city	Washington Park Elementary School	0	$5,696,400	94490	$14,665,700	$15,118	Education, K - 12	Important, Vulnerable Population
Monticello city	Monticello Fire Department	0	$75,450	5030	$336,919	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important

Jasper County Critical Facility Report for Flood

Jurisdiction	Name	Hazard Score	Replacement Value 2014	Building size ft²	Content value 2020	Estimated Functional Use value per day	Facility type	Risk
Monticello city	Jasper County Middle School	0	$2,319,135	124468	$13,621,000	$15,118	Education, K - 12	Important, Vulnerable Population
Totals for Monticello city Hazard Score 0			**$26,048,692**		**$63,233,618**	**$71,680**		
Shady Dale town	Shady Dale City Hall	0	$36,000	1200	$94,000	$33	Government, City Hall	Important
Shady Dale town	Shady Dale Volunteer Fire Dept.	0	$60,210	4014	$131,111	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Totals for Shady Dale town Hazard Score 0			**$96,210**		**$225,111**	**$138**		

Jasper County Critical Facility Report for Wind

Jurisdiction	Name	Hazard Score	Replacement Value 2014	Building size ft²	Content value 2020	Estimated Functional Use value per day	Facility type	Risk
Jasper County	Jasper County 911	1	$125,000	2000	$311,100	$2,886	Emergency Services, Communications	Essential, Lifeline, Important
Jasper County	Jasper County High School	1	$13,379,633	135240	$26,456,400	$15,118	Education, K - 12	Important
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Jasper County	Jasper Co. Sheriff's Office/Jail	1	$923,067	17955	$3,944,646	$5,932	Law Enforcement, Sheriff	Essential, Lifeline, Important, Vulnerable Population
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Jasper County	Jackson Lake Volunteer Fire Dept.	1	$73,350	4890	$258,473	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Jasper County	North Alcovy Volunteer Fire Dept.	1	$81,600	5440	$123,242	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Jasper County	Piedmont Volunteer Fire Dept.	1	$86,115.00	5741	$179,805	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Jasper County	Farrar Volunteer Fire Station	1	$60,300.00	4020	$46,825	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Jasper County	Monticello Water Treatment Plant	1	$535,000	10700	$3,347,200	$2,381	Government, Water/Sewer	Essential, Lifeline, Important

Jasper County Critical Facility Report for Wind

Jurisdiction	Name	Hazard Score	Replacement Value 2014	Building size ft²	Content value 2020	Estimated Functional Use value per day	Facility type	Risk
Totals for Jasper County Hazard Score 1			**$15,575,565**		**$34,865,649**	**$30,858**		
Monticello city	Jasper County Health Dept.	1	$328,900	4572	$785,000	$130	Medical, Clinics	Important
Monticello city	Jasper Memorial Hospital	1	$2,297,767	14950	$2,487,200	$9,052	Medical, Hospital	Essential, Lifeline, Important, Vulnerable Population
Monticello city	Jasper Co. Primary School	1	$5,841,600	97360	$14,796,500	$15,118	Education, K - 12	Important, Vulnerable Population
Monticello city	Piedmont Academy, Inc.	1	$3,180,240	53004	$179,805	$8,219	Education, Private	Important, Vulnerable Population
Monticello city	Monticello City Hall	1	$88,000	8280	$5,875,800	$1,959	Government, City Hall	Important
Monticello city	Jasper County Courthouse	1	$6,185,400	36339	$11,270,694	$5,442	Government, Court House	Important
Monticello city	Washington Park Elementary School	1	$5,696,400	94490	$14,665,700	$15,118	Education, K - 12	Important, Vulnerable Population
Monticello city	Monticello Fire Department	1	$75,450	5030	$336,919	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Monticello city	Jasper County Middle School	1	$2,319,135	124468	$13,621,000	$15,118	Education, K - 12	Important, Vulnerable Population
Totals for Monticello city Hazard Score 1			**$26,048,692**		**$63,233,618**	**$71,680**		
Shady Dale town	Shady Dale City Hall	1	$36,000	1200	$94,000	$33	Government, City Hall	Important
Shady Dale town	Shady Dale Volunteer Fire Dept.	1	$60,210	4014	$131,111	$105	Emergency Services, Fire Fighters	Essential, Lifeline, Important
Totals for Shady Dale town Hazard Score 1			**$96,210**		**$225,111**	**$138**		

For more information on GMIS designations visit: www.gema.ga.gov

Appendix B:

Growth & Development Trends

Community Information

Executive Summary

Jasper County, SC
Jasper County, SC (13133)
Geography: County

Prepared by Esri

	Jasper County
Mortgage Income	
2019 Percent of Income for Mortgage	18.1%
Median Household Income	
2019 Median Household Income	$42,275
2024 Median Household Income	$46,913
2019-2024 Annual Rate	2.10%
Average Household Income	
2019 Average Household Income	$56,953
2024 Average Household Income	$65,457
2019-2024 Annual Rate	2.82%
Per Capita Income	
2019 Per Capita Income	$20,653
2024 Per Capita Income	$23,726
2019-2024 Annual Rate	2.61%

Households by Income

Current median household income is $42,275 in the area, compared to $60,548 for all U.S. households. Median household income is projected to be $46,913 in five years, compared to $69,180 for all U.S. households

Current average household income is $56,953 in this area, compared to $87,198 for all U.S. households. Average household income is projected to be $65,457 in five years, compared to $99,638 for all U.S. households

Current per capita income is $20,653 in the area, compared to the U.S. per capita income of $33,028. The per capita income is projected to be $23,726 in five years, compared to $36,833 for all U.S. households

Housing	
2019 Housing Affordability Index	121
2000 Total Housing Units	1,805
2000 Owner Occupied Housing Units	5,207
2000 Renter Occupied Housing Units	875
2000 Vacant Housing Units	671
2010 Total Housing Units	6,153
2010 Owner Occupied Housing Units	3,927
2010 Renter Occupied Housing Units	1,417
2010 Vacant Housing Units	1,189
2019 Total Housing Units	6,423
2019 Owner Occupied Housing Units	3,267
2019 Renter Occupied Housing Units	942
2019 Vacant Housing Units	1,18[illegible]
2024 Total Housing Units	6,6[illegible]
2024 Owner Occupied Housing Units	[illegible]
2024 Renter Occupied Housing Units	952
2024 Vacant Housing Units	1,276

Currently, 67.1% of the 6,423 housing units in the area are owner occupied; 14.8%, renter occupied; and 18.2% are vacant. Currently, in the U.S., 55.4% of the housing units in the area are owner occupied; 32.4% are renter occupied; and 12.2% are vacant. In 2010, there were 6,153 housing units in the area - 63.8% owner occupied, 18.2% renter occupied, and 19.0% vacant. The annual rate of change in housing units since 2010 is 1.33%. Median home value in the area is $165,116, compared to a median home value of $231,154 for the U.S. In five years, median value is projected to change by 4.19% annually to $202,734.

Data Note: Income is expressed in current dollars. Housing Affordability Index and Percent Income for Mortgage calculations are based only on owner occupied housing units.
Source: U.S. Census Bureau, Census 2010 Summary File 1. [illegible]

MEGRE

Executive Summary

[illegible]
[illegible]
[illegible]

Prepared by Esri

	Jasper County
Population	
2000 Population	11,425
2010 Population	13,900
2019 Population	14,501
2024 Population	15,956
2000-2010 Annual Rate	1.99%
2010-2019 Annual Rate	0.46%
2019-2024 Annual Rate	0.62%
2019 Male Population	50.7%
2019 Female Population	49.3%
2019 Median Age	40.5

In the identified area, the current year population is 14,501. In 2010, the Census count in the area was 13,900. The rate of change since 2010 was 0.46% annually. The five-year projection for the population in the area is 15,956 representing a change of 0.62% annually from 2019 to 2024. Currently, the population is 50.3% male and 49.7% female.

Median Age

The median age in this area is 40.5, compared to U.S. median age of 38.5.

Race and Ethnicity	
2019 White Alone	[illegible]
2019 Black Alone	19.1%
2019 American Indian/Alaska Native Alone	0.5%
2019 Asian Alone	0.3%
2019 Pacific Islander Alone	0.0%
2019 Other Race	3.2%
2019 Two or More Races	2.1%
2019 Hispanic Origin (Any Race)	3.1%

Persons of Hispanic origin represent 3.1% of the population in the identified area compared to 18.5% of the U.S. population. Persons of Hispanic Origin may be of any race. The Diversity Index, which measures the probability that two people from the same area will be from different race/ethnic groups, is 44.1 in the identified area, compared to 64.7 for the U.S. as a whole.

Households	
2019 Wealth Index	15
2000 Households	4,173
2010 Households	5,044
2019 Total Households	5,256
2024 Total Households	5,419
2000-2010 Annual Rate	1.91%
2010-2019 Annual Rate	0.45%
2019-2024 Annual Rate	0.61%
2019 Average Household Size	2.74

The household count in this area has changed from 5,044 in 2010 to 5,256 in the current year, a change of 0.45% annually. The five-year projection of households is 5,419, a change of 0.61% annually from the current year total. Average household size is currently 2.74, compared to 2.74 in the year 2010. The number of families in the current year is 3,896 in the specified area.

Data Note: [illegible]
Source: U.S. Census Bureau, Census 2010 Summary File 1. [illegible] Census 2000 data [illegible]

Jasper County – Monticello – Shady Dale Joint Comprehensive Plan 2018 Update

The joint Comprehensive Plan for Jasper County and the Cities of Monticello and Shady Dale is an overall guide for the growth and general development of the County and the municipalities over a twenty-year period, beginning in 2018 and extending to 2030. The 2018 Plan Update includes updated Short Term Work Program items for the County and each of its cities. The Comprehensive Plan for Jasper County and the Cities of Monticello and Shady Dale, as presented in this document, is the result of a cooperative effort involving the residents and officials of the County and cities. The Comprehensive Plan respects the separate authorities of each local government, but alsorecognizes the interdependence of the entire County, and the effect long-range plans have on the community as a whole. The Comprehensive Plan consists of five main elements: Needs & Opportunities, Vision & Goals, Broadband, Land Use, and the Community Work Programs, including Short Term Work Programs for each jurisdiction. The Service Delivery Strategy is included as a supportive element of the Comprehensive Plan.

Planning Authority

This Comprehensive Plan was prepared and reviewed under the authorities of the governing bodies of Jasper County and its cities.

Study Area

The study area for the Comprehensive Plan includes Jasper County in its entirety. The majority of the County is unincorporated Jasper County, with the remainder being the incorporated cities of Monticello and Shady Dale.

Comprehensive Plan

Two public hearings and a number of public input and Steering Committee meetings were held during the development of the joint Comprehensive Plan update. Additional input was gathered through an online questionnaire, available in both English and Spanish. The Northeast Georgia Regional Commission submitted the draft Comprehensive Plan update, along with required public participation records, to the Georgia Department of Community Affairs (DCA) for official review on behalf of Jasper County. Following DCA review and approval, both City Councils and the County Commission passed resolutions to adopt the plan update.

Community Vision

A community vision was established for Jasper County, Monticello, and Shady Dale. The purpose of the vision is to portray a complete picture of what the community desires to become. That vision is: "*Jasper County is a place to live, grow, and prosper. Rural charm, cultural and natural resources, and local goods and businesses are celebrated. Interjurisdictional public-private partnerships create a variety of employment, recreation, and housing options that support a diverse citizenry; both locals and visitors are attracted to downtown Monticello's entertainment, dining, and shopping.* "

The community vision is supported by a vision for each individual Character Area and can be found in the Land Use chapter. Visions for each planning element are supported by the community goals and implementation policies.

Jasper County Geography Facts

Geography Facts	Jasper County
Land area in square miles, 2010	368.17
Persons per square mile, 2010	37.8
FIPS Code	159
Metropolitan or Micro-politan Statistical Area	Atlanta-Sandy Springs-Marietta, GA Metro Area

Appendix C:

Related Planning Documents

Hazard Risk Analyses Supplement to the Jasper County Joint Hazard Mitigation Plan

Carl Vinson
Institute of Government
UNIVERSITY OF GEORGIA

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Introduction

The Federal Disaster Mitigation Act of 2000 (DMA2K) requires state, local, and tribal governments to develop and maintain a mitigation plan to be eligible for certain federal disaster assistance and hazard mitigation funding programs.

Mitigation seeks to reduce a hazard's impacts, which may include loss of life, property damage, disruption to local and regional economies, and the expenditure of public and private funds for recovery. Sound mitigation must be based on a sound risk assessment that quantifies the potential losses of a disaster by assessing the vulnerability of buildings, infrastructure, and people.

In recognition of the importance of planning in mitigation activities, FEMA Hazus-MH, a powerful disaster risk assessment tool based on geographic information systems (GIS). This tool enables communities of all sizes to predict estimated losses from floods, hurricanes, earthquakes, and other related phenomena and to measure the impact of various mitigation practices that might help reduce those losses.

In 2020, the Georgia Department of Emergency Management partnered with the Carl Vinson Institute of Government at the University of Georgia to develop a detailed risk assessment focused on defining hurricane, riverine flood, and tornado risks in Jasper County, Georgia. This assessment identifies the characteristics and potential consequences of the disaster, how much of the community could be affected by the disaster, and the impact on community assets.

Risk Assessment Process Overview

Hazus-MH Version 2.2 SP1 was used to perform the analyses for Jasper County. The Hazus-MH application includes default data for every county in the US. This Hazus-MH data was derived from a variety of national sources and in some cases the data are also several years old. Whenever possible, using local provided data is preferred. Jasper County provided building inventory information from the county's property tax assessment system. This section describes the changes made to the default Hazus-MH inventory and the modeling parameters used for each scenario.

County Inventory Changes

The default Hazus-MH site-specific point inventory was updated using data compiled from the Georgia Emergency Management Agency (GEMA). The default Hazus-MH aggregate inventory (General Building Stock) was also updated prior to running the scenarios. Reported losses reflect the updated data sets.

General Building Stock Updates

General Building Stock (GBS) is an inventory category that consists of aggregated data (grouped by census geography — tract or block). Hazus-MH generates a combination of site-specific and aggregated loss estimates based on the given analysis and user input.

The GBS records for Jasper County were replaced with data derived from parcel and property assessment data obtained from Jasper County. The county provided property assessment data was current as of January 2020 and the parcel data current as of December 2019. Records without improvements were deleted. The parcel boundaries were converted to parcel points located in the centroids of each parcel boundary; then, each parcel point was linked to an assessor record based upon matching parcel numbers. The parcel assessor match-rate for Jasper County is 99.4%. The generated building inventory represents the approximate locations (within a parcel) of structures. The building inventory was aggregated by census block. Both the tract and block tables were updated. Table 1 shows the results of the changes to the GBS tables by occupancy class.

Table 1: GBS Building Exposure Updates by Occupancy Class*

General Occupancy	Default Hazus-MH Count	Updated Count	Default Hazus-MH Exposure	Updated Exposure
Agricultural	26	2	$5,730,000	$326,000
Commercial	248	195	$87,119,000	$17,571,000
Education	11	7	$11,649,000	$19,182,000
Government	13	20	$7,071,000	$4,670,000
Industrial	102	99	$37,225,000	$33,275,000
Religious	26	74	$19,439,000	$8,454,000
Residential	6,029	6,484	$1,106,996,000	$795,882,000
Total	6,455	6,881	$1,275,229,000	$879,360,000

*The exposure values represent the total number and replacement cost for all Jasper County Buildings

For Jasper County, the updated GBS was used to calculate hurricane wind losses. The flood losses and tornado losses were calculated from building inventory modeled in Hazus-MH as User-Defined Facility

(UDF)[1], or site-specific points. Figure 1 shows the distribution of buildings as points based on the county provided data.

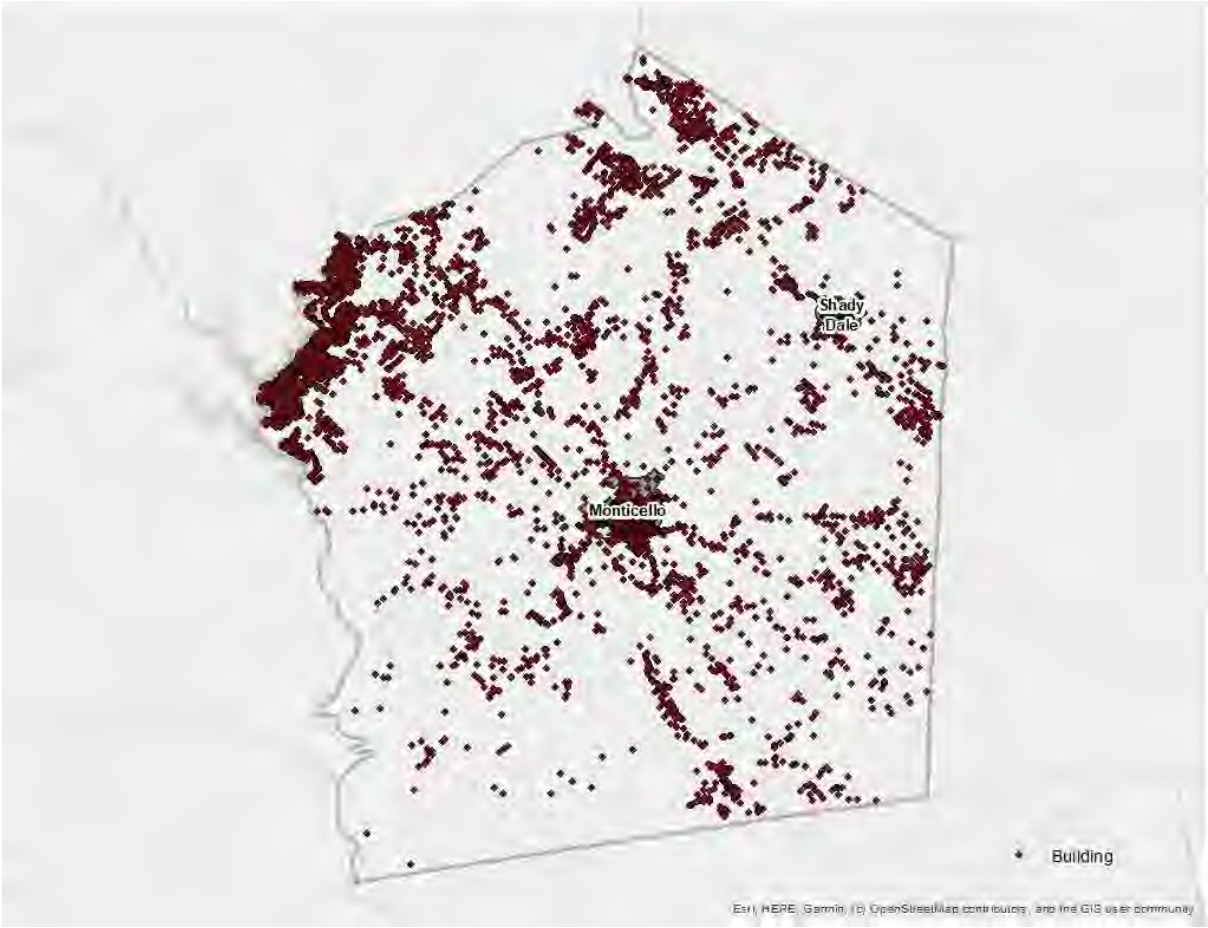


Figure 1: Jasper County Overview

Essential Facility Updates

The default Hazus-MH essential facility data was updated to reflect improved information available in the Georgia Mitigation Information System (GMIS) as of January 2020. For these risk analyses, only GMIS data for buildings that Hazus-MH classified as Essential Facilities was integrated into Hazus-MH because the application provides specialized reports for these five facilities. Essential Facility inventory was updated for the analysis conducted for this report. The following table summarizes the counts and exposures, where available, by Essential Facility classification of the updated data.

Essential facilities include:

- Care facilities
- EOCs
- Fire stations
- Police stations
- Schools

[1] The UDF inventory category in Hazus-MH allows the user to enter site-specific data in place of GBS data.

Table 2: Updated Essential Facilities

Classification	Updated Count	Updated Exposure
	Monticello	
EOC	0	$0
Care	2	$3,272,000
Fire	1	$336,000
Police	0	$0
School	4	$45,998,000
Total	7	$49,606,000
	Shady Dale	
EOC	0	$0
Care	0	$0
Fire	1	$131,000
Police	0	$0
School	0	$0
Total	1	$131,000
	Unincorporated Areas of Jasper County	
EOC	1	$311,000
Care	0	$0
Fire	5	$765,000
Police	1	$3,944,000
School	1	$26,456,000
Total	8	$31,476,000

Assumptions and Exceptions

Hazus-MH loss estimates may be impacted by certain assumptions and process variances made in this risk assessment.

- The Jasper County analysis used Hazus-MH Version 2.2 SP1, which was released by FEMA in May 2015.
- County provided parcel and property assessment data may not fully reflect all buildings in the county. For example, some counties do not report not-for-profit buildings such as government buildings, schools and churches in their property assessment data. This data was used to update the General Building Stock as well as the User Defined Facilities applied in this risk assessment.
- Georgia statute requires that the Assessor's Office assign a code to all of the buildings on a parcel based on the buildings primary use. If there is a residential or a commercial structure on a parcel and there are also agricultural buildings on the same parcel Hazus-MH looks at the residential and commercial "primary" structures first and then combines the value of all secondary structures on that parcel with the value of the primary structure. The values and building counts are still accurate but secondary structures are accounted for under the same classification as the primary structure. Because of this workflow, the only time that a parcel would show a value for an agricultural building is when there are no residential or commercial structures on the parcel thus making the agricultural building the primary structure. This is the reason that agricultural building counts and total values seem low or are nonexistent.
- GBS updates from assessor data will skew loss calculations. The following attributes were defaulted or calculated:
  - Foundation Type was set from Occupancy Class
  - First Floor Height was set from Foundation Type
  - Content Cost was calculated from Replacement Cost
- It is assumed that the buildings are located at the centroid of the parcel.
- The essential facilities extracted from the GMIS were only used in the portion of the analysis designated as essential facility damage. They were not used in the update of the General Building Stock or the User Defined Facility inventory.

The hazard models included in this risk assessment included:

- Hurricane assessment which was comprised of a wind only damage assessment.
- Flood assessment based on the 1% annual chance event that includes riverine assessments.
- Tornado assessment based on GIS modeling.

Hurricane Risk Assessment

Hazard Definition

The National Hurricane Center describes a hurricane as a tropical cyclone in which the maximum sustained wind is, at minimum, 74 miles per hour (mph)[2]. The term hurricane is used for Northern Hemisphere tropical cyclones east of the International Dateline to the Greenwich Meridian. The term typhoon is used for Pacific tropical cyclones north of the Equator west of the International Dateline. Hurricanes in the Atlantic Ocean, Gulf of Mexico, and Caribbean form between June and November with the peak of hurricane season occurring in the middle of September. Hurricane intensities are measured using the Saffir-Simpson Hurricane Wind Scale (Table 3). This scale is a 1 to 5 categorization based on the hurricane's intensity at the indicated time.

Hurricanes bring a complex set of impacts. The winds from a hurricane produce a rise in the water level at landfall called storm surge. Storm surges produce coastal flooding effects that can be as damaging as the hurricane's winds. Hurricanes bring very intense inland riverine flooding. Hurricanes can also produce tornadoes that can add to the wind damages inland. In this risk assessment, only hurricane winds, and coastal storm surge are considered.

Table 3: Saffir-Simpson Hurricane Wind Scale

Category	Wind Speed (mph)	Damage
1	74 - 95	Very dangerous winds will produce some damage
2	96 - 110	Extremely dangerous winds will cause extensive damage
3	111 - 130	Devastating damage will occur
4	131 -155	Catastrophic damage will occur
5	> 155	Catastrophic damage will occur

The National Oceanic and Atmospheric Administration's National Hurricane Center created the HURDAT database, which contains all of the tracks of tropical systems since the mid-1800s. This database was used to document the number of tropical systems that have affected Jasper County by creating a 20-mile buffer around the county to include storms that didn't make direct landfall in Jasper County but impacted the county. Note that the storms listed contain the peak sustained winds, maximum pressure and maximum attained storm strength for the entire storm duration. Since 1852, Jasper County has had 16 tropical systems within 20 miles of its county borders (Table 4).

Table 4: Tropical Systems affecting Jasper County[3]

YEAR	DATE RANGE	NAME	MAX WIND(Knots)	MAX PRESSURE	MAX CAT
1852	August 19-30	UNNAMED	100	961	H2

[2] National Hurricane Center (2011). "Glossary of NHC Terms." National Oceanic and Atmospheric Administration. http://www.nhc.noaa.gov/aboutgloss.shtml#h. Retrieved 2012-23-02.

[3] Atlantic Oceanic and Meteorological Laboratory (2012). "Data Center." National Oceanic and Atmospheric Administration. http://www.aoml.noaa.gov/hrd/data_sub/re_anal.html. Retrieved 7-20-2015.

YEAR	DATE RANGE	NAME	MAX WIND(Knots)	MAX PRESSURE	MAX CAT
1859	September 15-18	UNNAMED	70	0	TD
1882	September 02-13	UNNAMED	110	1000	H2
1889	September 12-26	UNNAMED	95	0	H1
1893	September 27 - October 05	UNNAMED	115	948	H3
1896	July 04-12	UNNAMED	85	0	H1
1901	September 21 - October 02	UNNAMED	45	0	TD
1903	September 09-16	UNNAMED	80	988	H1
1911	August 23-31	UNNAMED	85	972	H1
1912	June 07-17	UNNAMED	60	0	TD
1940	August 05-14	UNNAMED	85	1008	H1
1959	May 28 - June 02	ARLENE	55	1002	TD
1994	August 14-19	BERYL	50	1013	TD
1995	August 22-28	JERRY	35	1010	TD
2000	September 15-25	HELENE	60	1012	TD
2004	September 13-29	JEANNE	105	1010	H2

Category Definitions:

TS – Tropical storm

TD – Tropical depression

H1 – Category 1 (same format for H2, H3, and H4)

E – Extra-tropical cyclone

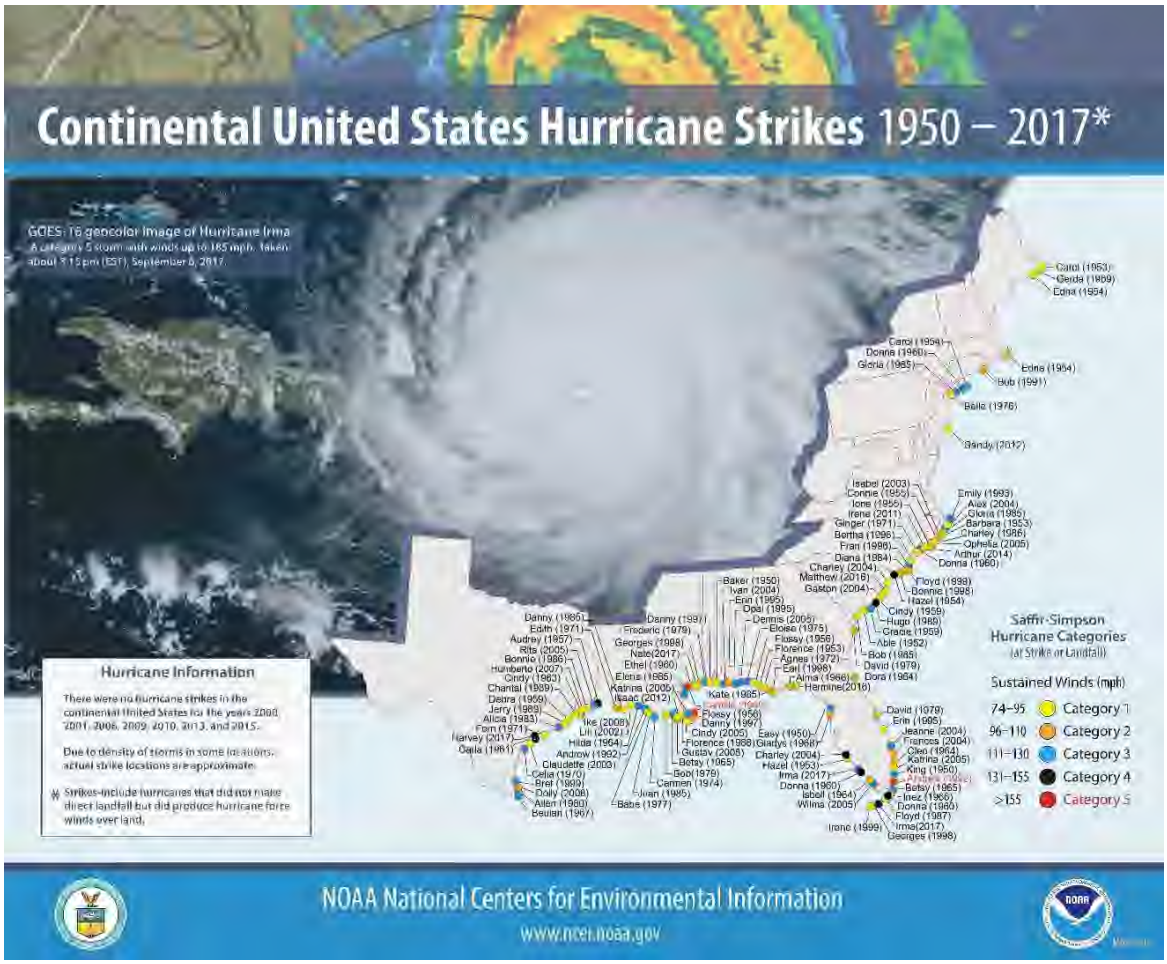


Figure 2: Continental United States Hurricane Strikes: 1950 to 2017[4]

Probabilistic Hurricane Scenario

The following probabilistic wind damage risk assessment modeled a Tropical Storm with maximum winds of 69 mph.

Wind Damage Assessment

Separate analyses were performed to determine wind and hurricane storm surge related flood losses. This section describes the wind-based losses to Jasper County. Wind losses were determined from probabilistic models run for the Tropical Storm which equates to the 1% chance storm event. Figure 3 shows wind speeds for the modeled Tropical Storm.

[4] Source: NOAA National Centers for Environmental Information

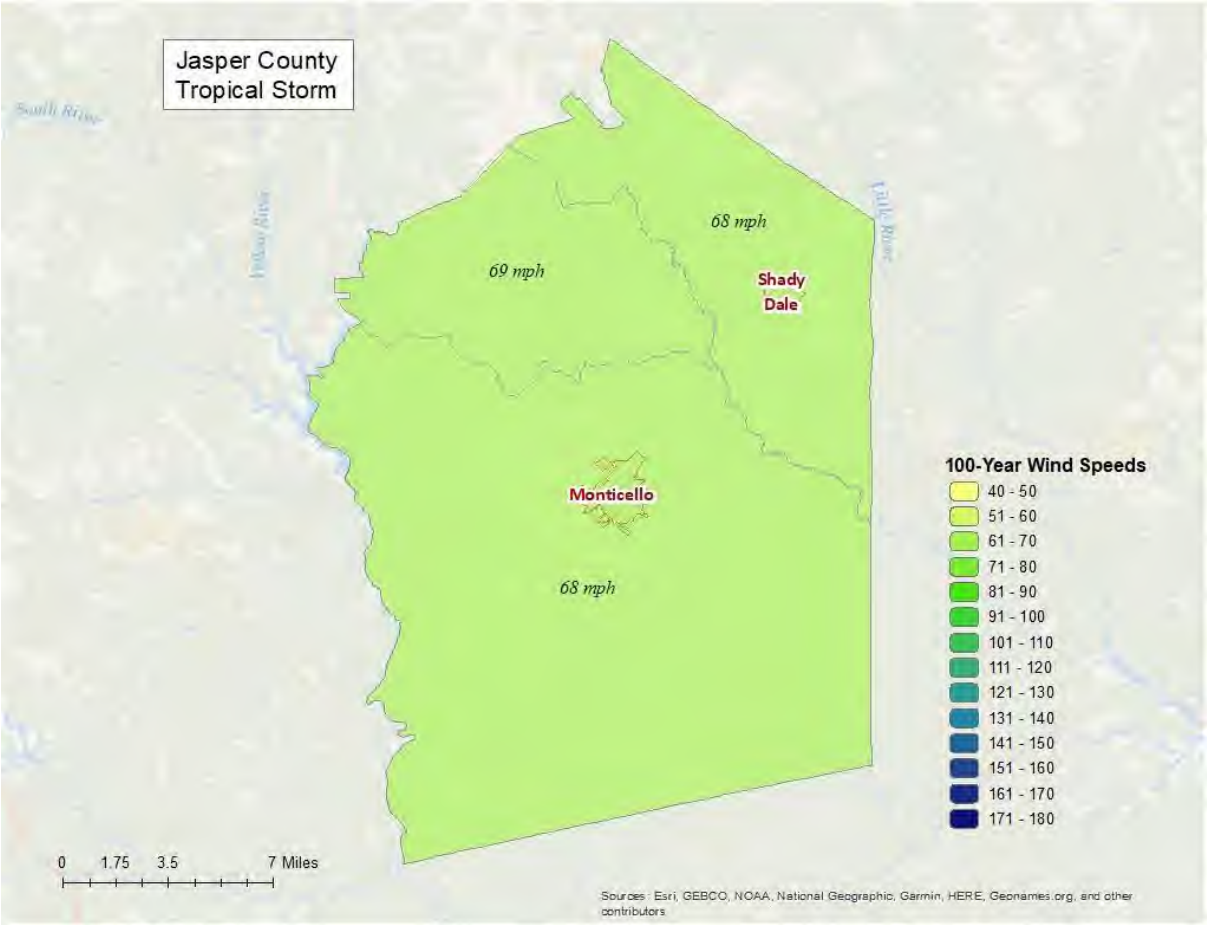


Figure 3: Wind Speeds by Storm Category

Wind-Related Building Damages

Buildings in Jasper County are vulnerable to storm events, and the cost to rebuild may have significant consequences to the community. The following table shows a summary of the results of wind-related building damage in Jasper County for the Tropical Storm (100 Year Event). The loss ratio expresses building losses as a percentage of total building replacement cost in the county. Figure 4 illustrates the building loss ratios of the modeled Tropical Storm.

Table 5: Hurricane Wind Building Damage

Classification	Number of Buildings Damaged	Total Building Damage	Total Economic Loss[5]	Loss Ratio
Tropical Storm	10	$763,040	$1,049,780	0.09%

[5] Includes property damage (infrastructure, contents, and inventory) as well as business interruption losses.

Note that wind damaged buildings are not reported by jurisdiction. This is due to the fact that census tract boundaries – upon which hurricane building losses are based – do not closely coincide with jurisdiction boundaries.

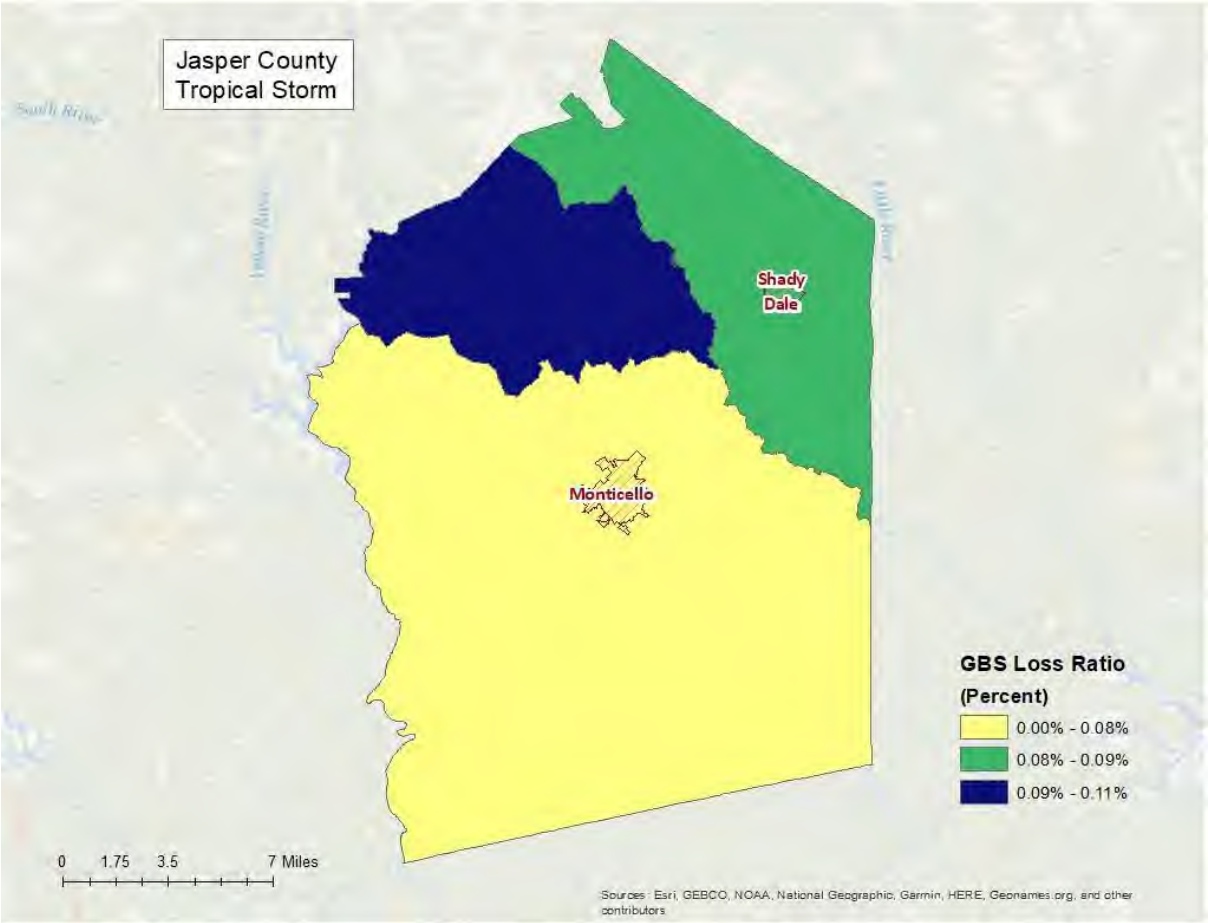


Figure 4: Hurricane Wind Building Loss Ratios

Essential Facility Losses

Essential facilities are also vulnerable to storm events, and the potential loss of functionality may have significant consequences to the community. Hazus-MH identified the essential facilities that may be moderately or severely damaged by winds. The results are compiled in Table 6.

There are 16 essential facilities in Jasper County.

Classification	Number
EOCs	1
Fire Stations	7
Care Facilities	2
Police Stations	1
Schools	5

Table 6: Wind-Damaged Essential Facility Losses

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

Shelter Requirements

Hazus-MH estimates the number of households evacuated from buildings with severe damage from high velocity winds as well as the number of people who will require short-term sheltering. Since the 1% chance storm event for Jasper County is a Tropical Storm, the resulting damage is not enough to displace Households or require temporary shelters as shown in the results listed in Table 7.

Table 7: Displaced Households and People

Classification	# of Displaced Households	# of People Needing Short-Term Shelter
Tropical Storm	0	0

Debris Generated from Hurricane Wind

Hazus-MH estimates the amount of debris that will be generated by high velocity hurricane winds and quantifies it into three broad categories to determine the material handling equipment needed:

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

Different material handling equipment is required for each category of debris. The estimates of debris for this scenario are listed in Table 8. The amount of hurricane wind related tree debris that is estimated to require pick up at the public's expense is listed in the eligible tree debris column.

Table 8: Wind-Related Debris Weight (Tons)

Classification	Brick, Wood, and Other	Reinforced Concrete and Steel	Eligible Tree Debris	Other Tree Debris	Total
Tropical Storm	39	0	547	11,398	11,984

Figure 5 shows the distribution of all wind related debris resulting from a Tropical Storm. Each dot represents 20 tons of debris within the census tract in which it is located. The dots are randomly distributed within each census tract and therefore do not represent the specific location of debris sites.

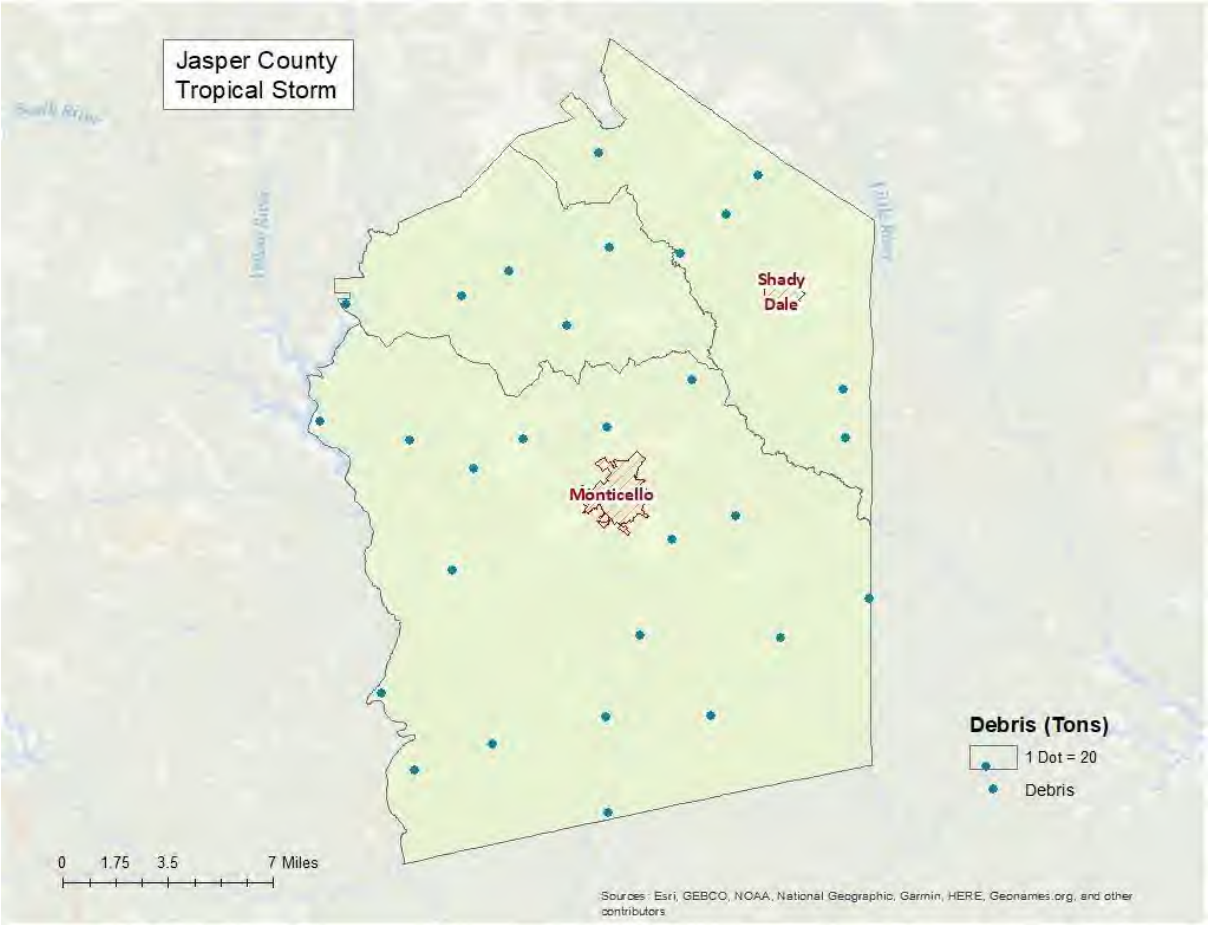


Figure 5: Wind-Related Debris Weight (Tons)

Flood Risk Assessment

Hazard Definition

Flooding is a significant natural hazard throughout the United States. The type, magnitude, and severity of flooding are functions of the amount and distribution of precipitation over a given area, the rate at which precipitation infiltrates the ground, the geometry and hydrology of the catchment, and flow dynamics and conditions in and along the river channel. Floods can be classified as one of three types: upstream floods, downstream floods, or coastal floods.

Upstream floods, also called flash floods, occur in the upper parts of drainage basins and are generally characterized by periods of intense rainfall over a short duration. These floods arise with very little warning and often result in locally intense damage, and sometimes loss of life, due to the high energy of the flowing water. Flood waters can snap trees, topple buildings, and easily move large boulders or other structures. Six inches of rushing water can upend a person; another 18 inches might carry off a car. Generally, upstream floods cause damage over relatively localized areas, but they can be quite severe in the local areas in which they occur. Urban flooding is a type of upstream flood. Urban flooding involves the overflow of storm drain systems and can be the result of inadequate drainage combined with heavy rainfall or rapid snowmelt. Upstream or flash floods can occur at any time of the year in Georgia, but they are most common in the spring and summer months.

Downstream floods, also called riverine floods, refer to floods on large rivers at locations with large upstream catchments. Downstream floods are typically associated with precipitation events that are of relatively long duration and occur over large areas. Flooding on small tributary streams may be limited, but the contribution of increased runoff may result in a large flood downstream. The lag time between precipitation and time of the flood peak is much longer for downstream floods than for upstream floods, generally providing ample warning for people to move to safe locations and, to some extent, secure some property against damage.

Coastal floods occurring on the Atlantic and Gulf coasts may be related to hurricanes or other combined offshore, nearshore, and shoreline processes. The effects of these complex interrelationships vary significantly across coastal settings, leading to challenges in the determination of the base (1-percent-annual-chance) flood for hazard mapping purposes. Land area covered by floodwaters of the base flood is identified as a Special Flood Hazard Area (SFHA). The Jasper County flood risk assessment analyzed at risk structures in the SFHA.

> The SFHA is the area where the National Flood Insurance Program's (NFIP) floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies. The owner of a structure in a high-risk area must carry flood insurance, if the owner carries a mortgage from a federally regulated or insured lender or servicer.

The following probabilistic risk assessment involves an analysis of a 1% annual chance riverine flood event (100-Year Flood) and a 1% annual chance coastal flood.

Riverine 1% Flood Scenario

Riverine losses were determined from the 1% flood boundaries downloaded from the FEMA Flood Map Service Center in January 2020. The flood boundaries were overlaid with the USGS 10 meter DEM using

the Hazus-MH Enhanced Quick Look tool to generate riverine depth grids. The riverine flood depth grid was then imported into Hazus-MH to calculate the riverine flood loss estimates. Figure 6 illustrates the riverine inundation boundary associated with the 1% annual chance.

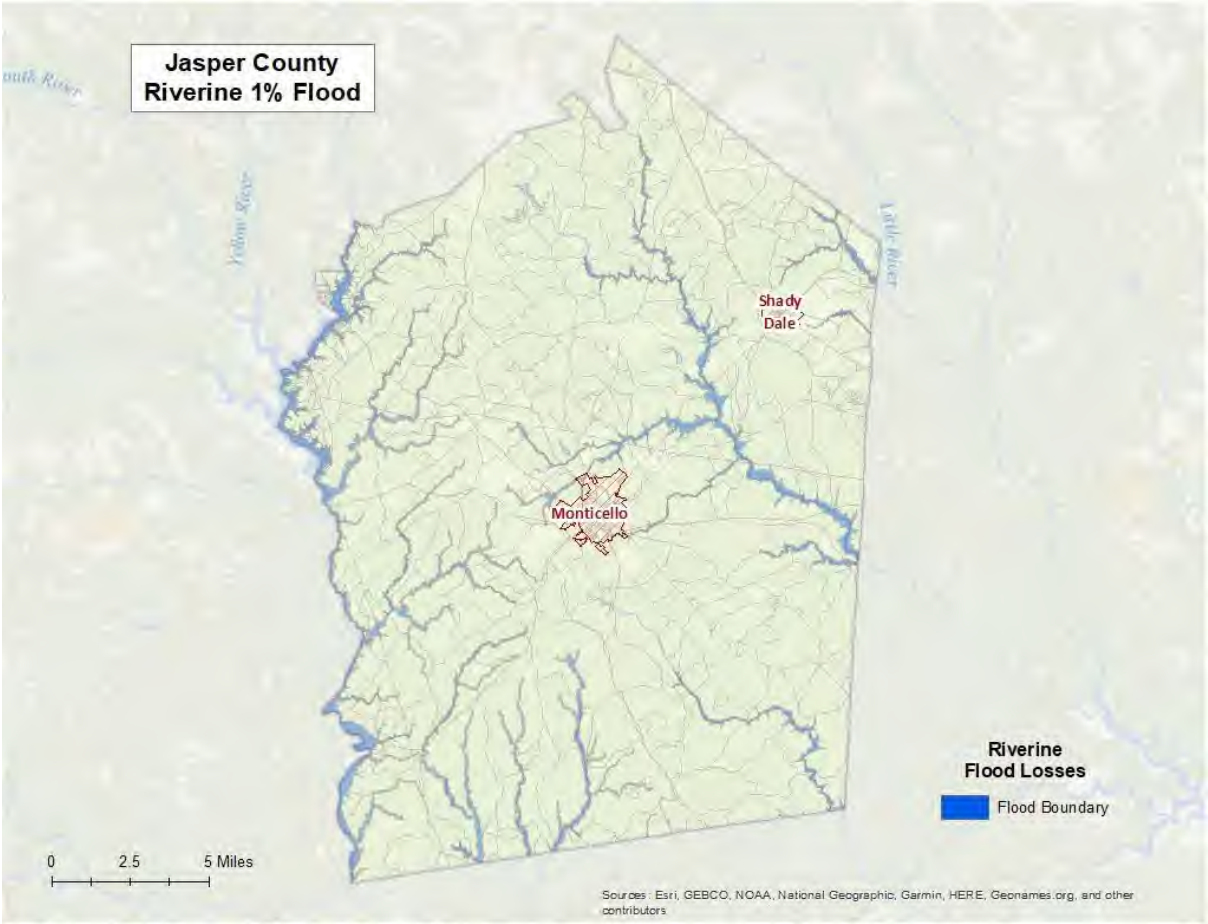


Figure 6: Riverine 1% Flood Inundation

Riverine 1% Flood Building Damages

Buildings in Jasper County are vulnerable to flooding from events equivalent to the 1% riverine flood. The economic and social impacts from a flood of this magnitude can be significant. Table 9 provides a summary of the potential flood-related building damage in Jasper County by jurisdiction that might be experienced from the 1% flood. Figure 7 maps the potential loss ratios of total building exposure to losses sustained to buildings from the 1% flood by 2010 census block and Figure 8 illustrates the relationship of building locations to the 1% flood inundation boundary.

Table 9: Jasper County Riverine 1% Building Losses

Occupancy	Total Buildings in the Jurisdiction	Total Buildings Damaged in the Jurisdiction	Total Building Exposure in the Jurisdiction	Total Losses to Buildings in the Jurisdiction	Loss Ratio of Exposed Buildings to Damaged Buildings in the Jurisdiction
Unincorporated					
Residential	5,368	111	$654,315,441	$3,497,949	0.53%
County Total					
	5,368	**111**	**$654,315,441**	**$3,497,949**	

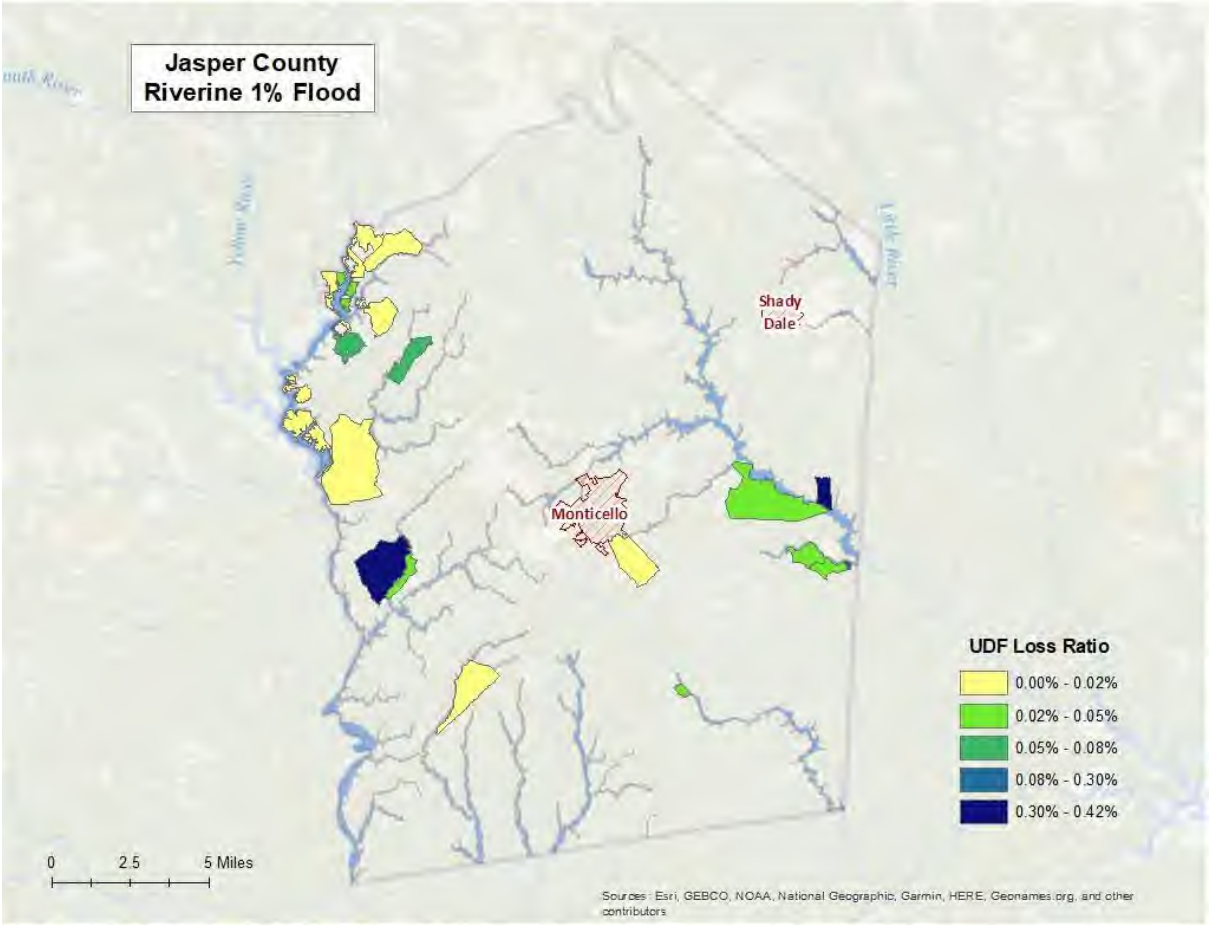


Figure 7: Jasper County Potential Loss Ratios of Total Building Exposure to Losses Sustained to Buildings from the 1% Riverine Flood by 2010 Census Block

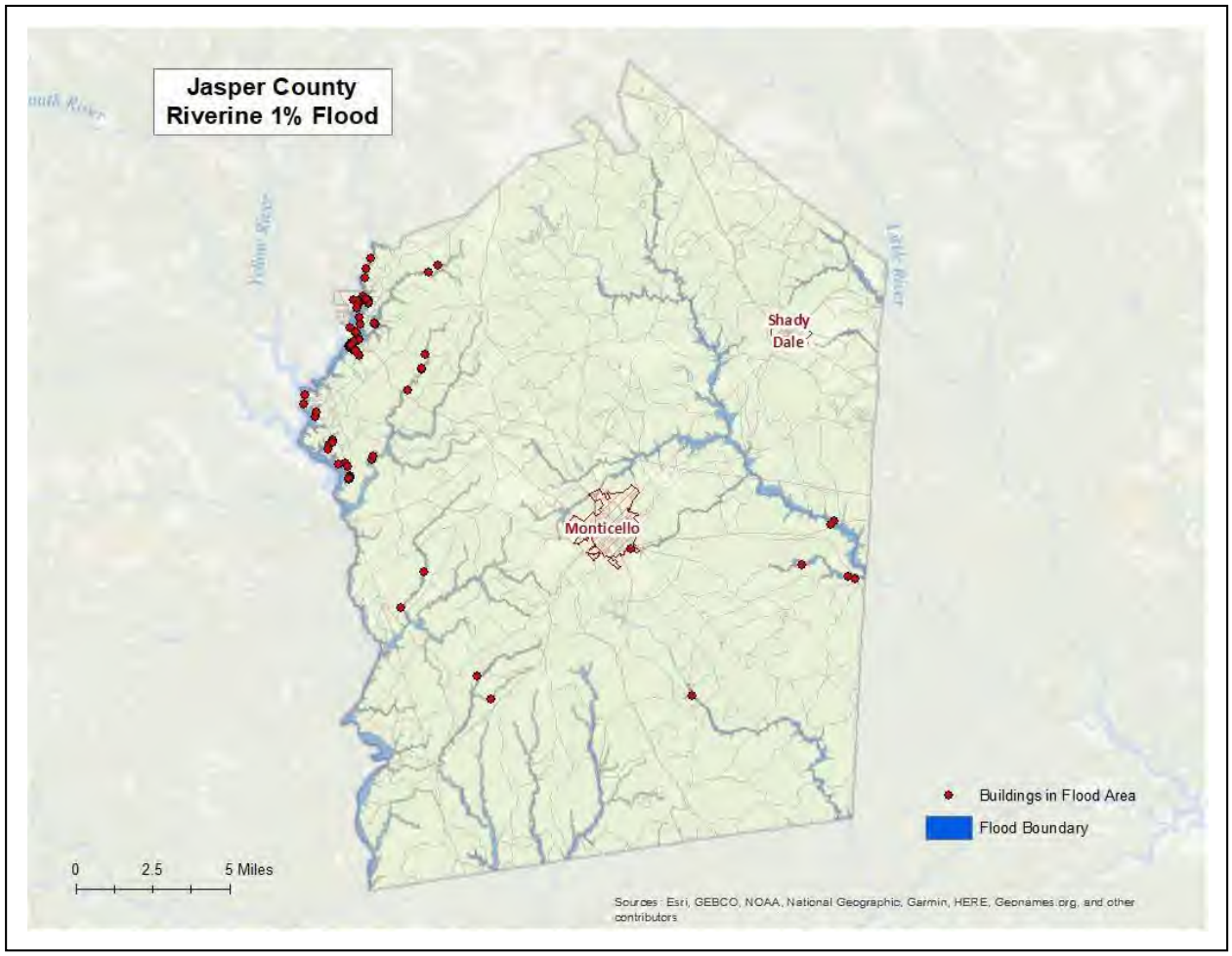


Figure 8: Jasper County Damaged Buildings in Riverine Floodplain (1% Flood)

Riverine 1% Flood Essential Facility Losses

An essential facility may encounter many of the same impacts as other buildings within the flood boundary. These impacts can include structural failure, extensive water damage to the facility and loss of facility functionality (e.g. a damaged police station will no longer be able to serve the community). The analysis identified no essential facility that were subject to damage in the Jasper County riverine 1% probability floodplain.

Riverine 1% Flood Shelter Requirements

Hazus-MH estimates that the number of households that are expected to be displaced from their homes due to riverine flooding and the associated potential evacuation. The model estimates 123 households might be displaced due to the flood. Displacement includes households evacuated within or very near to the inundated area. Displaced households represent 370 individuals, of which 49 may require short term publicly provided shelter. The results are mapped in Figure 9.

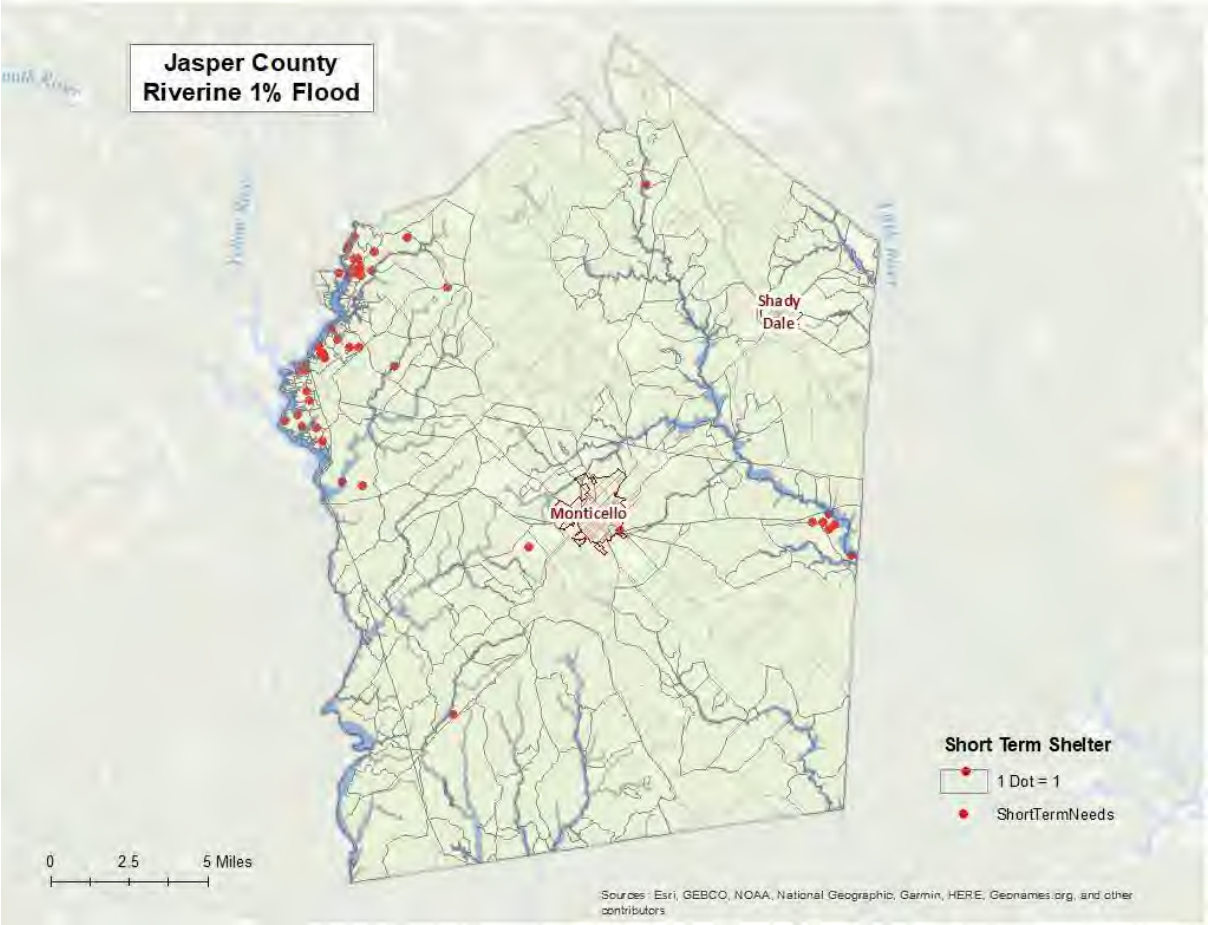


Figure 9: Riverine 1% Estimated Flood Shelter Requirements

Riverine 1% Flood Debris

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

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

Different types of material handling equipment will be required for each category. Debris definitions applied in Hazus-MH are unique to the Hazus-MH model and so do not necessarily conform to other definitions that may be employed in other models or guidelines.

The analysis estimates that an approximate total of 2,555 tons of debris might be generated:
1) Finishes- 860 tons; 2) Structural – 763 tons; and 3) Foundations- 933 tons. The results are mapped in Figure 10.

Figure 10: Riverine 1% Flood Debris Weight (Tons)

Tornado Risk Assessment

Hazard Definition

Tornadoes pose a great risk to the state of Georgia and its citizens. Tornadoes can occur at any time during the day or night. They can also happen during any month of the year. The unpredictability of tornadoes makes them one of Georgia's most dangerous hazards. Their extreme winds are violently destructive when they touch down in the region's developed and populated areas. Current estimates place the maximum velocity at about 300 miles per hour, but higher and lower values can occur. A wind velocity of 200 miles per hour will result in a wind pressure of 102.4 pounds per square foot of surface area—a load that exceeds the tolerance limits of most buildings. Considering these factors, it is easy to understand why tornadoes can be so devastating for the communities they hit.

Tornadoes are defined as violently-rotating columns of air extending from thunderstorms and cyclonic events. Funnel clouds are rotating columns of air not in contact with the ground; however, the violently-rotating column of air can reach the ground very quickly and become a tornado. If the funnel cloud picks up and blows debris, it has reached the ground and is a tornado.

Tornadoes are classified according to the Fujita tornado intensity scale. Originally introduced in 1971, the scale was modified in 2006 to better define the damage and estimated wind scale. The Enhanced Fujita Scale ranges from low intensity EF0 with effective wind speeds of 65 to 85 miles per hour, to EF5 tornadoes with effective wind speeds of over 200 miles per hour. The Enhanced Fujita intensity scale is included in Table 10.

Table 10: Enhanced Fujita Tornado Rating

Fujita Number	Estimated Wind Speed	Path Width	Path Length	Description of Destruction
EF0 *Gale*	65-85 mph	6-17 yards	0.3-0.9 miles	Light damage, some damage to chimneys, branches broken, sign boards damaged, shallow-rooted trees blown over.
EF1 Moderate	86-110 mph	18-55 yards	1.0-3.1 miles	Moderate damage, roof surfaces peeled off, mobile homes pushed off foundations, attached garages damaged.
EF2 Significant	111-135 mph	56-175 yards	3.2-9.9 miles	Considerable damage, entire roofs torn from frame houses, mobile homes demolished, boxcars pushed over, large trees snapped or uprooted.
EF3 Severe	136-165 mph	176-566 yards	10-31 miles	Severe damage, walls torn from well-constructed houses, trains overturned, most trees in forests uprooted, heavy cars thrown about.
EF4 Devastating	166-200 mph	0.3-0.9 miles	32-99 miles	Complete damage, well-constructed houses leveled, structures with weak foundations blown off for some distance, large missiles generated.
EF5 Incredible	> 200 mph	1.0-3.1 miles	100-315 miles	Foundations swept clean, automobiles become missiles and thrown for 100 yards or more, steel-reinforced concrete structures badly damaged.

Source: http://www.srh.noaa.gov

Hypothetical Tornado Scenario

For this report, an EF3 tornado was modeled to illustrate the potential impacts of tornadoes of this magnitude in the county. The analysis used a hypothetical path based upon an EF3 tornado event running along the predominant direction of historical tornados (southeast to northwest). The tornado path was placed to travel through Monticello. The selected widths were modeled after a re-creation of the Fujita-Scale guidelines based on conceptual wind speeds, path widths, and path lengths. There is no guarantee that every tornado will fit exactly into one of these categories. Table 11 depicts tornado path widths and expected damage.

Table 11: Tornado Path Widths and Damage Curves

Fujita Scale	Path Width (feet)	Maximum Expected Damage
EF-5	2,400	100%
EF-4	1,800	100%
EF-3	1,200	80%
EF-2	600	50%
EF-1	300	10%
EF-0	300	0%

Within any given tornado path there are degrees of damage. The most intense damage occurs within the center of the damage path, with decreasing amounts of damage away from the center. After the hypothetical path is digitized on a map, the process is modeled in GIS by adding buffers (damage zones) around the tornado path. Figure 11 describes the zone analysis.

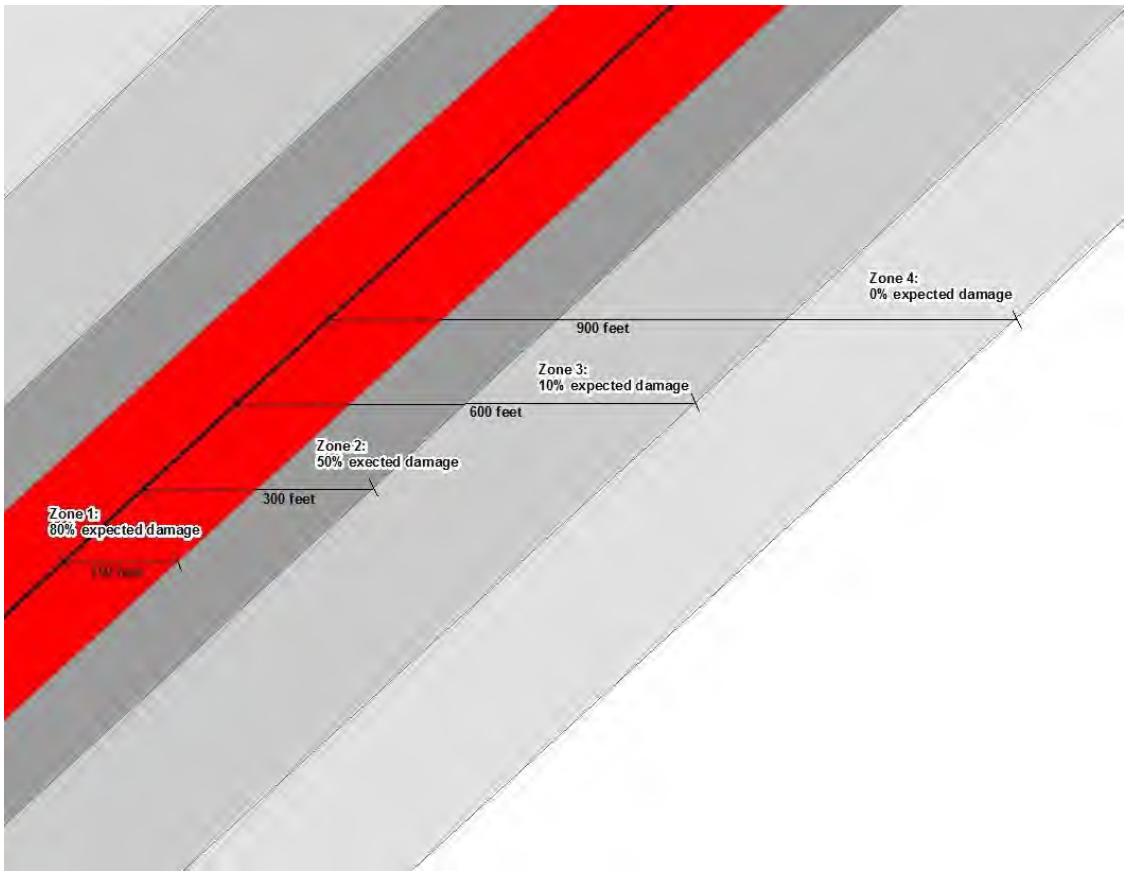


Figure 11: EF Scale Tornado Zones

An EF3 tornado has four damage zones, depicted in Table 12. Major damage is estimated within 150 feet of the tornado path. The outer buffer is 900 feet from the tornado path, within which buildings will not experience any damage. The selected hypothetical tornado path is depicted in Figure 12 and the damage curve buffer zones are shown in Figure 13.

Table 12: EF3 Tornado Zones and Damage Curves

Zone	Buffer (feet)	Damage Curve
1	0-150	80%
2	150-300	50%
3	300-600	10%
4	600-900	0%

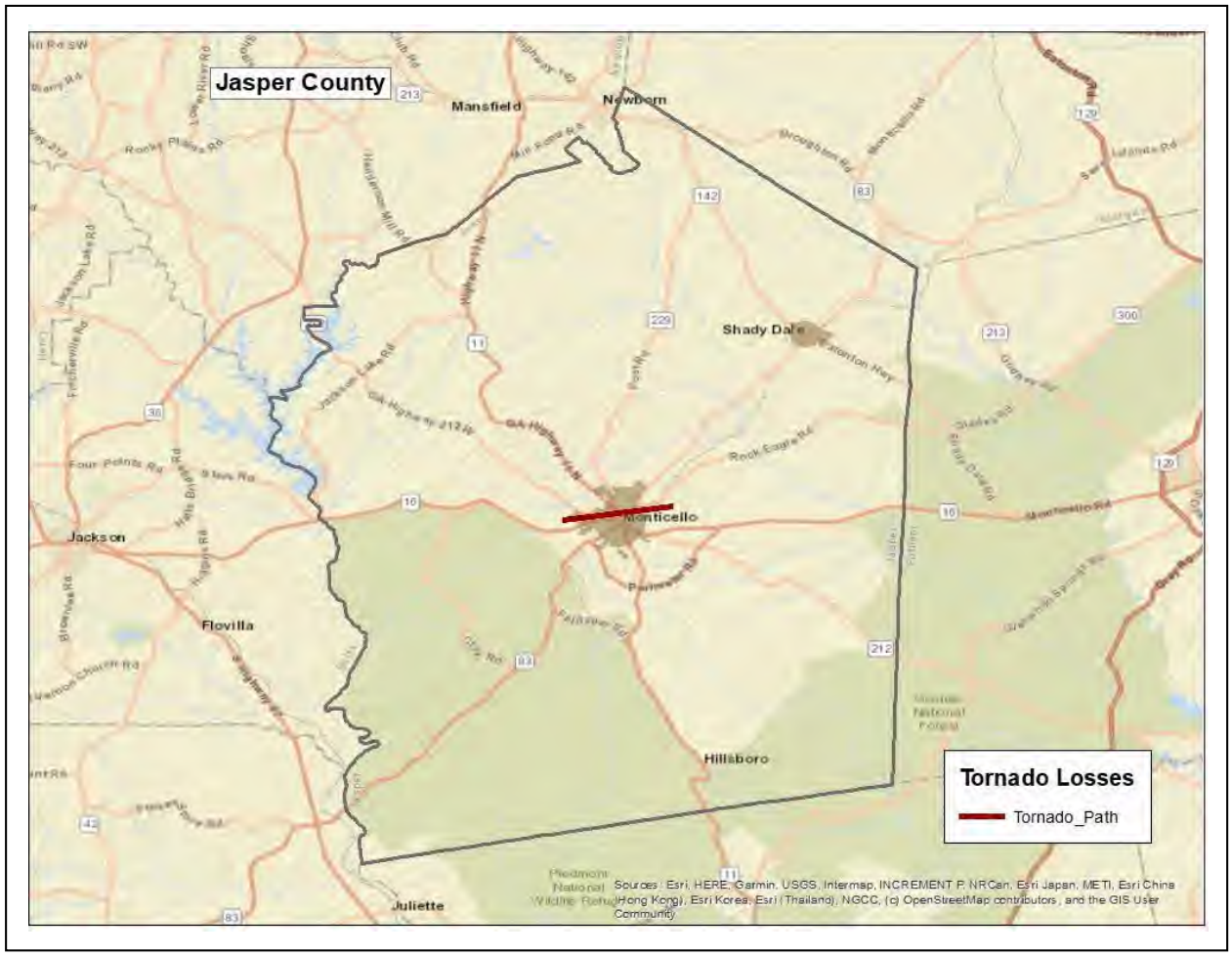


Figure 12: Hypothetical EF3 Tornado Path in Jasper County

Figure 13: Modeled EF3 Tornado Damage Buffers in Jasper County

EF3 Tornado Building Damages

The analysis estimated that approximately 289 buildings could be damaged, with estimated building losses of $13 million. The building losses are an estimate of building replacement costs multiplied by the percentages of damage. The overlay was performed against parcels provided by Jasper County that were joined with Assessor records showing estimated property replacement costs. The Assessor records often do not distinguish parcels by occupancy class if the parcels are not taxable and thus the number of buildings and replacement costs may be underestimated. The results of the analysis are depicted in Table 13.

Table 13: Estimated Building Losses by Occupancy Type

Occupancy	Buildings Damaged	Building Losses
Residential	257	$9,900,360
Commercial	19	$1,079,123
Industrial	9	$83,689
Religious	1	$37,008
Education	2	$1,396,251
Government	1	$77,519
Total	289	$12,573,950

EF3 Tornado Essential Facility Damage

There were three essential facilities located in the tornado path – three schools. Table 14 outlines the specific facility and the amount of damage under the scenario.

Table 14: Estimated Essential Facilities Damaged

Facility	Amount of Damage
Piedmont Academy	Major Damage
Jasper County Primary School	Major Damage
Washington Park Elementary School	Minor Damage

According to the Georgia Department of Education, Jasper County Primary School's enrollment was approximately 610 students, Washington Park Elementary School's enrollment was approximately 560 students, and Piedmont Academy's enrollment was approximately 300 students as of October 2019. Depending on the time of day, a tornado strike as depicted in this scenario could result in significant injury and loss of life. In addition, arrangements would have to be made for the continued education of the students in another location.

The location of the damaged Essential Facility is mapped in Figure 14.

Figure 14: Modeled Essential Facility Damage in Jasper County

Exceptions Report

Hazus Version 2.2 SP1 was used to perform the loss estimates for Jasper County, Georgia. Changes made to the default Hazus-MH inventory and the modeling parameters used to setup the hazard scenarios are described within this document.

Reported losses reflect the updated data sets. Steps, algorithms and assumptions used during the data update process are documented in the project workflow named PDM_GA_Workflow.doc.

Statewide Inventory Changes

The default Hazus-MH Essential Facility inventory was updated for the entire state prior to running the hazard scenarios for Jasper County.

Updates to the Critical Facility data used in GMIS were provided by Jasper County in January 2020. These updates were applied by The Carl Vinson Institute of Government at the University of Georgia. Table 15 summarizes the difference between the original Hazus-MH default data and the updated data for Jasper County.

Table 15: Essential Facility Updates

Site Class	Feature Class	Default Replacement Cost	Default Count	Updated Replacement Cost	Updated Count
EF	Care	$2,625,000	2	$3,272,000	2
EF	EOC	$880,000	1	$311,000	1
EF	Fire	$476,000	7	$1,232,000	7
EF	Police	$958,000	2	$3,944,000	1
EF	School	$30,415,000	5	$72,454,000	5

County Inventory Changes

The GBS records for Jasper County were replaced with data derived from parcel and property assessment data obtained from Jasper County. The county provided property assessment data was current as of January 2020 and the parcel data current as of December 2019.

General Building Stock Updates

The parcel boundaries and assessor records were obtained from Jasper County. Records without improvements were deleted. The parcel boundaries were converted to parcel points located in the centroids of each parcel boundary. Each parcel point was linked to an assessor record based upon matching parcel numbers. The generated Building Inventory represents the approximate locations (within a parcel) of building exposure. The Building Inventory was aggregated by Census Block and imported into

Hazus-MH using the Hazus-MH Comprehensive Data Management System (CDMS). Both the 2010 Census Tract and Census Block tables were updated.

The match between parcel records and assessor records was based upon a common Parcel ID. For this type of project, unless the hit rate is better than 85%, the records are not used to update the default aggregate inventory in Hazus-MH. The Parcel-Assessor hit rate for Jasper County was 99.4%.

Adjustments were made to records when primary fields did not have a value. In these cases, default values were applied to the fields. Table 16 outlines the adjustments made to Jasper County records.

Table 16: Building Inventory Default Adjustment Rates

Type of Adjustment	Building Count	Percentage
Area Unknown	534	8%
Construction Unknown	499	7%
Condition Unknown	232	3%
Foundation Unknown	492	7%
Year Built Unknown	176	3%
Total Buildings	6,890	6%

Approximately 6% of the CAMA values were either missing (<Null> or '0'), did not match CAMA domains or were unusable ('Unknown', 'Other', 'Pending'). These were replaced with 'best available' values. Missing YearBuilt values were populated from average values per Census Block. Missing Condition, Construction and Foundation values were populated with the highest-frequency CAMA values per Occupancy Class. Missing Area values were populated with the average CAMA values per Occupancy Class.

The resulting Building Inventory was used to populate the Hazus-MH General Building Stock and User Defined Facility tables. The updated General Building Stock was used to calculate flood and tornado losses. Changes to the building counts and exposure that were modeled in Jasper County are sorted by General Occupancy in Table 1 at the beginning of this report. If replacements cost or building value were not present for a given record in the Assessor data, replacement costs were calculated from the Building Area (sqft) multiplied by the Hazus-MH RS Means ($/sqft) values for each Occupancy Class.

Differences between the default and updated data are due to various factors. The Assessor records often do not distinguish parcels by occupancy class when the parcels are not taxable; therefore, the total number of buildings and the building replacement costs for government, religious/non-profit, and education may be underestimated.

User Defined Facilities

Building Inventory was used to create Hazus-MH User Defined Facility (UDF) inventory for flood modeling. Hazus-MH flood loss estimates are based upon the UDF point data. Buildings within the flood boundary were imported into Hazus-MH as User Defined Facilities and modeled as points.

Table 17: User Defined Facility Exposure

Class	Hazus-MH Feature	Counts	Exposure
BI	Building Exposure	6,881	$879,379,888
Riverine UDF	Structures Inside 1% Annual Chance Riverine Flood Area	127	$15,373,890

Assumptions

- Flood analysis was performed on Building Inventory. Building Inventory within the flood boundary was imported as User Defined Facilities. The point locations are parcel centroid accuracy.
- The analysis is restricted to the county boundary. Events that occur near the county boundary do not contain loss estimates from adjacent counties.
- The following attributes were defaulted or calculated:
  - First Floor Height was set from Foundation Type
  - Content Cost was calculated from Building Cost

Community Wildfire Protection Plan

An Action Plan for Wildfire Mitigation and Conservation of Natural Resources

Jasper County, Georgia

A Program of the Georgia Forestry Commission
with support from the U.S. Forest Service

JULY, 2016

SIGNATURE PAGE

_____ _____

Honorable Gene Trammell, Chairman Date
Jasper County Board of Commissioners

_____ _____

Mike Benton Date
Jasper County Manager

_____ _____

Jarret Slocumb Date
Jasper County Fire Chief
Jasper County Emergency Management

_____ _____

Russell Fowler Date
GFC Chief Ranger

_____ _____

Tim Kolmick Date
Fire Management Officer, USFS
Oconee National Forest

_____ _____

John Mason Date
Piedmont Nation Wildlife Refuge

Prepared by;

Russell Fowler, Chief Ranger, Jasper County

Beryl Budd, Wildfire Prevention Specialist

Georgia Forestry Commission
112 Juliette Rd
Round Oak GA 31038

The following report is a collaborative effort among various entities; the representatives listed below comprise the core decision-making team responsible for this report and mutually agree on the plan's contents:

Gene Trammell, Chairman
Jasper County Board of Commissioners

Mike Benton, County Manager
Jasper County

Jarret Slocumb, Chief
Jasper County Fire Department
Director, Jasper County Emergency Management

Russell Fowler, Chief Ranger
Jasper/Jones County Forestry Unit
Georgia Forestry Commission

Beryl Budd, Wildfire Prevention Specialist
Georgia Forestry Commission

Tim Kolmick, Fire Management Officer
US Forest Service
Oconee National Forest

John Mason, Prescribed Fire Specialist
Piedmont National Wildlife Refuge

PLAN CONTENTS PAGE

I. OBJECTIVES

A Community Wildfire Protection Plan (CWPP) provides a community with a road map to reduce its risk from wildfire. A CWPP is designed through collaboration between state and local fire agencies, homeowners and landowners, and other interested parties such as city councils, utilities, homeowners associations, environmental organizations, and other local stakeholders. The plan identifies strategic sites and methods for risk reduction and structural protection projects across jurisdictional boundaries.

Comprehensive plans provide long-term guidance for growth, reflecting a community's values and future expectations. The plan implements the community's values and serves to protect natural and community resources and public safety. Planning also enables communities to address their development patterns in the Wildland Urban Interface and determine how they can reduce their risk through alternative development patterns. The formal legal standing of the plan and its central role in local government decision making underscores the opportunity to use this planning process as an effective means for reducing wildfire risk.

The mission of the following plan is to set clear priorities for the implementation of wildfire mitigation in Jasper County. The plan includes prioritized recommendations for the appropriate types and methods of fuel reduction and structure ignitability reduction that will protect this community and its essential infrastructure. It also includes a plan for wildfire suppression. Specifically, the plan includes community-centered actions that will:

- Educate citizens on wildfire, its risks, and ways to protect lives and properties,
- Support fire rescue and suppression entities,
- Focus on collaborative decision-making and citizen participation,
- Develop and implement effective mitigation strategies, and
- Develop and implement effective community ordinances and codes.

II. COMMUNITY COLLABORATION

Wildfire risk reduction strategies are most effective when approached collaboratively – involving groups of residents, elected officials, community decision makers, emergency managers, and natural resource mangers –and when combined with effective outreach approaches. Collaborative approaches make sense as the initial focus of any community attempting to work toward wildfire risk reduction. In all Community Wildfire Protection Plan collaborations, the goal is to cooperatively identify problems and reach a consensus for mutual action. In the case of wildfire mitigation, a reduction in the wildfire risk to the community's lives, houses, and property is the desired outcome.

The collaborative core team convened on January 25, 2010 to assess risks and develop the Community Wildfire Protection Plan. The group is comprised of representatives from local government, local fire authorities, and the state agency responsible for forest management.

Below are the groups included in the task force:

Jasper County Government
- *County Fire Department*
- *Emergency Management*
- *Board of County Commissioners*

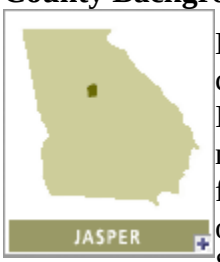
Georgia Forestry Commission

It was decided to conduct community assessments on the basis of the on high risk communities and the individual fire districts in the county. The chief of the Jasper County Fire Department, Chief Ranger of the local Georgia Forestry Commission office, and the Community Wildfire Protection Specialist reconvened on July19, 2010 for the purpose of completing the following:

Risk Assessment	Assessed wildfire hazard risks and prioritized mitigation actions. The wildfire risk assessment will help homeowners, builders, developers, and emergency personnel whether the area needs attention and will help direct wildfire risk reduction practices to the areas at highest risk.
Fuels Reduction	Identified strategies for coordinating fuels treatment projects.
Structure Ignitability	Identified strategies for reducing the ignitability of structures within the Wildland interface.
Emergency Management	Forged relationships among local government and fire districts and developed/refined a pre-suppression plan.
Education and Outreach	Developed strategies for increasing citizen awareness and action and to conduct homeowner and community leader workshops. Outreach and education programs are designed to raise awareness and improve audience knowledge of wildfire risk reduction needs and practices. In the best cases, education and outreach programs will influence attitudes and opinions and result in effective action.

III. COUNTY BACKGROUND AND WILDFIRE HISTORY

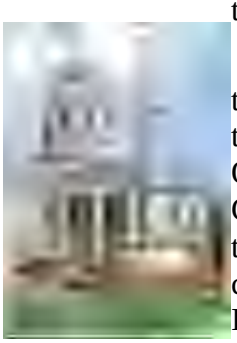
County Background



Located in central Georgia, Jasper County, the state's thirty-first county, was created in 1807 from part of Baldwin County on land formerly held by Creek Indians. It is one of the "antebellum trail" counties, which stretch from lower northeast Georgia to the center of the state. The 370-square-acre county was named for Revolutionary War (1775-83) sergeant William Jasper, a hero of the 1776 Battle of Sullivan's Island (also known as the Battle of Fort Moultrie) who died during the Siege of Savannah in 1779. The county was first named for John Randolph of Virginia, whose opposition to the War of 1812 (1812-15) made him so unpopular with Georgians that the legislature renamed the county in 1812. (In 1828 another county was named for Randolph.)

The Creek Indians long maintained settlements on the shoals of the Ocmulgee River, and Carolina fur trappers traded with them at a location known as the "Seven Islands of the Ocmulgee" as far back as the 1670s. The first non-Indians to settle in what became Jasper County arrived in the late eighteenth century. The first known white settler was a deer hunter known only by the name Newby, who lived near present-day Hillsboro as early as 1790. A treaty with the Creek nation that year provided land for a stagecoach route (the Seven Islands Stagecoach Road) from Augusta, Georgia, to Mobile, Alabama. Settlements grew up around the stagecoach stops.

The Seven Island Stagecoach Road became a valuable route for cotton planters, who shipped their cotton down the Ocmulgee River to mills near "Seven Islands," which grew into a thriving commercial center complete with cotton gins and grist-, saw-, and textile mills. The products of these industries were shipped out to seaports via the stagecoach road.



In the 1830s and 1840s the importance of the river and coach road for transportation of goods declined in favor of rail transportation. However, during the Civil War (1861-65), Union troops laid two pontoon bridges across the Ocmulgee River at Planter's Factory near Seven Islands and crossed into Jasper County between November 17 and 20, 1864. Sherman's troops destroyed much of the railroad infrastructure during their march to the sea, and until the railroads could recover, the river once again was used for transporting goods. The Seven Islands mills were operated until cotton lost its dominance in Georgia's economy. Abandoned mill buildings were finally torn down in the 1980s.

The county seat, Monticello, was named after U.S president Thomas Jefferson's home in Virginia by the town's founders, Virginians who had settled the area in 1808. Monticello was incorporated in 1810. Court was first held in the home of John Towns, one of the settlers. A log cabin served as courthouse until 1838, when it was replaced with a brick building. The current courthouse, made of marble and brick, was completed in 1907.

Among the other communities in Jasper County are Farrar, Hillsboro, Kelly, and Shady Dale. Shady Dale is the only other incorporated town.

As with much of the state, cotton was once the primary crop grown in Jasper County. After "King Cotton" lost its battle with the boll weevil and economic depression, many farm workers left the county. Those who remained began growing peaches. Later they adopted a diversified range of

commodities from livestock and poultry to wood products. During the 1980s a number of clothing and textile factories in the county closed, making a serious dent in the local economy. Residents began encouraging the growth of tourism by promoting their national forest areas and Jackson Lake. A major employer in the county is Georgia-Pacific.

Among the outdoor attractions is the Lloyd Shoals Dam, also called Jackson Lake, which covers 4,750 acres, with 135 miles of shoreline. The lake was formed when the Central Georgia Power Company created a dam and hydroelectric plant at Lloyd Shoals on the Ocmulgee River in 1910. Jasper County shares the lake with Butts and Newton counties. Part of the Oconee National Forest, the only national forest in Georgia's Piedmont, is in Jasper County. Much of this large wooded tract was deforested during the cotton plantation era but has been replanted for both people and wildlife to enjoy. The Seven Islands Trail is in Jasper County along the Ocmulgee River.

Seven Islands Nature Trail

(Courtesy *New Georgia Encyclopedia*)

Wildfire History

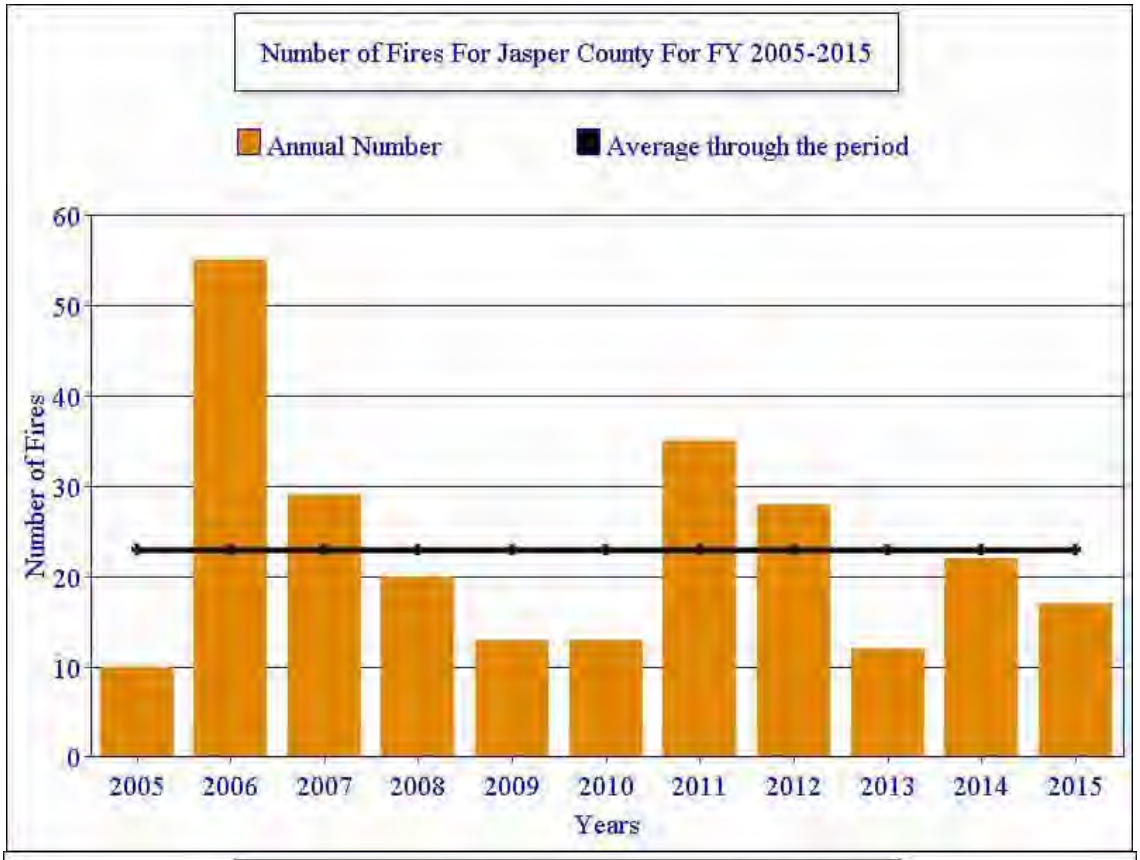
Recent data show that a majority of the fastest growing areas in the U.S. are in wildfire-prone environments. It is not a surprise that some of these fastest growing areas are in Georgia. In last decade of the 20th Century, Georgia's population increased substantially. Homeowners in Georgia must contend with natural hazards including wildfire, tornados, and flooding. This combination of factors – burgeoning population, abundant natural areas, development pressures, and lack of public awareness makes Georgia a perfect state for creating solutions to various hazards. Georgia is looked to throughout the southern region as a leader in comprehensive and hazard mitigation planning.

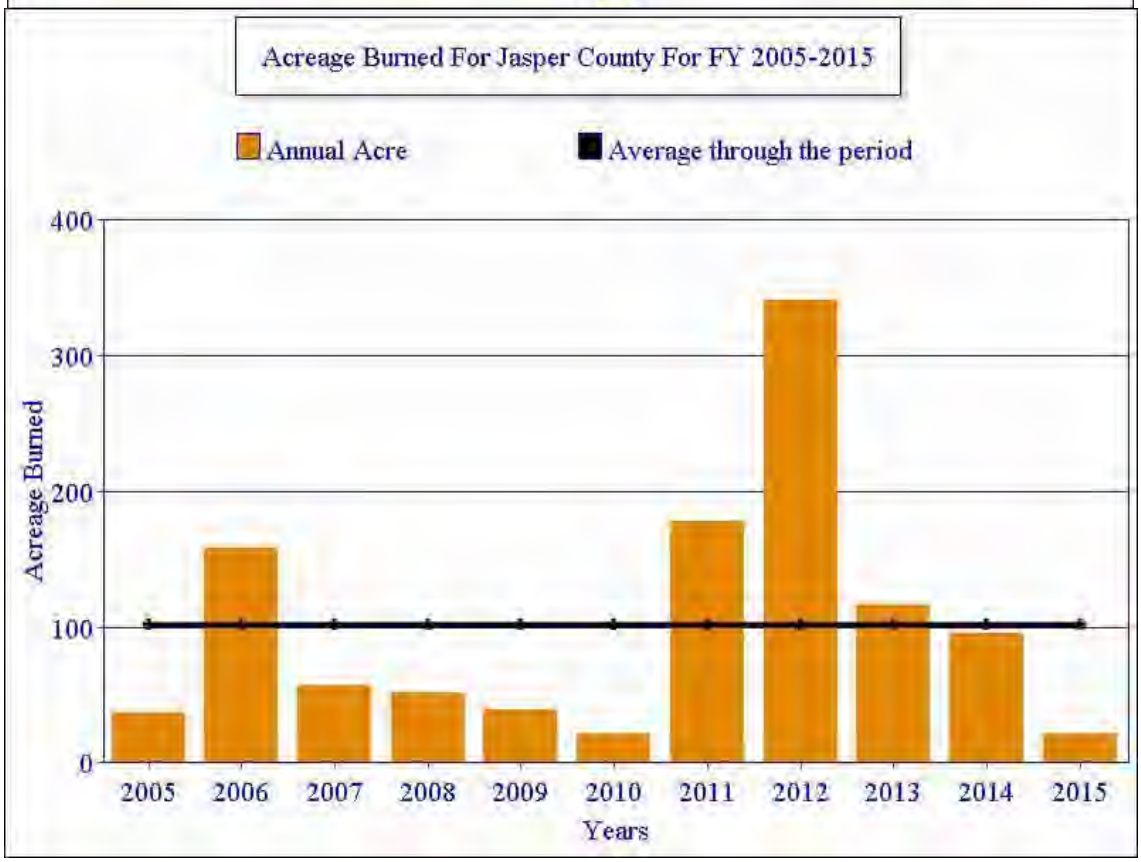
Many of Georgia's existing and new residents living in the urban interface are unaware of the vital role fire plays in our landscape and that their homes are extremely vulnerable to wildfire damage. Balancing development pressures with wildfire risk reduction and education creates a unique challenge for local governments, emergency managers, and wildfire management agencies such as the Georgia Forestry Commission.

Over the past five years, Jasper County has averaged 19 reported wildfires per year. The occurrence of these fires is fairly uniform throughout the year with a slight peak in the months of February and March and a slight decrease during the fall months. These fires have burned an average of 123 acres annually. While the numbers of fires remain fairly similar every month, there is a marked difference in the monthly acreage lost. The monthly acres lost during the late winter through summer period show a tenfold increase over the acres lost during the fall and early winter. Additionally while the annual numbers of fires have not increased noticeably during the 5 year period that records are available, the annual acreage lost appears to have decreased in later years. This perhaps a result of the increase in the practice of prescribed burning. The local Georgia Forestry Commission office needs to be commended for their valiant work increasing their very impressive prescribed burning regiment. The Jasper / Jones County Unit lead their district in the Central Georgia for burning. Despite their work, more homes are being built outside of traditional communities into the wildland urban interface. With this migration of people to the wildland urban interface the potential for a wildfire disaster continues to increase for Jasper County.

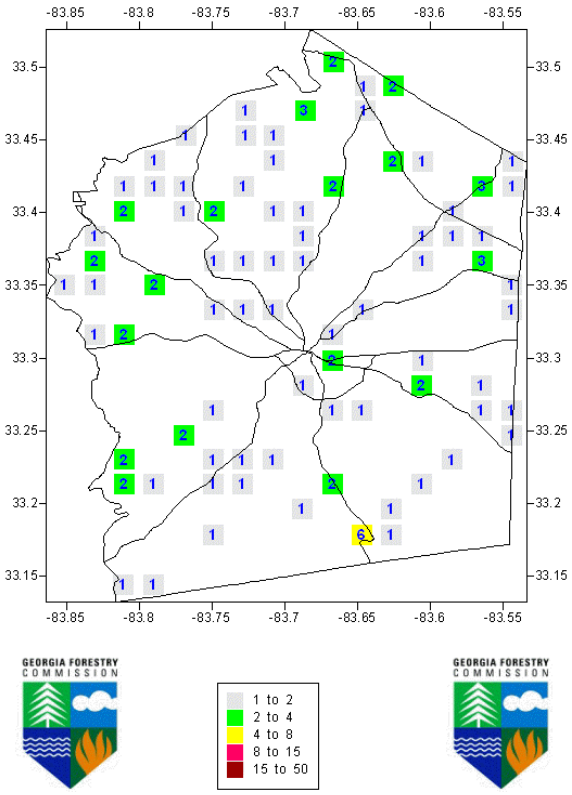
The leading cause of wildfires in Jasper County is careless debris burning. This has accounted for about 50% of all wildfires during the last 10 years. The second leading cause is machine use causing 17% of these wildfires. The following charts and tables include wildfire data in Jasper County from fiscal year 2016 (July 2015 thru June 2016) and for the previous years 2005 thru 2015. It should be noted that during these years the State has experienced two of the worst wildfire seasons in history, 2007 and 2011. Also during these years the lowest historical wildfire occurrence in 2010 and 2015.

County = Jasper	Cause	Fires		Acres	Fires 5 Yr Avg	Acres 5 Yr Avg
Campfire	Campfire	0		0.00	0.40	0.04
Children	Children	0		0.00	0.20	0.12
Debris: Ag Fields, Pastures, Orchards, Etc	Debris: Ag Fields, Pastures, Orchards, Etc	1		3.20	0.60	1.04
Debris: Construction Land Clearing	Debris: Construction Land Clearing	0		0.00	0.20	0.03
Debris: Escaped Prescribed Burn	Debris: Escaped Prescribed Burn	7		25.66	4.80	17.44
Debris: Household Garbage	Debris: Household Garbage	0		0.00	0.20	0.00
Debris: Residential, Leafpiles, Yard, Etc	Debris: Residential, Leafpiles, Yard, Etc	0		0.00	2.40	2.42
Debris: Site Prep - Forestry Related	Debris: Site Prep - Forestry Related	1		0.34	1.40	0.55
Incendiary	Incendiary	0		0.00	0.20	0.26
Lightning	Lightning	0		0.00	2.00	17.49
Machine Use	Machine Use	1		0.73	1.80	3.60
Miscellaneous	Miscellaneous	0		0.00	0.60	61.07
Miscellaneous: Cutting/Welding/Grinding	Miscellaneous: Cutting/Welding/Grinding	0		0.00	0.20	0.76
Miscellaneous: Power lines/Electric fences	Miscellaneous: Power lines/Electric fences	1		0.32	0.40	0.16
Miscellaneous: Spontaneous Heating/Combustion	Miscellaneous: Spontaneous Heating/Combustion	0		0.00	0.80	0.45
Miscellaneous: Structure/Vehicle Fires	Miscellaneous: Structure/Vehicle Fires	2		0.15	0.40	0.03
Smoking	Smoking	0		0.00	0.60	0.25
Undetermined	Undetermined	3		9.61	1.80	16.93
Totals for County: Jasper Year: 2016		16		40.01	19.00	122.66


Number of Fires For Jasper County For FY 2005-2015
Annual Number
Average through the period
Number of Fires
0
10
20
30
40
50
60
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Years


Acreage Burned For Jasper County For FY 2005-2015
Annual Acre
Average through the period
Acreage Burned
0
100
200
300
400
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Years

Fire Occurrence Map for Jasper County for Fiscal Year 2011-2015



IV. COMMUNITY BASE MAPS


Jasper County
N


Jasper County
NATIONAL
FOREST
N

V. COMMUNITY WILDFIRE RISK ASSESSMENT

The Wildland-Urban Interface

There are many definitions of the Wildland-Urban Interface (WUI), however from a fire management perspective it is commonly defined as an area where structures and other human development meet or intermingles 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.

1. "Boundary" wildland-urban interface is characterized by areas of development where homes, especially new subdivisions, press against 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 predominately 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.

(courtesy *Fire Ecology and Wildfire Mitigation in Florida* 2004)

Wildland Urban Interface Hazards

Firefighters in the wildland urban interface may encounter hazards other than the fire itself, such as hazardous materials, utility lines and poor access.

- Hazardous Materials
  - Common chemicals used around the home may be a direct hazard to firefighters from flammability, explosion potential and/or vapors or off-gassing. Such chemicals include paint, varnish and other flammable liquids; fertilizer; pesticides; cleansers; aerosol cans, fireworks, batteries and ammunition. In addition, some common household products such as plastics may give off very toxic fumes when they burn. Stay OUT of the smoke from burning structures and any unknown sources such as trash piles.
- Illicit Activities
  - Marijuana plantations or drug production labs may be found in wildland urban interface areas. Extremely hazardous materials such as propane tanks and flammable/toxic chemicals may be encountered, as well as booby traps.
- Propane tanks
  - Both large (household size) and small (gas grill size) liquefied propane gas (LPG) tanks can present hazards to firefighters, including explosion. See the "LPG Tank Hazards" discussion for details.

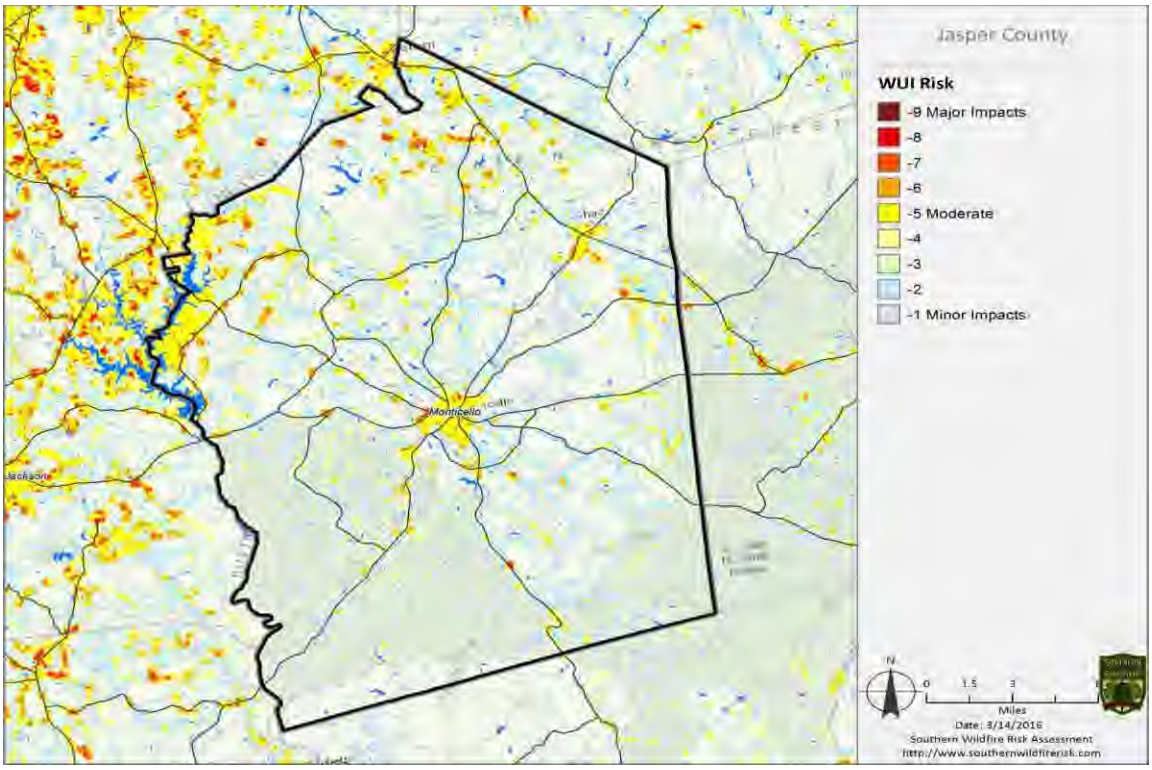
- Utility lines
    - Utility lines may be located above and below ground and may be cut or damaged by tools or equipment. Don't spray water on utility lines or boxes.
- Septic tanks and fields
    - Below-ground structures may not be readily apparent and may not support the weight of engines or other apparatus.
- New construction materials
    - Many new construction materials have comparatively low melting points and may "off-gas" extremely hazardous vapors. Plastic decking materials that resemble wood are becoming more common and may begin softening and losing structural strength at 180° F, though they normally do not sustain combustion once direct flame is removed. However, if they continue to burn they exhibit the characteristics of flammable liquids.
- Pets and livestock
    - Pets and livestock may be left when residents evacuate and will likely be highly stressed, making them more inclined to bite and kick. Firefighters should not put themselves at risk to rescue pets or livestock.
- Evacuation occurring
    - Firefighters may be taking structural protection actions while evacuations of residents are occurring. Be very cautious of people driving erratically. Distraught residents may refuse to leave their property, and firefighters may need to disengage from fighting fire to contact law enforcement officers for assistance. In most jurisdictions firefighters do not have the authority to force evacuations. Firefighters should not put themselves at risk trying to protect someone who will not evacuate!
- Limited access
    - Narrow one-lane roads with no turn-around room, inadequate or poorly maintained bridges and culverts are frequently found in wildland urban interface areas. Access should be sized-up and an evacuation plan for all emergency personnel should be developed.

Southern Wildfire Risk Assessment Summary (SouthWRAP)

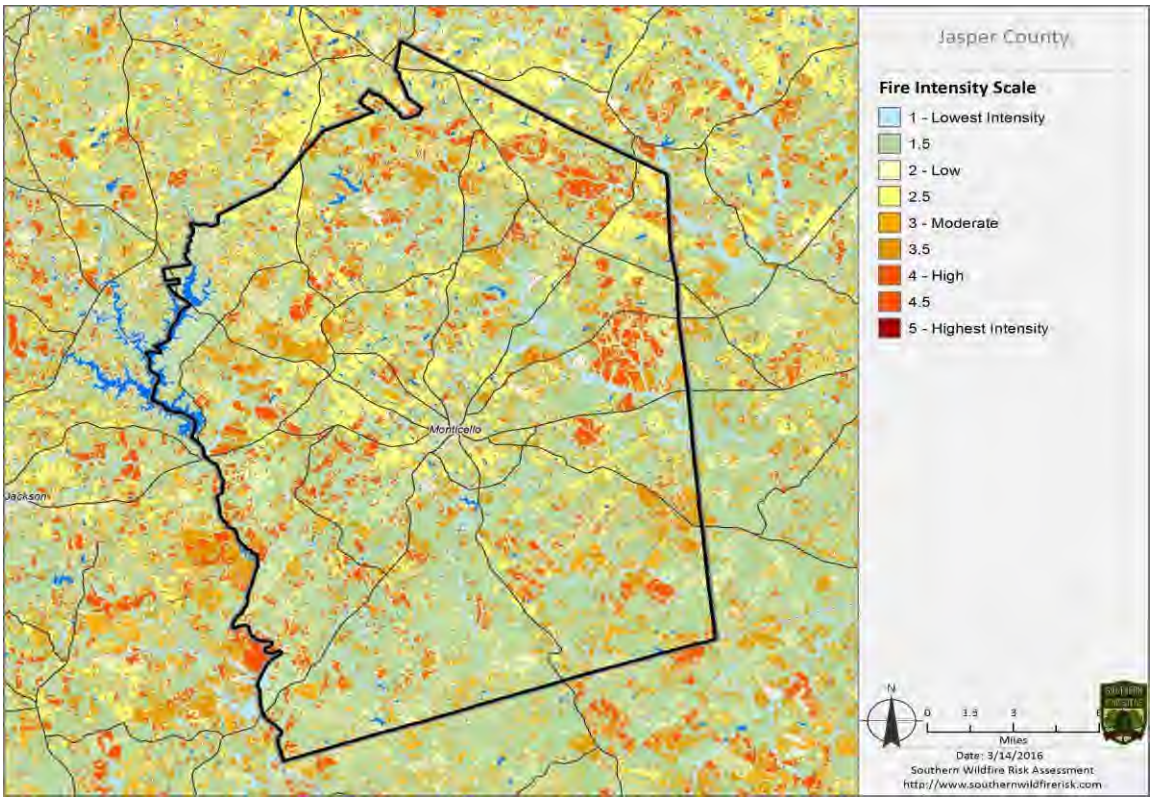
The Southern Wildfire Risk Assessment tool, developed by the Southern Group of State Foresters, was released to the public in July 2014. This tool allows users of the Professional Viewer application of the Southern Wildfire Risk Assessment (SWRA) web Portal (SouthWRAP) to define a specific project area and summarize wildfire related information for this area. A detailed risk summary report is generated using a set of predefined map products developed by the Southern Wildfire Risk Assessment project which have been summarized explicitly for the user defined project area. A risk assessment summary was generated for Wilcox County. The SouthWRAP (SWRA) products included in this report are designed to provide the information needed to support the following key priorities:

- Identify areas that are most prone to wildfire
- Identify areas that may require additional tactical planning, specifically related to mitigation projects and Community Wildfire Protection Planning
- Provide the information necessary to justify resource, budget and funding requests
- Allow agencies to work together to better define priorities and improve emergency response, particularly across jurisdictional boundaries
- Define wildland communities and identify the risk to those communities
- Increase communication and outreach with local residents and the public to create awareness and address community priorities and needs
- Plan for response and suppression resource needs
- Plan and prioritize hazardous fuel treatment programs

Wildland Urban Interface map from Jasper SouthWRAP report



Wildland Urban Interface Risk map



Fire Intensity Scale Map

Community Assessments:

The wildland fire risk assessments conducted in 2010 by the Jasper County Fire Department and the Georgia Forestry Commission returned an average score of 91, placing Jasper County in the "moderate risk" hazard range. The risk assessment instrument used to evaluate wildfire hazards to Jasper County's WUI was the Hazard and Wildfire Risk Assessment Checklist. The instrument takes into consideration accessibility, vegetation (based on fuel models), roofing assembly, building construction, and availability of fire protection resources, placement of gas and electric utilities, and additional rating factors. The following factors contributed to the wildfire hazard score for Jasper County:

- Dead end roads with inadequate turn arounds
- Narrow roads without drivable shoulders
- Long, narrow, and poorly labeled driveways
- Limited street signs and homes not clearly addressed
- Thick, highly flammable vegetation surrounding many homes
- Minimal defensible space around structures
- Homes with wooden siding and roofs with heavy accumulations of vegetative debris
- No pressurized or non-pressurized water systems available
- Above ground utilities
- Large, adjacent areas of forest or wildlands
- Heavy fuel buildups in adjacent wildlands
- Undeveloped lots comprising half the total lots in many rural communities.
- High occurrence of wildfires in the several locations
- Distance from fire stations
- Lack of homeowner or community organizations

The Communities-at-Risk within Jasper County that led to its moderate risk rating are:

- Turtle Cove Community, Off Lake Jackson Rd.
- Falcon Ridge Subdivision
- Grandview Community, Grand View Road
- Oconee Forest, Oconee Forest Road
- Jones Estates, Hamilton Drive
- Henderson Mill Subdivision, Henderson Mill Road at County Line Road
- Gaissert Subdivision, Gaissert Road
- Gap Creek Community, Gap Creek Road
- Johnny Fears Community, Johnny Fears Road
- Ross Community, Ross Road
- Kline Community, Kline Road
- Wisteria Cove Subdivision
- Hawks Nest Subdivision, Hawks Trail

Pictured above is an aerial photo of the Turtle Cove Community located on Jackson Lake off of Jackson Lake Road. This community is a prime example of wildland urban interface. Turtle Cove was certified as a Firewise Community in 2013 and the Turtle Cove Property Owner's Association is working to educate homeowner's about hazard risk and how to reduce the risk from wildfire. The Association has received several Firewise grants from the Georgia Forestry Commission for mitigation work and is working to manage and reduce risk on the community's forested property.

VI. PRIORITIZED MITIGATION RECOMMENDATIONS

Executive Summary

As Central Georgia continues to see increased growth from other areas seeking less crowded and warmer climes, new development will occur more frequently on forest and wildland areas. The County will have an opportunity to significantly influence the wildland fire safety of new developments. It is important that new development be planned and constructed to provide for public safety in the event of a wildland fire emergency.

Over the past 20 years, much has been learned about how and why homes burn during wildland fire emergencies. Perhaps most importantly, case histories and research have shown that even in the most severe circumstances, wildland fire disasters can be avoided. Homes can be designed, built and maintained to withstand a wildfire even in the absence of fire services on the scene. The National Firewise Communities program is a national awareness initiative to help people understand that they don't have to be victims in a wildfire emergency. The National Fire Protection Association has produced two standards for reference: NFPA 1144 Standard for Reducing Structure Ignition Hazards from Wildland Fire. 2008 Edition and NFPA 1141 Standard for Fire Protection Infrastructure for Land Development in Suburban and Rural Areas.

When new developments are built in the Wildland/Urban Interface, a number of public safety challenges may be created for the local fire services: (1) the water supply in the immediate areas may be inadequate for fire suppression; (2) if the Development is in an outlying area, there may be a longer response time for emergency services; (3) in a wildfire emergency, the access road(s) may need to simultaneously support evacuation of residents and the arrival of emergency vehicles; and (4) when wildland fire disasters strike, many structures may be involved simultaneously, quickly exceeding the capability of even the best equipped fire departments.

Prescribed burning (pictured at right) of woodlands is the best management practice to reduce hazardous fuel buildup. The Georgia Forestry Commission can assist with developing a prescribed burning plan, installation of firebreaks, and can provide equipment standby and burning assistance when personnel are available.

The following recommendations were developed by the Jasper County CWPP Core team as a result of surveying and assessing fuels and structures and by conducting meetings and interviews with county and city officials. A priority order was determined based on which mitigation projects would best reduce the hazard of wildfire in the assessment area.

Proposed Community Hazard and Structural Ignitability Reduction Priorities

Primary Protection for Community and Its Essential Infrastructure		
Treatment Area	Treatment Types	Treatment Method(s)
1. All Structures	Create minimum of 30-feet of defensible space**	Trim shrubs and vines to 30 feet from structures, trim overhanging limbs, replace flammable plants near homes with less flammable varieties, remove vegetation around chimneys.
2. Applicable Structures	Reduce structural ignitability**	Clean flammable vegetative material from roofs and gutters, store firewood appropriately, install skirting around raised structures, store water hoses for ready access, and replace pine straw and mulch around plantings with less flammable landscaping materials.
3. Community Clean-up Day	Cutting, mowing, pruning**	Cut, prune, and mow vegetation in shared community spaces.
4. Driveway Access	Culvert installation	See that adequate lengths of culverts are installed to allow emergency vehicle access.
5. Road Access	Identify needed road improvements	As roads are upgraded, widen to minimum standards with at least 50 foot diameter cul-de-sacs or turn arounds.
Community Wildland Fuel Reduction Priorities		
Treatment Area	Treatment Types	Treatment Method(s)
1. Adjacent WUI Lands	Reduce hazardous fuels	Encourage prescribed burning for private landowners and industrial timberlands particularly adjacent to residential areas. Work with Georgia Forestry Commission and Oconee National Forest to encourage prescribed burning and other fuel reduction practices in WUI areas.
2. Railroad Corridors	Reduce hazardous fuels	Encourage railroads to increase maintenance along their ROW eliminating brush and grass through herbicide and mowing. Maintain firebreaks along ROW adjacent to residential areas.

3. Existing Fire Lines	Reduce hazardous fuels	Clean and re-harrow existing lines. Create new fire lines near residential areas.
Improved Community Wildland Fire Response Priorities		
1. Water Sources	Dry Hydrants	Inspect, maintain and improve access to existing dry hydrants. Add signage along road to mark the hydrants. Locate sites and construct additional dry hydrants as needed.
2. Fire Stations	Equipment	Wildland hand tools. Lightweight Wildland PPE Gear. Investigate need for "brush" trucks near communities at risk.
3. Water Sources	Drafting equipment	Investigate need for additional drafting pumps and other drafting equipment.
4. Personnel	Training	Obtain Wildland Fire Suppression training for fire personnel to include S130, S190, and S215. Ready Set Go training.
**Actions to be taken by homeowners and community stakeholders		

Proposed Education and Outreach Priorities

1. Conduct "How to Have a Firewise Home" Workshop for County Residents
Set up and conduct a workshop for homeowners that teach the principles of making homes and properties safe from wildfire. Topics for discussion include defensible space, landscaping, building construction, etc. Workshop will be scheduled for evenings or weekends when most homeowners are available and advertised through local media outlets. Distribute materials promoting firewise practices and planning through local community and governmental meetings.

2. Conduct “Firewise” Workshop for Community Leaders
Arrange for GFC Firewise Coordinator to work with local community leaders and governmental officials on the importance of “Firewise Planning” in developing ordinances and codes as the county as the need arises. In addition to the Turtle Cove Community, Falcon Ridge and other high risk communities should be sought after for inclusion in the National Firewise Communities Program.
3. Spring Clean-up Event, (National Wildfire Preparedness Day, first Saturday in May)
Conduct clean-up event every spring involving the Georgia Forestry Commission, Jasper County Fire Departments, City of Monticello, and local residents of Jasper County. Since 2014, the National Fire Protection Association’s National Wildfire Preparedness Day is held each year on the first Saturday in May. Set up information table with educational materials and refreshments. Initiate the event with a morning briefing by GFC Firewise coordinator and local fire officials detailing plans for the day and safety precautions. Activities to include the following: • Clean flammable vegetative material from roofs and gutters • Trim shrubs and vines to 30 feet away from structures • Trim overhanging limbs • Clean hazardous or flammable debris from adjacent properties Celebrate the work with a community cookout, with Community officials, GFC and Jasper County Fire Departments discussing and commending the work accomplished.
4. Informational Packets
Develop and distribute informational packets to be distributed by realtors and insurance agents. Included in the packets are the following: • Be Firewise Around Your Home • Firewise Guide to Landscape and Construction • Firewise Communities USA Bookmarks • Fire Adapted Community information
5. Wildfire Protection Display
Create and exhibit a display for the general public at the local events. Display can be independent or combined with the Georgia Forestry Commission display.
6. Press
Invite the local and regional news media to community “Firewise” functions for news coverage and regularly submit press releases documenting wildfire risk improvements in Jasper County.

VII. ACTION PLAN

Roles and Responsibilities

The following roles and responsibilities have been developed to implement the action plan:

Role	Responsibility
Hazardous Fuels and Structural Ignitability Reduction	
Jasper County WUI Fire Council	Create this informal team or council comprised of residents, GFC officials, Jasper County Fire department officials, a representative from the city and county government and the EMA Director for Jasper County. Meet periodically to review progress towards mitigation goals, appoint and delegate special activities, work with federal, state, and local officials to assess progress and develop future goals and action plans. Work with residents to implement projects and firewise activities.
Key Messages to focus on	1 Defensible Space and Firewise Landscaping 2 Debris Burning Safety 3 Firewise information for homeowners 4 Prescribed burning benefits
Communications objectives	1 Create public awareness for fire danger and defensible space issues 2 Identify most significant human cause fire issues 3 Enlist public support to help prevent these causes 4 Encourage people to employ fire prevention and defensible spaces in their communities.
Target Audiences	1 Homeowners 2 Forest Landowners and users 3 Civic Groups 4 School Groups 5 Homeowner Associations
Methods	1 News Releases 2 Personal Contacts 3 Key messages and prevention tips 4 Visuals such as signs, brochures and posters

Spring Clean-up Day (National Wildfire Preparedness Day, first Saturday in May)	
Event Coordinator	Coordinate day's events and schedule, catering for cookout, guest attendance, and moderate activities the day of the day of the event.
Event Treasurer	Collect funds from residents to cover food, equipment rentals, and supplies.
Publicity Coordinator	Advertise event through neighborhood newsletter, letters to officials, and public service announcements (PSAs) for local media outlets. Publicize post-event through local paper and radio PSAs.
Work Supervisor	Develop volunteer labor force of community residents; develop labor/advisory force from Georgia Forestry Commission, Jasper County Fire Departments, and Emergency Management Agency. Procure needed equipment and supplies. In cooperation with local city and county officials, develop safety protocol. Supervise work and monitor activities for safety the day of the event.

Funding Needs: The following funding is needed to implement the action plan:

Project	Estimated Cost	Potential Funding Source(s)
1. Create a minimum of 30 feet of defensible space around structures	Varies	Residents will supply labor and fund required work on their own properties.
2. Reduce structural ignitability by cleaning flammable vegetation from roofs and gutters; appropriately storing firewood, installing skirting around raised structures, storing water hoses for ready access, replacing pine needles with less flammable material.	Varies	Residents will supply labor and fund required work on their own properties.
3. Amend codes and ordinances to reduce fire risk. The International Wildland –Urban Interface Code (IWUIC) was adopted in Georgia in 2013.	No Cost	To be adopted by city and county government.
4. Spring Cleanup Day	Varies	Community Business donations. State Farm provides grants for National Wildfire Preparedness Day events.
5. Fuel Reduction Activities	$15 / acre	FEMA & USFS Grants

VIII. GRANT FUNDING AND MITIGATION ASSISTANCE

As funding is questionable in these times of tight government budgets and economic uncertainty, unconventional means should be identified whereby the need for funding can be reduced or eliminated.

- FIREWISE materials are available for no cost at www.firewise.org.
- Another source of mitigation information can be found at www.nfpa.org.
- Access to reduced cost or free of charge copy services to reproduce materials.
- Free of charge public meeting areas should be identified where communities could gather for educational programs regarding prevention and firewise principles.

Community Protection Grant: US Forest Service sponsored prescribed fire program. Communities with "at-risk" properties that lie within ten miles of a National Forest, National Park Service or Bureau of Land Management tracts may apply with the Georgia Forestry Commission to have their land prescribe burned free-of-charge. Forest mastication, where it is practical with a Georgia Forestry Commission equipment, is also available under this grant program.

FEMA Mitigation Policy MRR-2-08-01: through GEMA – Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Program (PDM).

1. To provide technical and financial assistance to local governments to assist in the implementation of long term, cost effective hazard mitigation accomplishments.
2. This policy addresses wildfire mitigation for the purpose of reducing the threat to all-risk structures through creating defensible space, structural protection through the application of ignition resistant construction and limited hazardous fuel reduction to protect life and property.
3. With a completed registered plan (addendum to the State Plan) counties can apply for pre-mitigation funding. They will also be eligible for HMGP funding if the county is declared under a wildfire disaster.

Georgia Forestry Commission: Plowing and prescribed burning assistance, as well as forest mastication, can be obtained from the GFC as a low-cost option for mitigation efforts.

The Georgia Forestry Commission Firewise Community Mitigation Assistance Grants – Nationally recognized Firewise Communities can receive up to $5000 grants to help address potential wildfire risk reduction projects. Grant submission can be made through local Georgia Forestry Commission offices or your Regional Wildfire Prevention Specialist.

IX. GLOSSARY

Community-At-Risk – *A group of two or more structures whose proximity to forested or wildland areas places homes and residents at some degree of risk.*

Critical Facilities – *Buildings, structures or other parts of the community infrastructure that require special protection from an approaching wildfire.*

CWPP – *The Community Wildfire Protection Plan*

Defensible Space – *The immediate landscaped area around a structure (usually a minimum of 30 ft.) kept "lean, clean and green" to prevent an approaching wildfire from igniting the structure.*

Dry Hydrant - *A non-pressurized pipe system permanently installed in existing lakes, ponds and streams that provides a suction supply of water to a fire department tank truck.*

FEMA – *The Federal Emergency Management Agency whose mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards.*

Fire Adapted Community – *A community fully prepared for its wildfire risk by taking actions to address safety, homes, neighborhoods, businesses and infrastructure, forest, parks, open spaces, and other community assets.*

Firewise Program – *A national initiative with a purpose to reduce structural losses from wildland fires.*

Firewise Community/USA – *A national recognition program for communities that take action to protect themselves from wildland fire. To qualify a community must have a wildfire risk assessment by the Georgia Forestry Commission, develop a mitigation action plan, have an annual firewise mitigation/education event, have dedicated firewise leadership, and complete the certification application.*

Fuels – *All combustible materials within the wildland/urban interface or intermix including, but not limited to, vegetation and structures.*

Fuel Modification – *Any manipulation or removal of fuels to reduce the likelihood of ignition or the resistance to fire control.*

Hazard & Wildfire Risk Assessment – *An evaluation to determine an area's (community's) potential to be impacted by an approaching wildland fire.*

Healthy Forests Initiative - *Launched in August 2002 by President Bush (following passage of the Healthy Forests Restoration Act by Congress) with the intent to reduce the risks severe wildfires pose to people, communities, and the environment.*

Home Ignition Zone (Structure Ignition Zone) - *Treatment area for wildfire protection. The "zone" includes the structure(s) and their immediate surroundings from 0-200 ft.*
Mitigation – An a*ction that moderates the severity of a fire hazard or risk.*

National Fire Plan – *National initiative, passed by Congress in the year 2000, following a landmark wildland fire season, with the intent of actively responding to severe wildland fires and their impacts to communities while ensuring sufficient firefighting capacity for the future.*

National Fire Protection Association (NFPA) - *An international nonprofit organization established in 1896, whose mission is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education.*

National Wildfire Preparedness Day – *Started in 2014 by the National Fire Protection Association as a day for communities to work together to prepare for the fire season. It is held annually on the first Saturday in May.*

Prescribed Burning (fire) – *The use of planned fire that is deliberately set under specific fuel and weather condition to accomplish a variety of management objectives and is under control until it burns out or is extinguished.*

Ready, Set, Go - *A program fire services use to help homeowners understand wildfire preparedness, awareness, and planning procedures for evacuation.*

Southern Group of State Foresters – *Organization whose members are the agency heads of the forestry agencies of the 13 southern states, Puerto Rico and the Virgin Islands.*

Stakeholders– *Individuals, groups, organizations, businesses or others who have an interest in wildland fire protection and may wish to review and/or contribute to the CWPP content.*

Wildfire or Wildland Fire – *An unplanned and uncontrolled fire spreading through vegetative fuels.*

Wildland/Urban Interface - *The presence of structures in locations in which the authority having jurisdiction (AHJ) determines that topographical features, vegetation, fuel types, local weather conditions and prevailing winds result in the potential for ignition of the structures within the area from flames and firebrands from a wildland fire* (NFPA 1144, 2008 edition).

X. SOURCES OF INFORMATION

Publications/Brochures/Websites

- FIREWISE materials can be ordered at www.firewise.org . These materials can be ordered at no cost.
- Georgia Forestry Commission www.georgiafirewise.org
- Examples of successful wildfire mitigation programs can be viewed at the website for National Database of State and Local wildfire Hazard Mitigation Programs sponsored by the U.S. Forest Service and the Southern Group of State Foresters www.wildfireprograms.com
- Information about a variety of interface issues (including wildfire) can be found at the USFS website for Interface South: www.interfacesouth.org
- Information on International Wildland-Urban Interface Code and standards for emergency services including wildfire can be found at www.nfpa.org
- Information on FEMA Assistance to Firefighters Grants (AFG) can be found at www.firegrantsupport.com
- Information on National Fire Plan grants can be found at http://www.federalgrantswire.com/national-fire-plan--rural-fire-assistance.html
- Southern Wildfire Risk Assessment website (SouthWRAP) www.southernwildfirerisk.com
- Fire Adapted Community program www.fireadapted.org
- Ready Set Go program www.wildlandfirersg.org

Appended Documents:

- Jasper County Southern Wildfire Risk Assessment (SouthWRAP) Summary Report

P. O. Box 819 Macon, GA 312021
800-GA-TREESGaTrees.org

The Georgia Forestry Commission provides leadership, service, and education in the protection and conservation of Georgia's Forest Resources.
An Equal Opportunity Employer and Service Provider

This plan should become a working document that is shared by local, state, and federal agencies that will use it to accomplish common goals. An agreed-upon schedule for meeting to review accomplishments, solve problems, and plan for the future should extend beyond the scope of this plan. Without this follow up this plan will have limited value.

GEORGIA EARTHQUAKE AWARENESS GUIDE







For Local Emergency Management Agency Directors

April 2011

FEMA

Geophysics @ Georgia Tech

Ready. Georgia

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This publication is a project of the Georgia Emergency Management Agency (GEMA)/Homeland Security in cooperation with the Georgia Institute of Technology-School of Earth & Atmospheric Science, the Federal Emergency Management Agency (FEMA) National Earthquake Hazards Reduction Program (NEHRP) and the Ready Georgia Campaign. A downloadable guide is available at:

www.gema.ga.gov
www.ready.ga.gov
http://geophysics.eas.gatech.edu

For additional information, please contact GEMA or Georgia Institute of Technology, School of Earth & Atmospheric Sciences.

Agency	Website	Address	Phone Number
Georgia Emergency Management Agency/Homeland Security **Ready Georgia Campaign**	www.gema.ga.gov www.ready.ga.gov	P.O. Box 18055 Atlanta, Georgia 30316	1-800-TRY-GEMA
Georgia Institute of Technology-School of Earth & Atmospheric Sciences	http://www.eas.gatech.edu/schoo	311 Ferst Drive Atlanta, GA 30332-0340	404-894-3893
April 2011			

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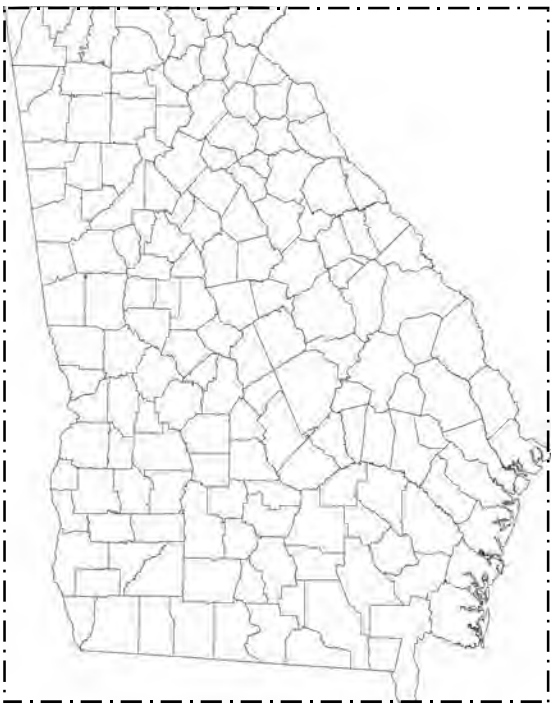
GEORGIA AND EARTHQUAKES

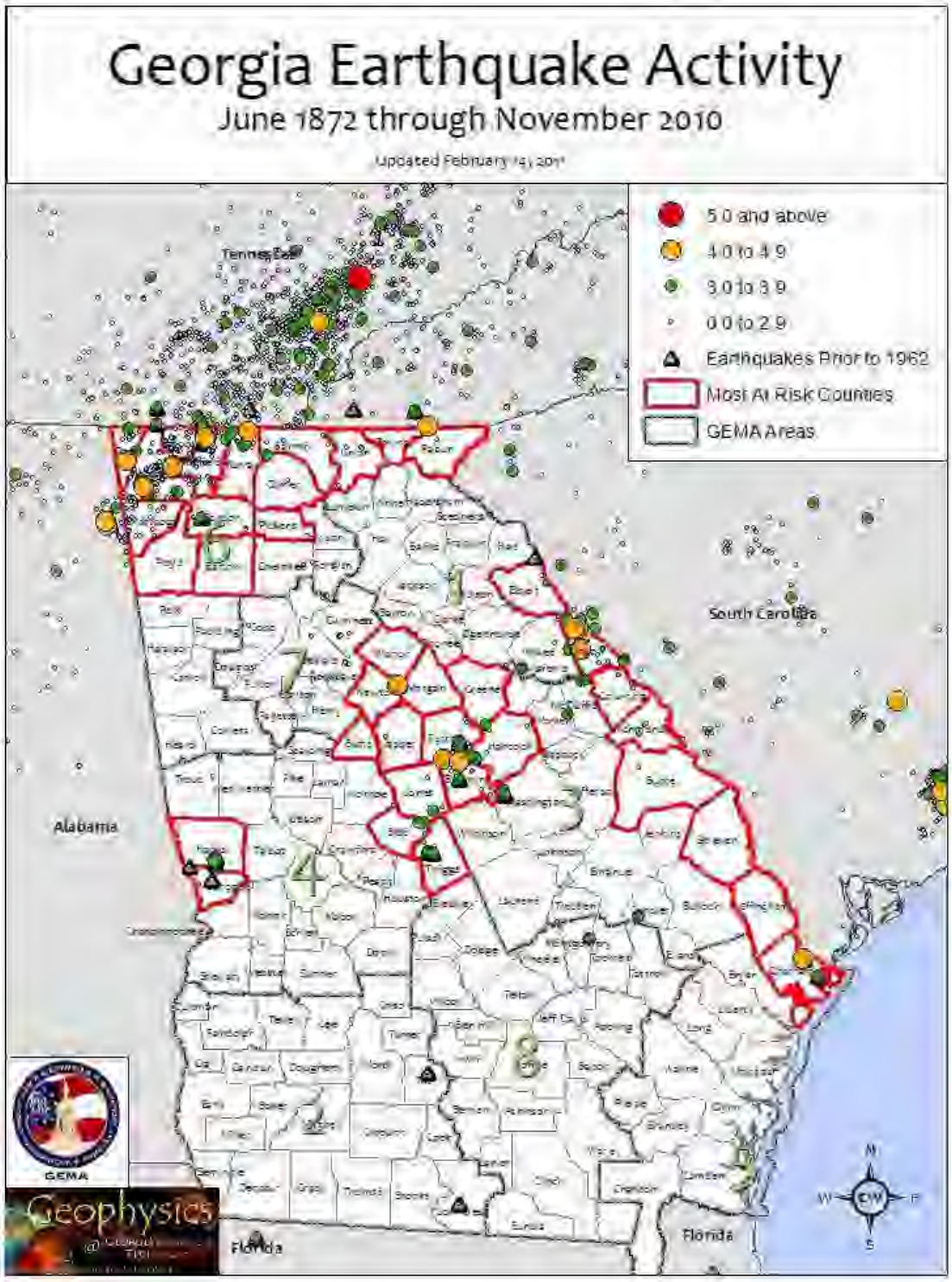
According to Georgia Tech's School of Earth and Atmospheric Sciences, 15 percent of the world's earthquakes are scattered over areas like Georgia that lack clearly defined active faults. These earthquakes usually start with a jolt, build rapidly in amplitude within a couple of seconds, and then decay.

The total felt duration of the typical small Georgia earthquake is usually less than 10 seconds, and it sounds like a muffled dynamite explosion. Although earthquakes in Georgia are comparatively rare, scattered earthquakes have caused significant damage and can be an important consideration for homeowners (Source: www.ready.ga.gov).



~~Figure 1.0~~: Georgia Counties at the Greatest Risk for Earthquakes

Area	Counties
Northwest Georgia Counties	Bartow, Catoosa, Chattooga, Dade, Fannin, Floyd, Gilmer, Gordon, Murray, Pickens, Rabun, Towns, Union, Walker, Whitfield
South Carolina Border Counties	Burke, Chatham, Columbia, Effingham, Elbert, Lincoln, Richmond, Screven
Central and West Central Georgia Counties	Twiggs, Bibb, Jones, Baldwin, Hancock, Greene, Putnam, Butts, Jasper, Newton, Morgan, Walton, Harris, Mucscogee
Source: **Georgia Tech School of Earth & Atmospheric Sciences, A.V. Newman, C.N. Gammans, 2010.**	


Georgia Earthquake Activity
June 1872 through November 2010
5.0 and above
4.0 to 4.9
3.0 to 3.9
0.0 to 2.9
Earthquakes Prior to 1962
Most At Risk Counties
GEMA Areas
Tennessee
South Carolina
Alabama
Florida
Florida
GEMA
Geophysics

EARTHQUAKE BASICS OVERVIEW

An earthquake is a sudden shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. Earthquakes can cause buildings and bridges to collapse, telephone and power lines to fall, and cause fires, explosions and landslides. Earthquakes can also cause tsunamis, which can impact coastal areas far away from where earthquake shaking can be felt.

Earthquake Effects

Earthquakes often have significant social and economic impacts on communities, including:

- Disruption of business supply chains;
- Rise in insurance costs for certain types of buildings susceptible to earthquake damage;
- Cancellation of insurance policy after an earthquake;
- Loss of housing options (especially for low-income residents);
- Changes to neighborhoods, as residents often must relocate.

Causes of Earthquakes

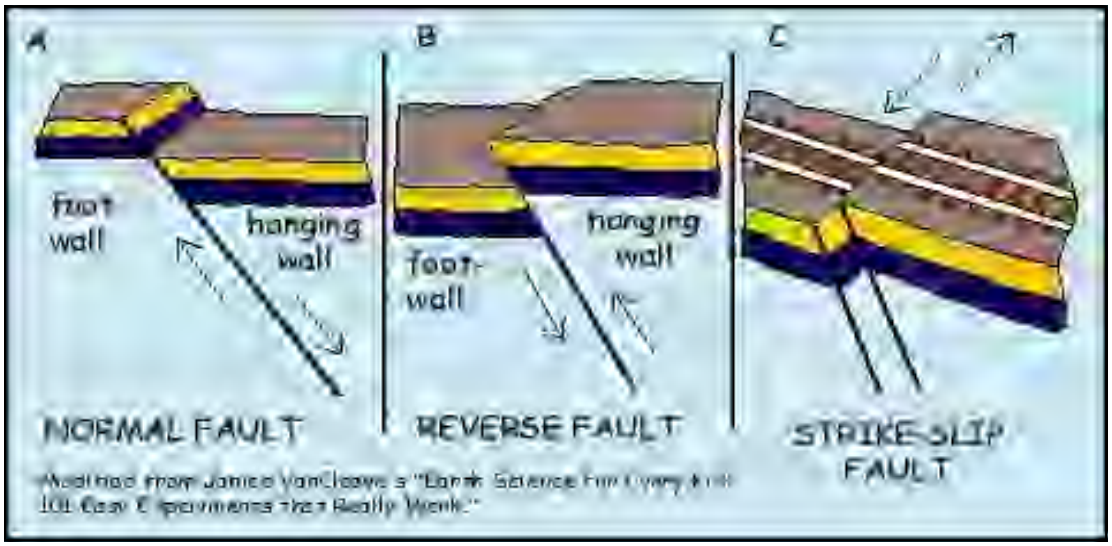
An earthquake is caused by a sudden slip on a fault, which results in a release of energy that travels away from the fault surface as seismic waves. Seismic waves are elastic shocks that travel through the earth. Faults slip to release stress that is created as tectonic plates move around the surface of the earth.

Faults

A fault is a weak zone in the earth's crust where two sections can shift.

- Normal fault movement occurs when the two sides move away from one another as the crust fails in extension.
- Thrust or reverse fault movement occurs when the two sides are pushed together due to compression.
- Strike-slip or lateral fault movement occurs when the pieces move horizontally past one another.

Figure 2.0: Types of Faults



Source: http://www.dnr.sc.gov/geology/earthquake.html

Seismic Waves

Earthquakes release energy that radiates away from the fault in the form of seismic waves.

The two main types of seismic waves are:

- Body waves
- Surface waves

Body Waves

- Travel through the Earth
- Are felt first after an earthquake
- Can be divided into:
    - **Compressional Waves** (also called primary or P waves) are the fastest seismic waves traveling as fast as 30 times the speed of sound in air.
    - **Shear Waves** (or secondary waves) are the second main arrival, traveling at about 60% the speed of P waves.

Surface Waves

- Travel along the Earth's surface
- Travel slower than either type of body wave
- Are larger then body waves for most earthquakes
- Cause most of the damage to buildings

Measuring Earthquakes

Seismographs record and measure vibrations produced by earthquakes as a wavy line called a seismogram. Modern seismographs record earthquakes digitally, rather than on paper allowing for greater research and storage capabilities.

Using the data recorded as seismograms by many recording stations, the following can be determined:

- Time the earthquake started
- Epicenter of the quake (where it started)
- Focal depth
- Amount of energy released (related to the magnitude)
- Fault area

Measuring Severity

Earthquake severity can be measured in two main ways:

- **Magnitude**, based on the amount of shaking or the size of the fault rupture. The Richter and Moment Magnitude Scales are each used to measure magnitude.

- **Intensity,** based on how strong the shock is felt and the damage done at the location of interest. An earthquake has many different intensities. The Modified Mercalli Scale is used to identify these various intensities.

Richter Magnitude Scale

The Richter Magnitude Scale expresses earthquake size as a magnitude in a numeric scale. The Richter Magnitude Scale is logarithmic, where each increase in whole numbers represents a tenfold increase in shaking and an increase in energy of 32 times.

Earthquakes with a magnitude of 2.0 or less (microearthquakes) are generally too small to be felt. According to the United States Geological Survey, microearthquakes are very common; approximately 8,000 occur worldwide each day. Large earthquakes that have caused significant damage have measured 7.0 or larger. In the United States, a magnitude of 5.5 or greater is capable of causing building and infrastructure damage. However, the Richter Magnitude Scale measures energy release, not damage.

Moment Magnitude Scale

The Moment Magnitude Scale supersedes the Richter Magnitude Scale and other magnitude scales to evaluate the size of the fault rupture. The Moment Magnitude Scale gives the most reliable estimate of earthquake size when the earthquakes exceed 6.0 on the Richter Magnitude Scale or are very distant from recording devices. The Moment Magnitude Scale is the preferred magnitude scale.

Modified-Mercalli Intensity Scale

The Modified Mercalli Intensity Scale is a measure of the strength of shaking of an earthquake at a specific location. It can also be described as the local effect of an earthquake as felt by people and resulting damage on the earth's surface. It is normally represented in Roman numerals.

Each earthquake has several intensities over the impacted area. Under this system, an area with an intensity of I is felt by a very few people, while a XII will cause total damage.

The Modified Mercalli Intensity Scale quantifies the results of an earthquake at various locations. It is not a measurement of an earthquake or any of its characteristics.

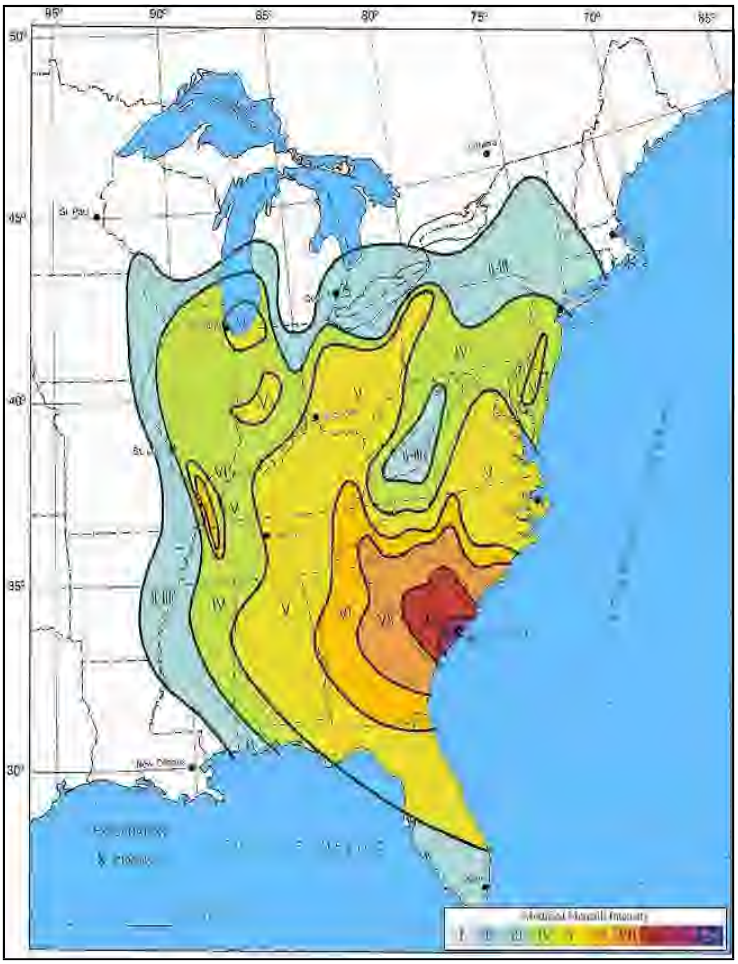


Figure 3.0:

Modified -Mercalli Intensity Map for the shaking and damage associated with the 1886 Charleston, South Carolina earthquake. A few chimneys fell even in Atlanta, and shaking was felt as far away as Chicago (McKinley, 1887). The precise magnitude of this event is unknown because seismometers did not yet exist, however, it is estimated to be between magnitude 6.6 and 7.3. (Image from Stover and Coffman, 1993.)

U.S. SEISMICITY

While earthquakes have occurred in nearly all of the 50 states and territories, there are areas of heightened earthquake activity. Some areas of the U.S. experience moderate to severe earthquakes every 30 to 50 years, while other areas may experience these size earthquakes approximately every 200 or more years.

Figure 4.0: U.S Earthquake Facts & Statistics

Number of Earthquakes in the United States 2000-2010

Magnitude	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
8.0 to 9.9	0	0	0	0	0	0	0	0	0	0	0
7.0 to 7.9	0	1	1	2	0	1	0	1	0	0	1
6.0 to 6.9	6	5	4	7	2	4	7	9	9	4	7
5.0 to 5.9	63	41	63	54	25	47	51	72	85	59	52
4.0 to 4.9	281	290	536	541	284	345	346	366	432	288	523
3.0 to 3.9	917	842	1535	1303	1362	1475	1213	1137	1486	1492	2962
2.0 to 2.9	660	646	1228	704	1336	1738	1145	1173	1573	2378	3091
1.0 to 1.9	0	2	2	2	1	2	7	11	13	26	23
0.1 to 0.9	0	0	0	0	0	0	1	0	0	1	0
No Magnitude	415	434	507	333	540	73	13	22	20	14	13
Total	2342	2261	3876	2946	3550	3685	2783	2791	3618	* 4262	* 6672
Estimated Deaths	0	0	0	2	0	0	0	0	0	0	0

Source: http://earthquake.usgs.gov/earthquakes/eqarchives/year/eqstats.php. Located by the US Geological Survey National Earthquake Information Center (***As of November 1, 2010**)

LARGEST U.S. EARTHQUAKES

Alaska experiences the majority of the earthquakes in the United States and is one of the most seismically active regions of the world. To date, the largest earthquake recorded in the United States was in 1964, when measured at a magnitude of 9.2 and occurred in Prince William Sound, Alaska. In addition, a series of large earthquakes occurred in 1811 and 1812 in New Madrid, Missouri, the largest of which is estimated between 7.4 and 7.8 magnitude. Below is a map that depicts where the most significant earthquakes occurred in the United States over the years.

Figure 5.0: US Earthquakes Causing Damage 1750-1996 , Modified-Mercalli Intensity VI-XII.

GEORGIA EARTHQUAKE HISTORY

The first notable earthquakes felt in Georgia were the great New Madrid series of 1811 - 1812. These shocks were felt over almost all of the eastern United States. In Georgia, that series of shocks reportedly shook some bricks from chimneys. Besides those initial earthquake rumblings between 1811-1812, Georgia was also impacted by the large Charleston, South Carolina Earthquake of 1886.; it caused severe shaking throughout the state. Georgians heard a low rumble then began feeling earthquake tremors on August 31 at 9:25 p.m.. The shock waves reached Savannah. The shaking was so significant that people had difficulty remaining standing, and one woman even died of fright as the shaking cracked walls, felled chimneys, and broke windows. Panic at a revival service left two injured and two more were injured when they leapt from upper story windows. Several more were injured by falling bricks. Ten buildings in Savannah were damaged beyond repair, and at least 240 chimneys were reported damaged. People spent the night outside. At the Tybee Island light station the 134-foot lighthouse was cracked near the middle where the walls were six feet thick, and the 1-ton lens moved an inch and a half to the northeast.

In Augusta, the shaking was the most severe (VIII on the Modified Mercalli Intensity Scale) in the state. An estimated 1,000 chimneys and many buildings were damaged. Businesses and social life was paralyzed for two days.

An earthquake on June 17, 1872, in Milledgeville had an intensity of at least V on the Modified Mercalli Intensity Scale, the lowest intensity in which some damage may occur. It was reported as a sharp shock, jarring brick buildings and rattling windows.

On November 1, 1875, at 9:55 p.m., an intensity VI earthquake occurred near the South Carolina border. It was felt from Sparatansburg and Columbia, South Carolina, to Atlanta and Macon, Georgia, from Gainesville to Augusta. The earthquake was felt over an area of 2,500 square miles.

A more local event occurred on October 18, 1902, with a sharp shock felt along the east face of Rocky Face Mountain west of Dalton with intensity VI and at La Fayette with intensity V. The felt area was about 1,500 square miles and included Chattanooga, Tennessee.

The Savannah area was shaken by an intensity VI earthquake on January 23, 1903. Centering near Tybee Island, it was felt over an area of 10,000 square miles including Savannah (intensity VI), Augusta (intensity III), Charleston (intensity IV-V), and Columbia (intensity III-IV). Houses were strongly shaken. Another shock was felt on June 20, 1912, in Savannah with intensity V.

On March 5, 1916, an earthquake centered 30 miles southeast of Atlanta was felt over an area of 5,000 square miles, as far as Cherokee County, North Carolina, by several people in Raleigh, and in parts of Alabama and Tennessee.

An earthquake of intensity V or over occurred on March 12, 1964, near Haddock, less than 20 miles northeast of Macon. Intensity V was recorded at Haddock, while shaking was felt in four counties over a 400 square miles.

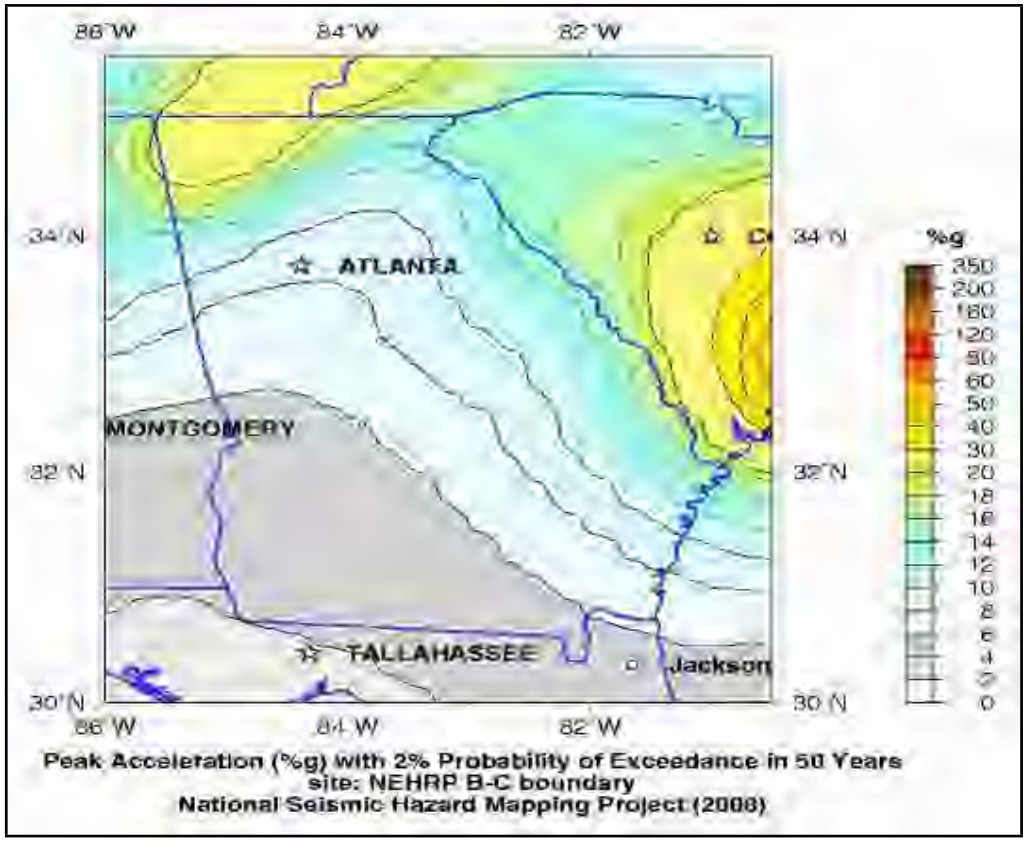


Figure 6.0: USGS estimated seismic hazards in and around Georgia. The map shows the low probability (2% in 50 years) of reaching a certain level of shaking. Only the northwestern section of the state is expected has more than a 1/50 chance of accelerations greater than 20% g (yellow region) in the next 50 years. (Source: USGS Hazard, 2010).

GEORGIA EARTHQUAKE RISK

Earthquakes are much less common in the eastern United States than in California, with most events imperceptible by the public. This leads to a dangerous complacency that may be unwarranted. Most Georgians are largely unaware of the last large event that struck Charleston, South Carolina in 1886, killing almost 60 people and causing complete devastation to the city. Unfortunately, earthquakes in the eastern United States are very efficient at transmitting seismic energy over large distances, such that the damage area of a magnitude 6.0 here is comparable to a magnitude 7.0 in the western United States.

Earthquakes may be felt in any area of Georgia, but northwestern Georgia has experienced the most earthquakes in recent history. Earthquakes large enough to cause damage could be felt in most, if not all, of Georgia's counties. Based on current and historical seismicity, three zones of somewhat distinct seismic activity are apparent in Georgia (Figure 1). The least active area extends from the Coastal Plain of South Georgia through Columbus and on past Montgomery Alabama, where almost no seismic activity is observed, besides a magnitude 3.6 earthquake that occurred near Jacksonville in 1900.

The northern half of Georgia is more seismically active, with earthquakes occurring primarily along two distinct bands. The most prominent is the Eastern Tennessee Seismic Zone. The second band is less active but extends along the Fall Line from Macon to the South Carolina border, just north of Augusta. The threat of a large earthquake from the Tennessee Valley Seismic Zone and a potential repeat of the Charleston earthquake pose the greatest risk to Georgia (Figure 7.0).

Earthquakes in Northwest Georgia occur primarily along the Eastern Tennessee Seismic Zone (ETSZ), which runs along the western Appalachian Mountains and extends from West Virginia down to the Alabama-Mississippi border. In the eastern United States, the ETSZ is second only to the New Madrid Seismic Zone in terms of seismic activity. Earthquakes here typically occur between approximately 3 km-25 km below the surface and outline a very long (200 miles or more) roughly linear active zone. These similarities between the ETSZ and the New Madrid suggest that ETSZ could sustain an event similar to the devastating 1811-1812 earthquakes. This area currently experiences about one magnitude 4.0 earthquake about every 5 to 10 years. Such an event is generally perceived as a startling vibration that may rock objects off shelves and may cause some cracking of plaster.

Earthquakes in Central and South Georgia are more scattered than in the ETSZ and do not define any convincing faults. Some large faults including the Brevard Fault that run through Atlanta, however these known faults are not considered to be active and show no ongoing microseismicity (small earthquakes). Instead, most of these events may be failing smaller faults that are buried beneath soil and can be affected by changes in reservoirs levels. Many of these earthquakes are very small but occur within 3 km of the surface making them more easily felt and heard. They often occur in an earthquake swarm, which may be felt for one to three months. In the Piedmont, they are most common in areas of weakly fractured granitic rock. The Piedmont may experience about one magnitude 4 event every 10 to 20 years, this will likely be both felt and heard, potentially with many foreshocks and aftershocks. In the immediate epicentral zone, plaster and cement block walls will be cracked, merchandise will fall off store shelves, and minor structural damage will occur in buildings not designed to withstand earthquake forces. Earthquakes in the Coastal Plain of Southern Georgia are too sparsely distributed to define a pattern but pose the second largest long-term risk to Georgians. This risk is dominated by the repeat of the 1886 Charleston earthquake. While scientists do not know the likelihood of such a repeat near or along coastal Georgia, the potential can not be entirely discounted.

Earthquakes outside Georgia's borders are a considerable threat to Georgians. The Charleston earthquake of 1886 and the New Madrid Earthquakes of 1811-1812 caused as much damage in Georgia as earthquakes that occurred within the borders. Current models for earthquake risk suggest that these distant earthquakes provide the greatest threat. In most of Georgia, the Charleston earthquake of August 1886, knocked over chimneys, broke windows and cracked plaster. The Charleston earthquake is estimated to have been between magnitude 6.6 and 7.3. This magnitude is similar in size to the "World Series," or Loma Prieta earthquake of October 18, 1989 (magnitude 6.9). A repeat of this event today would likely be far more devastating due to population growth. Such an earthquake would be felt far beyond Charleston, and possibly cause damage to unreinforced structures as far away as Atlanta. Though the precise magnitudes of the 1811-1812 New Madrid Earthquakes may never be known, many reports suggest that at least one of the four large earthquakes in the sequence was among the strongest felt intraplate earthquakes in the world. Magnitude estimated for the largest of these events is between 7.0 and 8.3, with newer estimates trending smaller. In any case, the events were devastating and caused massive changes to the landscape that are still visible today. The Mississippi River changed its course, the land surface sunk to form new lakes and violent shaking snapped off trees. At the time, the log cabin settlements were sparsely populated and the loss of life was minimal. However, if a similar event were to occur today, extensive damage would be expected throughout a large region, and, because population density is now significantly higher, the loss of life is likely to be

While these events are most likely to occur along zones of active seismicity (including the New Madrid, Eastern Tennessee and Charleston regions), it is possible that the next large event may occur outside of one of these zones. Again, residents of Georgia are fortunate that such devastating earthquakes are rare in the eastern United States. Major events like Charleston and New Madrid have occurred about once every 100 years in all of the eastern United States. The probability that such an event could cause at least some damage in Georgia within the next year is only about one in a thousand. The damage would be much like that experienced in Georgia during the 1886 Charleston earthquake if the event occurred in a neighboring state. However, near the epicenter of the large event, the damage would be like that experienced in Charleston or in the San Francisco Bay area on October 18, 1989. For such a major earthquake, the zone of extreme damage, Modified Mercalli Intensity VIII and higher, could be in excess of 100 miles in radius (See Appendix III).

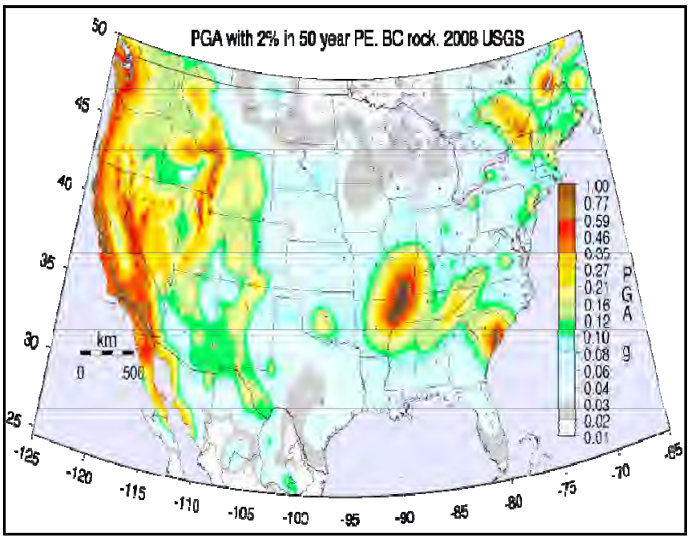


Figure 7.0: The National Seismic Hazard map defining the level of shaking that has a 2% probability of occurring in 50 years around the United States (the expected shaking an area might feel once every 2500 years).

Seismic Hazard Mapping is used to evaluate the long-term probability of risk from strong ground shaking any area may sustain. This is the only non-speculative means available to assess hazards. Hazard maps rely heavily on the historical and ongoing measurements of seismicity, though in some parts of the western United States new information about fault motions are now also being included. Because such fault motions are too small to be observed in the eastern United States, only prior earthquake information is used. In these maps, "hazard" is expressed in terms of the probability of experiencing a given level of shaking and are reported in terms of acceleration relative to the gravity, *g* (this is the same as the G-Force described during flight). earthquakes are also considered.

Seismic hazards are obviously greater in areas of higher seismic activity, but the effects of large distant earthquakes are taken into consideration. In a statistical sense, this is the level of vibration one should expect to experience once every 2,500 years. The United States Geological Survey seismic hazard maps are frequently being updated due to improved understanding of earthquake behavior and recent versions are used by the Building Seismic Safety Council to revise the seismic hazard maps used in building codes. The seismic hazard indicated by these maps is greatest in northwest Georgia if decreases in the Piedmont and is minimal in the Coastal Plain. Predicted seismic hazard is again greater toward and in South Carolina, showing the influence of the continuing activity near Charleston, South Carolina.

PLANNING FOR EARTHQUAKES

Emergency Response to Earthquakes can be divided into response efforts for those for small, moderate, strong, large and great earthquakes. In all cases, the first task is to determine the size and location of the event because these parameters will determine the extent and location of emergency services that will be needed. Unlike hurricanes and other weather-related disasters, there will be no opportunity for advanced preparation or mobilization. Following is an outline of potential impacts to communities based on estimated size variations of earthquake events.

Small earthquakes are of magnitude less than 2.5. These are typically felt only within 15 km of the epicenter and typically contained within one or two counties. These could generate calls to emergency response agencies, particularly in central Georgia where these events occur closer to the surface and are felt more strongly. If the event is part of a typical Piedmont earthquake swarm, such as in the Norris Lake Community swarm of 1993, the continuing occurrence of minor seismicity may cause alarm. Actions, such as town meetings, may be needed to explain the events to the population.

Also, the time following an earthquake or during a swarm provides a good opportunity to instruct the population in methods to minimize damage and injury during earthquakes, particularly because earthquake swarms are often followed by isolated events as large as the largest event in the swarm. Swarms are very rarely indicators of coming larger earthquakes.

Moderate earthquakes are those with magnitudes between 3 and 5. These will be noticed by almost everyone in the epicentral area and will be felt up to 200 miles away. The local 9-1-1 centers are likely to become swamped with calls, but the news media will usually be quick to distribute information on the identity and size of these earthquakes. Some weak structures may experience minor damage, such as cracked plaster and falling objects. In addition, in rare incidences, there may be some minor structural damage such as brick facade falling off buildings. Life threatening situations would be rare for these moderate events, and any associated emergencies should be easily handled as routine events.

Strong earthquakes are those with magnitudes between 5 and 6. These will be widely noticed and will cause widespread minor damage in well-built structures. A few structures will suffer major damage that could require safety inspections, but these will be rare. Again, life-threatening situations would be restricted to the immediate epicentral zone and to weak structures with poor foundation. These events will be felt up to 600 miles away. As with moderate earthquakes, the news media will distribute information. Traffic control may be needed in damaged areas. In rare cases, a bridge or road structure may be damaged. Fires are also a strong possibility following an earthquake. In the eastern United States, water heaters and furnaces are not routinely protected against falling over, which could start fires.

Large earthquakes are those with magnitude 6.5 and larger, such as the Charleston, 1886, and New Madrid, 1811-1812, earthquakes. Expect extensive damage and loss of life in a radius of 10 to 30 miles from the epicenter. Outside the epicentral zone of major damage, the effects, to 150 miles, will be like those of the large earthquakes. Safety inspections will need to be conducted because these large earthquakes may have aftershocks that cause more damage, particularly to weakened structures. Many people will be displaced from their homes, and field or tent communities will need to be established up to two months. Transportation may be interrupted by broken rail lines and

and bridges. Furthermore, clutter from buildings in the intensely damaged areas could inhibit rescue efforts. A systematic search for survivors of collapsed buildings will have to be conducted. The probability for the repeat of an event like Charleston, 1886, somewhere in the eastern United States is about 2.5 percent in the next 25 years. (one chance in 1,000 per year in Georgia). Such an event near any large metropolitan area in the southeastern United States and outside of Atlanta would likely see a rapid temporary to long-term influx of evacuees to Atlanta.

Seismic monitoring of significant earthquakes in the United States is coordinated by the United States Geological Survey (https://www.usgs.gov). This includes most earthquakes larger than magnitude 3.5 and those that are felt widely. For small local earthquakes, it is generally necessary to rely on data from a nearby regional network. In Georgia, Georgia Institute of Technology maintains a small network, including station ATL just south of Atlanta, and a distributed Educational Seismic Network (http://geophysics.eas.gatech.edu/GTEQ-see Figure 8.0). The University of Tennessee, University of North Carolina at Chapel Hill, and the University of South Carolina maintain seismic stations surrounding Georgia. In addition, the Center for Earthquake Research and Information at Memphis State University maintains a Southern Appalachian Regional Network. These networks generally record events of magnitude greater than 1.5 and routinely distribute information on these events directly to the public or over the Internet.

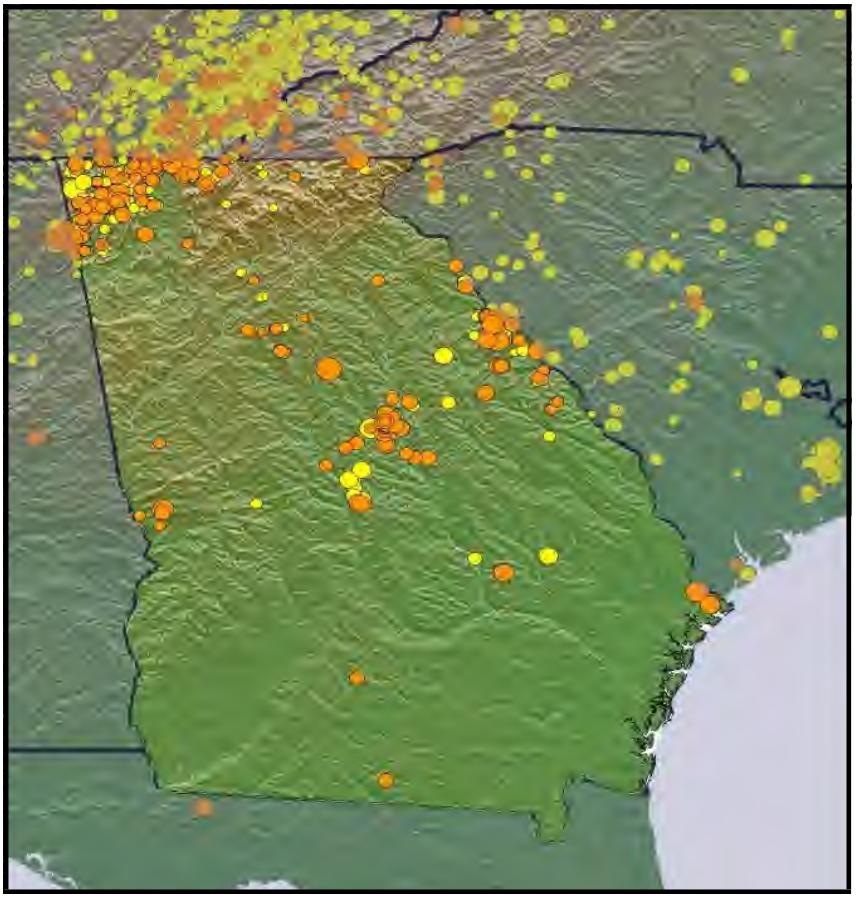


Figure 8.0: Earthquake activity in and around Georgia. Yellow events are those recorded since 1962 and reported in the global composite catalog (ANSS, 2010), Orange events are historic and locally recorded earthquakes. A continuously updated version of this map is available at: http://geophysics.eas.gatech.edu/GTEQ. Most events are between magnitude 2 and 3.

For more information on real-time seismic monitoring, please contact the Georgia Institute of Technology, School of Earth and Atmospheric Sciences-

Dr. Andrew V. Newman
Assistant Professor
Office: 404-894-3976
Fax: 404-894-5638

anewman@gatech.edu
http://geophysics.eas.gatech.edu/anewman

Additional Resources

- **Descriptive Comparisons of Earthquake Magnitude with Observed Effects**
- **Modified-Mercalli Intensity Scale of 1931**
- **Glossary of Terms**
- **Information Sources**

DESCRIPTIVE COMPARISON OF EARTHQUAKE MAGNITUDES WITH OBSERVED EFFECTS

The rate at which earthquakes have occurred in Georgia is shown in Figure 7.0. We experience a magnitude 3.0 every year or two and a magnitude 4.0 every 8 years. The best way to estimate the area of potential damage is to use the observed relation between magnitude and area of intensity VII. Modified Mercalli Intensity VII is the lowest level of shaking at which damage requiring some emergency response would be expected. The relation for the eastern United States is approximately, Log10 (AVII) = M - 2. The intensity VII area for a magnitude 4.0 is 100 square kilometer (a radius of 5.6 km or 3.5 mile) and a magnitude 6.0 is 10,000 square kilometer (a radius of 56 km or 35 mile).

MAGNITUDE:

0.0: Earthquakes that occur at shallow depths in the Piedmont are occasionally heard by people when they are within a few miles of the epicenter. Their sounds are like a distant cannon. These are usually ignored.

1.0: Earthquakes that occur at shallow depths in the Piedmont are usually heard by people when they are within a few miles of the epicenter. These and smaller earthquakes are rarely reported by people in areas of northwest Georgia where the earthquake focus is deeper.

2.0: (e.g. Norris Lake Community, Georgia, summer 1993) Earthquakes are typically described as a large quarry blast by residents in the Piedmont. Vibrations are felt near the epicenter. People in northwest Georgia occasionally report vibrations from events of this size.

3.0: (e.g. Heard County, Georgia, February 10, 1997, or the largest Norris Lake Community earthquakes) Earthquakes are maximum intensity III in northwest Georgia and V in the Piedmont. Vibrations are like a heavy truck. Their sounds and vibrations are like an explosion. Sometimes two shakes are felt, with the first a higher frequency vibration and the second following within a few seconds a rocking vibration. In the Piedmont, they sound like a cannon. The vibration decays with time.

4.0: Earthquakes (e.g. Clarks Hill Reservoir, Georgia, August 2, 1974) have maximum intensities in the VI to VII range. These events are just large enough to cause some minor damage in the epicenter area and groceries may off shelves. Felt over many counties, typically out to a distance of 100 miles.

5.0: Earthquakes (e.g. Sharpsburg, Kentucky, July 27, 1980) are noted for widespread damage. The Sharpsburg earthquake was particularly noted for damage to chimneys. Intensity VI and higher within a radius of 30 miles. Felt over many states, a radius of over 300 miles.

6.0: Earthquakes (e.g. Massena, New York, September 5, 1944) are characterized by intensity VIII and higher near the epicenter. The Massena earthquake was felt from Canada south to Maryland and from Maine west to Indiana. It caused property damage estimated at $2 million. Many chimneys required rebuilding, and several structures were unsafe for occupancy until repaired. Residents of St. Lawrence County reported that many water wells went dry. At Massena, 90 percent of the chimneys were destroyed or damaged and house foundations, plumbing, and masonry were damaged severely. Cracks formed in the ground and brick-masonry and concrete structures were damaged.

7.0: Earthquakes (Charleston, South Carolina, August 2, 1886) generate intensities of IX and above. Effects in the epicentral region include more than 1,300 square kilometers of extensive cratering and fissuring. Damage to railroad tracks, about 6 kilometers northwest of Charleston, included lateral and vertical displacements, formation of S-shaped curves and longitudinal movement. Strong alarming vibrations are felt. Many building will sustain damage, a few will fall or be rendered useless. Some lives will be lost in collapsed buildings or in fires following the earthquake. Communications and transportation will be interrupted significantly.

MODIFIED-MERCALLI INTENSITY SCALE	
Intensity	**What to Expect**
I.	Not felt except by a very few under especially favorable circumstances.
II.	Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing
III.	Felt quite noticeably indoors, especially on upper floors of buildings, but most people do not recognize it as an earthquake. Standing motorcars rock slightly. Vibration like passing truck. Duration estimated.
IV.	During the day, felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, and doors disturbed; walls make creaking sound. Sensation like heavy truck striking building. Standing motorcars rocked noticeably.
V.	Felt by nearly everyone; many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbance of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.
VI.	Felt by all; many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.
VII.	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures. Some chimneys broken. Noticed by persons driving motorcars.
VIII.	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motorcars disturbed.
IX.	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.
X.	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.
XI.	Few, if any (masonry), structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.
XII.	Damage total. Waves seen on ground surfaces. Lines of sight and level distorted. Objects thrown upward into the air.

GLOSSARY OF TERMS

Acceleration: Rate of change in velocity with time. In earthquake ground shaking, acceleration is measured relative to the acceleration of gravity (g).

Active Fault or Active Seismic Zone: A fault that has exhibited movement in recent time and that is expected to move in the future. The movement may be indicated by earthquakes in a seismic zone or by displacements within the last 10,000 years of young soil or other deposits along a fault trace.

Aftershocks: Smaller earthquakes following a large event and occurring in the same fault zone. Generally, aftershocks decrease in magnitude and frequency-of-occurrence with time.

Aseismic Region: A region lacking earthquakes and also assumed to lack a potential for future earthquakes.

Capable Fault: A fault that is considered active for seismic hazard computations.

Creep: Slow slip along a fault without producing earthquakes.

Crust of the Earth: The top 30 km of the Earth that is brittle and the area of occurrence of most earthquakes. Mid-crustal depths represent the strongest part of the Earth's crust and are at depths of 10km to 20 km.

Duration: The duration of strong shaking is the time interval between the first and last peaks of strong (usually felt) ground motion.

Eastern United States: All states in the continental United States east of the Rocky Mountain Front, approximately Longitude 105° west.

Earthquake: The sudden release of stress along a fault and the resulting vibrations of the earth. The vibrations propagate away from the epicenter.

Earthquake Prediction: An earthquake prediction is a qualified determination of the magnitude, location, and time of a future earthquake. Such qualifications must be beyond the expectations from ongoing background activity. Predictions can be broken down into short-term (hours to days), intermediate-term (weeks to months), or long-term forecasts (years to decades).

Earthquake Swarm: An earthquake swarm is a prolonged series of small events. In a swarm, earthquake activity usually increases until the largest event occurs.

Epicenter: The location on the earth's surface directly above the focus (or hypocenter) for an earthquake.

GLOSSARY OF TERMS

Fault: (or Fault Zone) a zone of weakness or fractures in the earth along which the two sides have been displaced relative to each other parallel to the fracture. The total fault offset may range from centimeters to kilometers.
Focal Depth: The depth below the surface of the hypocenter, the point where an earthquake initiates movement.
Focal Plane: The area of movement on a fault during an earthquake. The Focus may be any place on the focal plane.
Focus: (or hypocenter) The place at which rock failure commences in an earthquake.
Foreshocks: Smaller earthquakes preceding a large event and occurring in the same fault zone.
Hazard Map: A map showing locations of areas where a defined level of vibration is expected to be felt in a given time period. For example, areas where an acceleration of 0.1 g or greater would be expected once every 450 years.
Hypocenter: see Focus.
Intraplate Earthquake: Earthquake that occurs in the interior of recognized tectonic plates, often not associated with major active fault zones. All eastern United States earthquakes are intraplate earthquakes.
Intensity: A measure of ground shaking obtained from the damage done to structures built by man, changes in the earth's surface and felt reports. The Modified Mercalli Intensity Scale measures intensity in Roman numeral units from I (felt slightly) to XII (total damage).
Isoseismal: Lines that surround zones in which an earthquake generated a given intensity.
Magnitude: Earthquake magnitude is an instrumental determination of the relative size of an earthquake. The Richter Magnitude was the first commonly used measure of earthquake size. All subsequent magnitude scales are tied to the Richter magnitude scale. Magnitudes released in news reports are often referred to as Richter Magnitude, although that term can only be applied strictly to southern California earthquakes.
Microseism: Weak, almost continuous seismic waves or earth noise; often caused by surf, ocean waves, wind, or industrial activity.
New Madrid Seismic Zone: An area of continuing seismic activity along the Mississippi River in Tennessee and Missouri. Also, the location of the epicenters of the four largest New Madrid earthquakes of 1811-1812.

GLOSSARY OF TERMS

P-wave: The primary or fastest wave traveling away from a seismic event through the earth and consisting of a train of compressions and dilatations of the material.

Plate Tectonics: The Earth's crust consists of many rigid plates, such as the North American Plate. Plate Tectonics is the description of plate movement and interaction that explains earthquakes, volcanoes, and mountain building as consequences of horizontal surface motions of rigid portions of the Earth's crust.

San Andrea fault zone: A zone of movement between the North American Plate and the Pacific Plate, extending through southern California.

S wave: The secondary, or shear, seismic wave, traveling more slowly than the P wave, and consisting of elastic vibrations that are transverse to the direction of travel. It cannot travel in a fluid.

Surface Waves: Seismic waves that are confined to the earth's surface. Surface wave velocities are less than S-wave velocities.

Seismicity: Generally, the occurrence of earthquakes in space and time. Usually given as the number of earthquakes of a given magnitude in a specified time, such as the number of zero magnitude events per year.

Seismogram: The record of an earthquake written by a seismograph.

Seismograph: An instrument for recording the motions of the Earth's surface.

Seismologist: Scientist trained in interpreting ground motion from earthquakes and in using the waves from explosions to determine the structure of the Earth. Seismologists are found in major universities and in the oil industry.

Seismology: The study of earthquakes, seismic sources, and wave propagation through the Earth.

Seismometer: The sensor part of the seismograph.

Tectonic Earthquakes: Earthquakes resulting from sudden release of energy stored by deformation of the Earth's tectonic plates.

INFORMATION SOURCES

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Stover, C. W. and Coffman, J. L. (1993). Seismicity of the United States, 1568-1989 (Revised), U.S. Geological Survey Professional Paper 1527, United States Government. Printing Office, Washington. (http://earthquake.usgs.gov/earthquakes/states/events/1886_09_01_iso.php).

USGS Hazard (2010). USGS National Seismic Hazards Mapping Project, Earthquake Hazard Program, http://earthquake.usgs.gov/hazards/ (last visited 13 Sept 2010).

Web Resources

National Earthquake Hazard Reduction Program
http://www.fema.gov/plan/prevent/earthquake/nehrp.shtm

The Great Central US Shake-Out
http://www.shakeoout.org/centralus/

Disaster Assistance Website
www.disasterassistance.gov

Ready Georgia
www.ready.ga.gov

Federal Emergency Management Agency
www.fema.gov

United States Geological Survey
www.earthquake.usgs.gov/prepare/

Prepare Now
www.preparenow.org

Seven Steps on the Road to Earthquake Safety
http://www.earthquakecountry.info/roots/steps.html

Georgia Department of Community Affairs

SERVICE DELIVERY STRATEGY

FORM 1

COUNTY: **JASPER COUNTY**

I. GENERAL INSTRUCTIONS:

1. FORM 1 is required for **ALL** SDS submittals. Only one set of these forms should be submitted per county. The completed forms shall clearly present the collective agreement reached by all cities and counties that were party to the service delivery strategy.
2. List each local government and/or authority that provides services included in the service delivery strategy in Section II below.
3. List all services provided or primarily funded by each general purpose local government and/or authority within the county that are continuing *without change* in Section III, below. (It is acceptable to break a service into separate components if this will facilitate description of the service delivery strategy.)

OPTION A *Revising or Adding to the SDS*	OPTION B *Extending the Existing SDS*
4. List all services provided or primarily funded by each general purpose local government and authority within the county which are revised or added to the SDS in Section IV, below. (It is acceptable to break a service into separate components if this will facilitate description of the service delivery strategy.) 5. For **each** service or service component listed in Section IV, complete a separate, updated *Summary of Service Delivery Arrangements* form (FORM 2). 6. Complete one copy of the *Certifications* form (FORM 4) and have it signed by the authorized representatives of participating local governments. [Please note that DCA cannot validate the strategy unless it is signed by the local governments required by law (see Instructions, FORM 4).]	4. In Section IV type, "NONE." 5. Complete one copy of the *Certifications for Extension of Existing SDS* form (FORM 5) and have it signed by the authorized representatives of the participating local governments. [Please note that DCA cannot validate the strategy unless it is signed by the local governments required by law (see Instructions, FORM 5).] 6. Proceed to step 7, below. ***For answers to most frequently asked questions on Georgia's Service Delivery Act, links and helpful publications, visit DCA's website at http://www.dca.ga.gov/development/PlanningQualityGrowth/programs/servicedelivery.asp, or call the Office of Planning and Quality Growth at (404) 679-5279.***

7. If any of the conditions described in the existing *Summary of Land Use Agreements* form (FORM 3) have changed or if it has been ten (10) or more years since the most recent FORM 3 was filed, update and include FORM 3 with the submittal.
8. Provide the completed forms and any attachments to your regional commission. The regional commission will upload digital copies of the SDS documents to the Department's password-protected web-server.

NOTE: ANY FUTURE CHANGES TO THE SERVICE DELIVERY ARRANGEMENTS DESCRIBED ON THESE FORMS WILL REQUIRE AN UPDATE OF THE SERVICE DELIVERY STRATEGY AND SUBMITTAL OF REVISED FORMS AND ATTACHMENTS TO THE GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS UNDER THE "OPTION A" PROCESS DESCRIBED, ABOVE.

II. Local Governments Included in the Service Delivery Strategy:

In this section, list all local governments (including cities located partially within the county) and authorities that provide services included in the service delivery strategy.

JASPER COUNTY BOARD OF COMMISSIONERS
MONTICELLO CITY COUNCIL
SHADY DALE CITY COUNCIL
TURTLE COVE WATER
ALCOVY WATER AUTHORITY
JASPER COUNTY WATER AUTHORITY

III. Services Included in the Existing Service Delivery Strategy that are being Extended WITHOUT CHANGE:

In this section, list each service or service component already included in the existing SDS which will continue as previously agreed with no need for modification.

ANIMAL CONTROL
BUILDING INSPECTION
CODE ENFORCEMENT
ELECTIONS
JUVENILE COURT
MAGISTRATE COURT
PROBATE COURT
SUPERIOR COURT
ECONOMIC DEVELOPMENT SERVICES
EMERGENCY MEDICAL SERVICES
HOSPITAL
INDIGENT DEFENSE
LIBRARIES
MAPPING
PARKS AND RECREATION
PLANNING AND ZONING
PUBLIC HOUSING
PUBLIC WORKS
SENIOR CITIZENS SERVICES
SEWERAGE COLLECTION
TAX ASSESSORS AND TAX MAPS
TAX COMMISSIONER

IV. Services that are being REVISED or ADDED in this Submittal:

In this section, list each new service or new service component which is being added and each service or service component which is being revised in this submittal. For each item listed here, a separate Summary of Service Delivery Arrangements form (FORM 2) must be completed.

RECORDER COURT
FIRE PROTECTION
JAIL
LAW ENFORCEMENT
ADDRESSES
SOLID WASTE
SOCIAL SERVICES
WATER SUPPLY AND DISTRIBUTION

Georgia Department of Community Affairs

SERVICE DELIVERY STRATEGY

FORM 2: Summary of Service Delivery Arrangements

Instructions:

Make copies of this form and complete one for each service listed on FORM 1, Section IV. Use EXACTLY the same service names listed on FORM 1. Answer each question below, attaching additional pages as necessary. If the contact person for this service (listed at the bottom of the page) changes, this should be reported to the Department of Community Affairs.

COUNTY:JASPER COUNTY	Service:*ADDRESSES*

1. Check one box that best describes the agreed upon delivery arrangement for this service:

a.) ☐ Service will be provided countywide (i.e., including all cities and unincorporated areas) by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):

b.) ☐ Service will be provided only in the unincorporated portion of the county by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):

c.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the service will not be provided in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service:

d.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the county will provide the service in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service.):

e.) ☒ Other (If this box is checked, **attach a legible map delineating the service area of each service provider,** and identify the government, authority, or other organization that will provide service within each service area.): **JASPER COUNTY WILL PROVIDE IN UNINCORPORATED AREAS AND INCORPORATED CITY OF MONTICELLO. CITY OF SHADY DALE WILL PROVIDE IN INCORPORATED CITY OF SHADY DALE.**

2. In developing this strategy, were overlapping service areas, unnecessary competition and/or duplication of this service identified?

☐ ***Yes*** (if "Yes," you must attach additional documentation as described, below)

☒ ***No***

If these conditions will continue under this strategy, **attach an explanation for continuing the arrangement** (i.e., overlapping but higher levels of service (See O.C.G.A. 36-70-24(1)), overriding benefits of the duplication, or reasons that overlapping service areas or competition cannot be eliminated).

If these conditions will be eliminated under the strategy, **attach an implementation schedule** listing each step or action that will be taken to eliminate them, the responsible party and the agreed upon deadline for completing it.

SDS FORM 2, continued

3. List each government or authority that will help to pay for this service and indicate how the service will be funded (e.g., enterprise funds, user fees, general funds, special service district revenues, hotel/motel taxes, franchise taxes, impact fees, bonded indebtedness, etc.).

Local Government or Authority	*Funding Method*
JASPER COUNTY	GENERAL FUND
CITY OF SHADY DALE	GENERAL FUND

4. How will the strategy change the previous arrangements for providing and/or funding this service within the county?

THE CITY OF SHADY DALE ASSIGNS ADDRESSES IN THE INCORPORATED AREA OF SHADY DALE.

5. List any formal service delivery agreements or intergovernmental contracts that will be used to implement the strategy for this service:

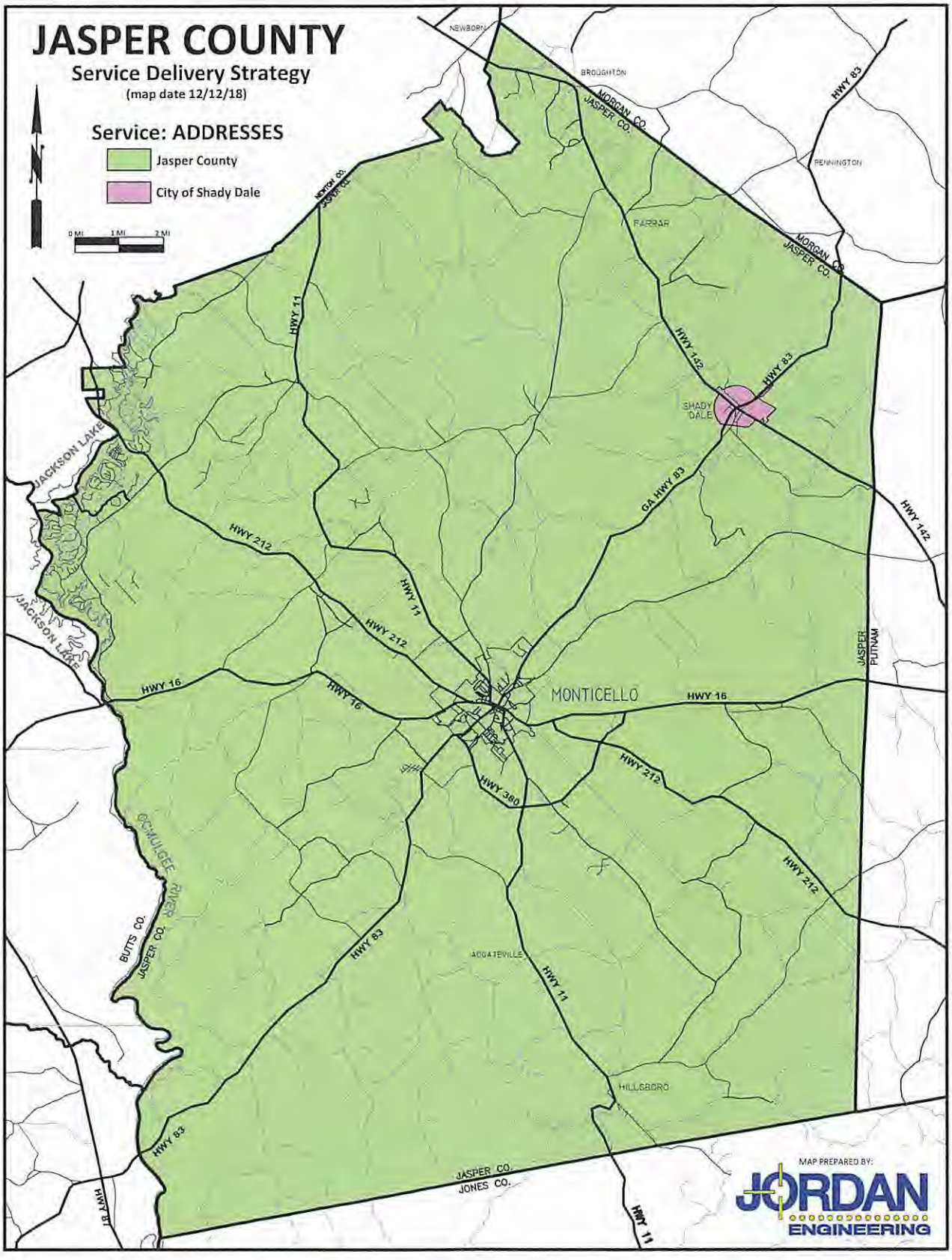
Agreement Name	*Contracting Parties*	*Effective and Ending Dates*

6. What other mechanisms (if any) will be used to implement the strategy for this service (e.g., ordinances, resolutions, local acts of the General Assembly, rate or fee changes, etc.), and when will they take effect?

7. Person completing form: **MIKE BENTON, COUNTY MANAGER**
Phone number: **706-468-4900** Date completed: Type Date Here

8. Is this the person who should be contacted by state agencies when evaluating whether proposed local government projects are consistent with the service delivery strategy? ☒Yes ☐No

If not, provide designated contact person(s) and phone number(s) below:


JASPER COUNTY
Service Delivery Strategy
(map date 12/12/18)
Service: ADDRESSES
Jasper County
City of Shady Dale
0 MI
1 MI
2 MI
N
NEWBORN
BROUGHTON
MORGAN CO.
JASPER CO.
HWY 83
PENNINGTON
NEWTON CO.
JASPER CO.
FARRAR
MORGAN CO.
JASPER CO.
HWY 11
HWY 142
HWY 83
SHADY DALE
JACKSON LAKE
GA HWY 83
HWY 142
HWY 212
HWY 11
HWY 212
JACKSON LAKE
JASPER
PUTNAM
HWY 16
HWY 16
MONTICELLO
HWY 16
HWY 212
HWY 380
OCMULGEE RIVER
HWY 212
BUTTS CO.
JASPER CO.
HWY 83
ADGATEVILLE
HWY 11
HILLSBORO
HWY 83
JASPER CO.
JONES CO.
HWY 87
HWY 11
MAP PREPARED BY:
JORDAN
ENGINEERING

Georgia Department of Community Affairs

SERVICE DELIVERY STRATEGY

FORM 2: Summary of Service Delivery Arrangements

Instructions:

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COUNTY:JASPER COUNTY	Service:*FIRE PROTECTION*

1. Check one box that best describes the agreed upon delivery arrangement for this service:

a.) ☐ Service will be provided countywide (i.e., including all cities and unincorporated areas) by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):

b.) ☐ Service will be provided only in the unincorporated portion of the county by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):

c.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the service will not be provided in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service:

d.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the county will provide the service in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service.):

e.) ☒ Other (If this box is checked, **attach a legible map delineating the service area of each service provider,** and identify the government, authority, or other organization that will provide service within each service area.): **JASPER COUNTY PROVIDES FIRE PROTECTION IN UNINCORPORATED AREAS AND INCORPORATED CITY OF MONTICELLO. CITY OF SHADY DALE PROVIDES FIRE PROTECTION IN INCORPORATED CITY OF SHADY DALE.**

2. In developing this strategy, were overlapping service areas, unnecessary competition and/or duplication of this service identified?

☐ ***Yes*** (if "Yes," you must attach additional documentation as described, below)

☒ ***No***

If these conditions will continue under this strategy, **attach an explanation for continuing the arrangement** (i.e., overlapping but higher levels of service (See O.C.G.A. 36-70-24(1)), overriding benefits of the duplication, or reasons that overlapping service areas or competition cannot be eliminated).

If these conditions will be eliminated under the strategy, **attach an implementation schedule** listing each step or action that will be taken to eliminate them, the responsible party and the agreed upon deadline for completing it.

SDS FORM 2, continued

3. List each government or authority that will help to pay for this service and indicate how the service will be funded (e.g., enterprise funds, user fees, general funds, special service district revenues, hotel/motel taxes, franchise taxes, impact fees, bonded indebtedness, etc.).

Local Government or Authority	*Funding Method*
JASPER COUNTY	GENERAL FUND
CITY OF SHADY DALE	GENERAL FUND

4. How will the strategy change the previous arrangements for providing and/or funding this service within the county?

JASPER COUNTY PROVIDES FIRE PROTECTION IN INCORPORATED CITY OF MONTICELLO.

5. List any formal service delivery agreements or intergovernmental contracts that will be used to implement the strategy for this service:

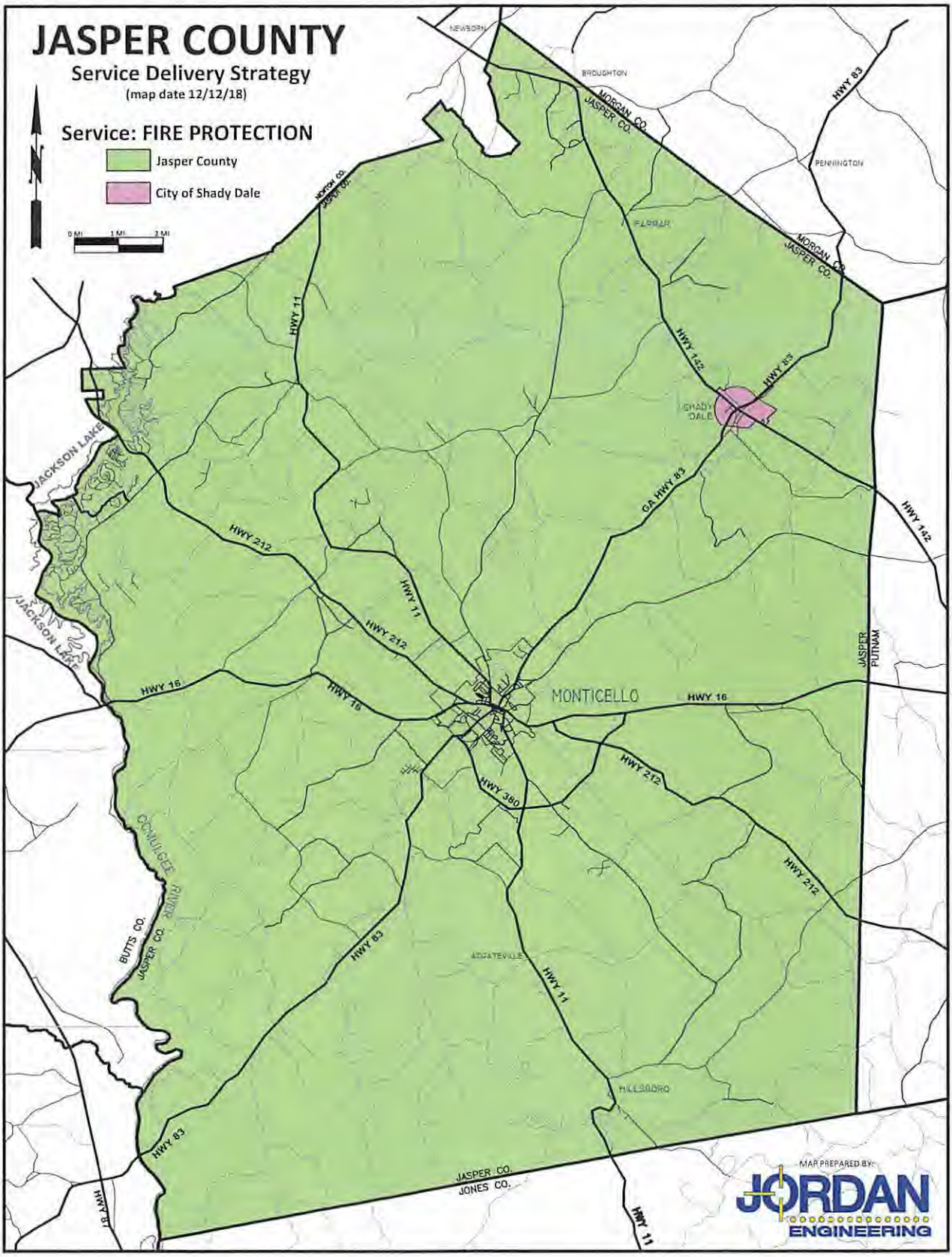
Agreement Name	*Contracting Parties*	*Effective and Ending Dates*

6. What other mechanisms (if any) will be used to implement the strategy for this service (e.g., ordinances, resolutions, local acts of the General Assembly, rate or fee changes, etc.), and when will they take effect?

7. Person completing form: **MIKE BENTON, COUNTY MANAGER**
Phone number: **706-468-4900** Date completed: Type Date Here

8. Is this the person who should be contacted by state agencies when evaluating whether proposed local government projects are consistent with the service delivery strategy? ☒Yes ☐No

If not, provide designated contact person(s) and phone number(s) below:


JASPER COUNTY
Service Delivery Strategy
(map date 12/12/18)
Service: FIRE PROTECTION
Jasper County
City of Shady Dale
0 MI
1 MI
2 MI
NEWBORN
BROUGHTON
MORGAN CO.
JASPER CO.
PENNINGTON
HWY 83
NEWTON CO.
JASPER CO.
FLORAR
HWY 11
HWY 142
HWY 83
SHADY DALE
JACKSON LAKE
GA HWY 83
HWY 142
HWY 212
HWY 11
HWY 212
JASPER
PUTNAM
HWY 16
HWY 16
MONTICELLO
HWY 16
HWY 380
HWY 212
HWY 212
CONNAUGHTEE RIVER
BUTTS CO.
JASPER CO.
HWY 83
ADGATEVILLE
HWY 11
HILLSBORO
HWY 83
JASPER CO.
JONES CO.
HWY 87
HWY 11
MAP PREPARED BY:
JORDAN
ENGINEERING

Georgia Department of Community Affairs

SERVICE DELIVERY STRATEGY

FORM 2: Summary of Service Delivery Arrangements

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COUNTY:JASPER COUNTY	**Service:*JAIL***

1. Check one box that best describes the agreed upon delivery arrangement for this service:

a.) ☒ Service will be provided countywide (i.e., including all cities and unincorporated areas) by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):**JASPER COUNTY**

b.) ☐ Service will be provided only in the unincorporated portion of the county by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):

c.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the service will not be provided in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service:

d.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the county will provide the service in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service.):

e.) ☐ Other (If this box is checked, **attach a legible map delineating the service area of each service provider,** and identify the government, authority, or other organization that will provide service within each service area.):

2. In developing this strategy, were overlapping service areas, unnecessary competition and/or duplication of this service identified?

☐ ***Yes*** (if "Yes," you must attach additional documentation as described, below)

☒ ***No***

If these conditions will continue under this strategy, **attach an explanation for continuing the arrangement** (i.e., overlapping but higher levels of service (See O.C.G.A. 36-70-24(1)), overriding benefits of the duplication, or reasons that overlapping service areas or competition cannot be eliminated).

If these conditions will be eliminated under the strategy, **attach an implementation schedule** listing each step or action that will be taken to eliminate them, the responsible party and the agreed upon deadline for completing it.

SDS FORM 2, continued

3. List each government or authority that will help to pay for this service and indicate how the service will be funded (e.g., enterprise funds, user fees, general funds, special service district revenues, hotel/motel taxes, franchise taxes, impact fees, bonded indebtedness, etc.).

Local Government or Authority	*Funding Method*
JASPER COUNTY	GENERAL FUND, FEES

4. How will the strategy change the previous arrangements for providing and/or funding this service within the county?

JASPER COUTY OPERATES AND FUNDS THE JAIL WITHOUT COMPENSATION FROM ANY MUNICIPALITY.

5. List any formal service delivery agreements or intergovernmental contracts that will be used to implement the strategy for this service:

Agreement Name	*Contracting Parties*	*Effective and Ending Dates*

6. What other mechanisms (if any) will be used to implement the strategy for this service (e.g., ordinances, resolutions, local acts of the General Assembly, rate or fee changes, etc.), and when will they take effect?

7. Person completing form: **MIKE BENTON, COUNTY MANAGER**
Phone number: **706-468-4900** Date completed: Type Date Here

8. Is this the person who should be contacted by state agencies when evaluating whether proposed local government projects are consistent with the service delivery strategy? ☒Yes ☐No

If not, provide designated contact person(s) and phone number(s) below:

Georgia Department of Community Affairs

SERVICE DELIVERY STRATEGY

FORM 2: Summary of Service Delivery Arrangements

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COUNTY:JASPER COUNTY	**Service:*LAW ENFORCEMENT***

1. Check one box that best describes the agreed upon delivery arrangement for this service:

a.) ☐ Service will be provided countywide (i.e., including all cities and unincorporated areas) by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):

b.) ☐ Service will be provided only in the unincorporated portion of the county by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):

c.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the service will not be provided in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service:

d.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the county will provide the service in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service.):

e.) ☒ Other (If this box is checked, **attach a legible map delineating the service area of each service provider,** and identify the government, authority, or other organization that will provide service within each service area.): **REMOVE LAW ENFORCEMENT FROM SERVICE DELIVERY STRATEGY**

2. In developing this strategy, were overlapping service areas, unnecessary competition and/or duplication of this service identified?

☐ ***Yes*** (if "Yes," you must attach additional documentation as described, below)

☐ ***No***

If these conditions will continue under this strategy, **attach an explanation for continuing the arrangement** (i.e., overlapping but higher levels of service (See O.C.G.A. 36-70-24(1)), overriding benefits of the duplication, or reasons that overlapping service areas or competition cannot be eliminated).

If these conditions will be eliminated under the strategy, **attach an implementation schedule** listing each step or action that will be taken to eliminate them, the responsible party and the agreed upon deadline for completing it.

SDS FORM 2, continued

3. List each government or authority that will help to pay for this service and indicate how the service will be funded (e.g., enterprise funds, user fees, general funds, special service district revenues, hotel/motel taxes, franchise taxes, impact fees, bonded indebtedness, etc.).

Local Government or Authority	*Funding Method*

4. How will the strategy change the previous arrangements for providing and/or funding this service within the county?

REMOVE LAW ENFORCEMENT FROM SERVICE DELIVERY STRATEGY

5. List any formal service delivery agreements or intergovernmental contracts that will be used to implement the strategy for this service:

Agreement Name	*Contracting Parties*	*Effective and Ending Dates*

6. What other mechanisms (if any) will be used to implement the strategy for this service (e.g., ordinances, resolutions, local acts of the General Assembly, rate or fee changes, etc.), and when will they take effect?

7. Person completing form: **MIKE BENTON, COUNTY MANAGER**
Phone number: **706-468-4900** Date completed: Type Date Here

8. Is this the person who should be contacted by state agencies when evaluating whether proposed local government projects are consistent with the service delivery strategy? ☒Yes ☐No

If not, provide designated contact person(s) and phone number(s) below:

Georgia Department of Community Affairs

SERVICE DELIVERY STRATEGY

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COUNTY:JASPER COUNTY	Service:*RECORDER COURT*

1. Check one box that best describes the agreed upon delivery arrangement for this service:

a.) ☐ Service will be provided countywide (i.e., including all cities and unincorporated areas) by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):

b.) ☐ Service will be provided only in the unincorporated portion of the county by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):

c.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the service will not be provided in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service:

d.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the county will provide the service in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service.):

e.) ☒ Other (If this box is checked, **attach a legible map delineating the service area of each service provider,** and identify the government, authority, or other organization that will provide service within each service area.): **CITY OF MONTICELLO DISSOLVED THE RECORDER COURT THRU LEGISLATION.**

2. In developing this strategy, were overlapping service areas, unnecessary competition and/or duplication of this service identified?

☐ ***Yes*** (if "Yes," you must attach additional documentation as described, below)

☐ ***No***

If these conditions will continue under this strategy, **attach an explanation for continuing the arrangement** (i.e., overlapping but higher levels of service (See O.C.G.A. 36-70-24(1)), overriding benefits of the duplication, or reasons that overlapping service areas or competition cannot be eliminated).

If these conditions will be eliminated under the strategy, **attach an implementation schedule** listing each step or action that will be taken to eliminate them, the responsible party and the agreed upon deadline for completing it.

SDS FORM 2, continued

3. List each government or authority that will help to pay for this service and indicate how the service will be funded (e.g., enterprise funds, user fees, general funds, special service district revenues, hotel/motel taxes, franchise taxes, impact fees, bonded indebtedness, etc.).

Local Government or Authority	*Funding Method*

4. How will the strategy change the previous arrangements for providing and/or funding this service within the county?

THIS SERVICE IS GOING AWAY ENTIRELY.

5. List any formal service delivery agreements or intergovernmental contracts that will be used to implement the strategy for this service:

Agreement Name	*Contracting Parties*	*Effective and Ending Dates*

6. What other mechanisms (if any) will be used to implement the strategy for this service (e.g., ordinances, resolutions, local acts of the General Assembly, rate or fee changes, etc.), and when will they take effect?

7. Person completing form: **MIKE BENTON, COUNTY MANAGER**
Phone number: **706-468-4900** Date completed: Type Date Here

8. Is this the person who should be contacted by state agencies when evaluating whether proposed local government projects are consistent with the service delivery strategy? ☒Yes ☐No

If not, provide designated contact person(s) and phone number(s) below:

Georgia Department of Community Affairs

SERVICE DELIVERY STRATEGY

FORM 2: Summary of Service Delivery Arrangements

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COUNTY:JASPER COUNTY	**Service:*SOCIAL SERVICES***

1. Check one box that best describes the agreed upon delivery arrangement for this service:

a.) ☒ Service will be provided countywide (i.e., including all cities and unincorporated areas) by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):**JASPER COUNTY**

b.) ☐ Service will be provided only in the unincorporated portion of the county by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):

c.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the service will not be provided in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service:

d.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the county will provide the service in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service.):

e.) ☐ Other (If this box is checked, **attach a legible map delineating the service area of each service provider,** and identify the government, authority, or other organization that will provide service within each service area.):

2. In developing this strategy, were overlapping service areas, unnecessary competition and/or duplication of this service identified?

☐ ***Yes*** (if "Yes," you must attach additional documentation as described, below)

☒ ***No***

If these conditions will continue under this strategy, **attach an explanation for continuing the arrangement** (i.e., overlapping but higher levels of service (See O.C.G.A. 36-70-24(1)), overriding benefits of the duplication, or reasons that overlapping service areas or competition cannot be eliminated).

If these conditions will be eliminated under the strategy, **attach an implementation schedule** listing each step or action that will be taken to eliminate them, the responsible party and the agreed upon deadline for completing it.

SDS FORM 2, continued

3. List each government or authority that will help to pay for this service and indicate how the service will be funded (e.g., enterprise funds, user fees, general funds, special service district revenues, hotel/motel taxes, franchise taxes, impact fees, bonded indebtedness, etc.).

Local Government or Authority	*Funding Method*
JASPER COUNTY	GENERAL FUND, USER FEES, GRANTS

4. How will the strategy change the previous arrangements for providing and/or funding this service within the county?

ADDING USER FEES AS AN ADDITIONAL FUNDING METHOD

5. List any formal service delivery agreements or intergovernmental contracts that will be used to implement the strategy for this service:

Agreement Name	*Contracting Parties*	*Effective and Ending Dates*

6. What other mechanisms (if any) will be used to implement the strategy for this service (e.g., ordinances, resolutions, local acts of the General Assembly, rate or fee changes, etc.), and when will they take effect?

7. Person completing form: **MIKE BENTON, COUNTY MANAGER**
Phone number: **706-468-4900** Date completed: Type Date Here

8. Is this the person who should be contacted by state agencies when evaluating whether proposed local government projects are consistent with the service delivery strategy? ☒Yes ☐No

If not, provide designated contact person(s) and phone number(s) below:

Georgia Department of Community Affairs

SERVICE DELIVERY STRATEGY

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COUNTY:JASPER COUNTY	**Service:*SOLID WASTE***

1. Check one box that best describes the agreed upon delivery arrangement for this service:

a.) ☐ Service will be provided countywide (i.e., including all cities and unincorporated areas) by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):

b.) ☐ Service will be provided only in the unincorporated portion of the county by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):

c.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the service will not be provided in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service:

d.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the county will provide the service in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service.):

e.) ☒ Other (If this box is checked, **attach a legible map delineating the service area of each service provider,** and identify the government, authority, or other organization that will provide service within each service area.): **JASPER COUNTY PROVIDES IN UNINCORPORATED AREAS AND INCORPORATED CITY OF SHADY DALE. CITY OF MONTICELLO PROVIDES IN INCORPORATED CITY OF MONTICELLO.**

2. In developing this strategy, were overlapping service areas, unnecessary competition and/or duplication of this service identified?

☐ ***Yes*** (if "Yes," you must attach additional documentation as described, below)

☒ ***No***

If these conditions will continue under this strategy, **attach an explanation for continuing the arrangement** (i.e., overlapping but higher levels of service (See O.C.G.A. 36-70-24(1)), overriding benefits of the duplication, or reasons that overlapping service areas or competition cannot be eliminated).

If these conditions will be eliminated under the strategy, **attach an implementation schedule** listing each step or action that will be taken to eliminate them, the responsible party and the agreed upon deadline for completing it.

SDS FORM 2, continued

3. List each government or authority that will help to pay for this service and indicate how the service will be funded (e.g., enterprise funds, user fees, general funds, special service district revenues, hotel/motel taxes, franchise taxes, impact fees, bonded indebtedness, etc.).

Local Government or Authority	*Funding Method*
JASPER COUNTY	USER FEES, GENERAL FUND
CITY OF MONTICELLO	USER FEES

4. How will the strategy change the previous arrangements for providing and/or funding this service within the county?

JASPER COUNTY PROVIDES CURBSIBE PICKUP FOR SOLID WASTE FOR UNINCORPORATED AREAS AND INCORPORATED CITY OF SHADY DALE. JASPER COUNTY MAINTAINS A C & D LANFILL FOR UNINCORPORATED AREAS AND INCORPORATED AREAES. CITY OF MONTICELLO PROVIDES CURBSIDE PICKUP FOR INCORPORATED CITY OF MONTICELLO.

5. List any formal service delivery agreements or intergovernmental contracts that will be used to implement the strategy for this service:

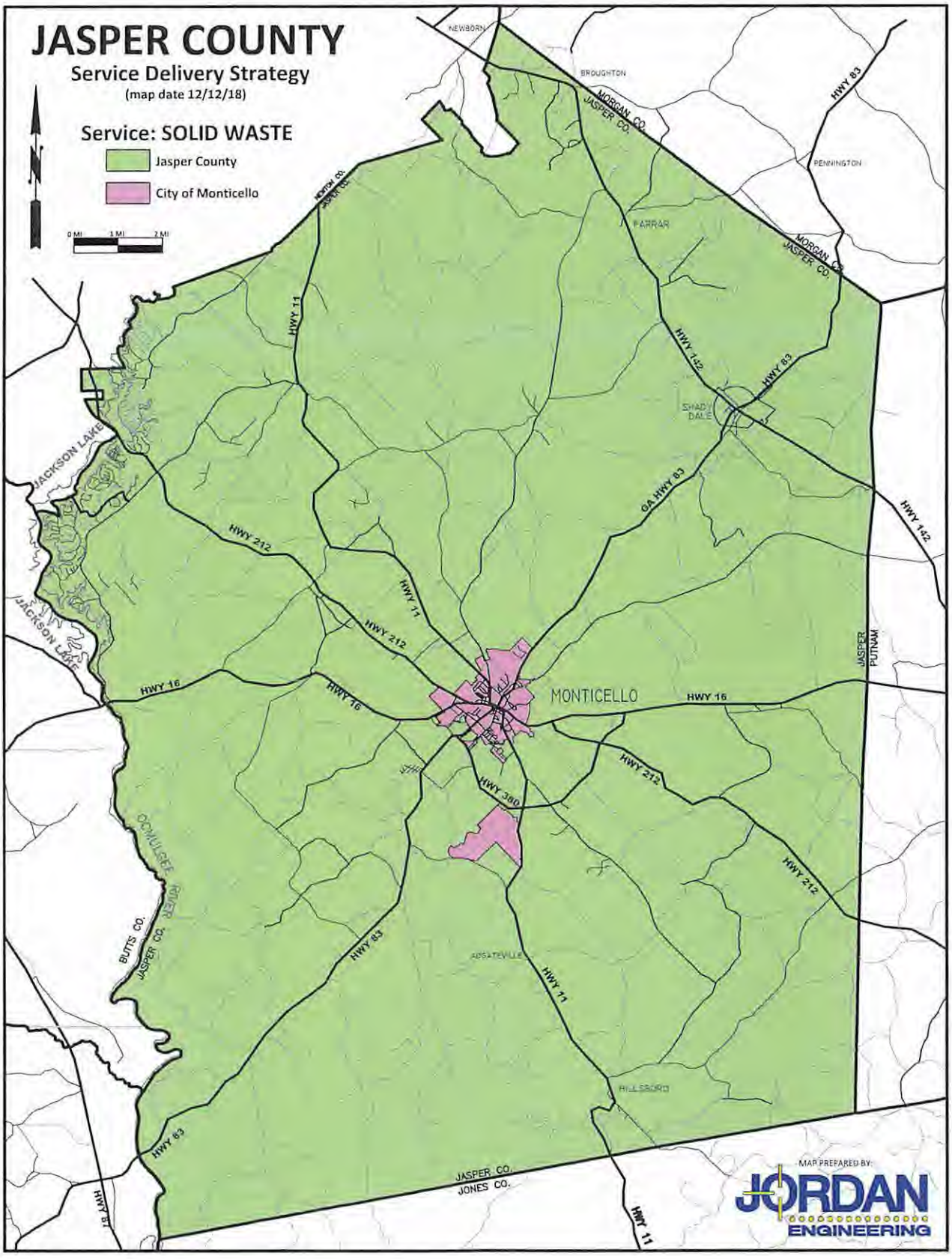
Agreement Name	*Contracting Parties*	*Effective and Ending Dates*

6. What other mechanisms (if any) will be used to implement the strategy for this service (e.g., ordinances, resolutions, local acts of the General Assembly, rate or fee changes, etc.), and when will they take effect?

7. Person completing form: **MIKE BENTON, COUNTY MANAGER**
Phone number: **706-468-4900** Date completed: Type Date Here

8. Is this the person who should be contacted by state agencies when evaluating whether proposed local government projects are consistent with the service delivery strategy? ☒Yes ☐No

If not, provide designated contact person(s) and phone number(s) below:


JASPER COUNTY
Service Delivery Strategy
(map date 12/12/18)
Service: SOLID WASTE
Jasper County
City of Monticello
0 MI
1 MI
2 MI
NEWBORN
BROUGHTON
MORGAN CO.
JASPER CO.
PENNINGTON
FARRAR
NEWTON CO.
JASPER CO.
HWY 83
HWY 11
HWY 142
SHADY DALE
JACKSON LAKE
GA HWY 83
HWY 212
HWY 16
MONTICELLO
HWY 380
JASPER
PUTNAM
OCMULGEE RIVER
BUTTS CO.
JASPER CO.
ADSATEVILLE
HILLSBORO
JASPER CO.
JONES CO.
MAP PREPARED BY:
JORDAN
ENGINEERING

Georgia Department of Community Affairs

SERVICE DELIVERY STRATEGY

FORM 2: Summary of Service Delivery Arrangements

Instructions:

Make copies of this form and complete one for each service listed on FORM 1, Section IV. Use EXACTLY the same service names listed on FORM 1. Answer each question below, attaching additional pages as necessary. If the contact person for this service (listed at the bottom of the page) changes, this should be reported to the Department of Community Affairs.

COUNTY:JASPER COUNTY	Service:*WATER SUPPLY AND DISTRIBUTION*

1. Check one box that best describes the agreed upon delivery arrangement for this service:

a.) ☐ Service will be provided countywide (i.e., including all cities and unincorporated areas) by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):

b.) ☐ Service will be provided only in the unincorporated portion of the county by a single service provider. (If this box is checked, identify the government, authority or organization providing the service.):

c.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the service will not be provided in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service:

d.) ☐ One or more cities will provide this service only within their incorporated boundaries, and the county will provide the service in unincorporated areas. (If this box is checked, identify the government(s), authority or organization providing the service.):

e.) ☒ Other (If this box is checked, **attach a legible map delineating the service area of each service provider,** and identify the government, authority, or other organization that will provide service within each service area.): **CITY OF MONTICELLO, CITY OF SHADY DALE, TURTLE COVE WATER, ALCOVY WATER AUTHORITY, JASPER COUNTY WATER AUTHORITY**

2. In developing this strategy, were overlapping service areas, unnecessary competition and/or duplication of this service identified?

☐ ***Yes*** (If "Yes," you must attach additional documentation as described, below)

☒ ***No***

If these conditions will continue under this strategy, **attach an explanation for continuing the arrangement** (i.e., overlapping but higher levels of service (See O.C.G.A. 36-70-24(1)), overriding benefits of the duplication, or reasons that overlapping service areas or competition cannot be eliminated).

If these conditions will be eliminated under the strategy, **attach an implementation schedule** listing each step or action that will be taken to eliminate them, the responsible party and the agreed upon deadline for completing it.

SDS FORM 2, continued

3. List each government or authority that will help to pay for this service and indicate how the service will be funded (e.g., enterprise funds, user fees, general funds, special service district revenues, hotel/motel taxes, franchise taxes, impact fees, bonded indebtedness, etc.).

Local Government or Authority	*Funding Method*
CITY OF MONTICELLO	USER FEES
CITY OF SHADY DALE	USER FEES
TURTLE COVE WATER	USER FEES
ALCOVY WATER AUTHORITY	USER FEES
JASPER COUNTY WATER AUTH.	USER FEES

4. How will the strategy change the previous arrangements for providing and/or funding this service within the county?

JASPER COUNTY WATER AND SEWER AUTHORITY HAS BEEN ADDED TO THE ABOVE LIST.

CITY OF MONTICELLO WATER SERVICE DISTRICT INCLUDES PROPERTY ANNEXED IN 2018.

5. List any formal service delivery agreements or intergovernmental contracts that will be used to implement the strategy for this service:

Agreement Name	*Contracting Parties*	*Effective and Ending Dates*
IGA	Jasper County Water Authority; City of Monticello	TBD

6. What other mechanisms (if any) will be used to implement the strategy for this service (e.g., ordinances, resolutions, local acts of the General Assembly, rate or fee changes, etc.), and when will they take effect?

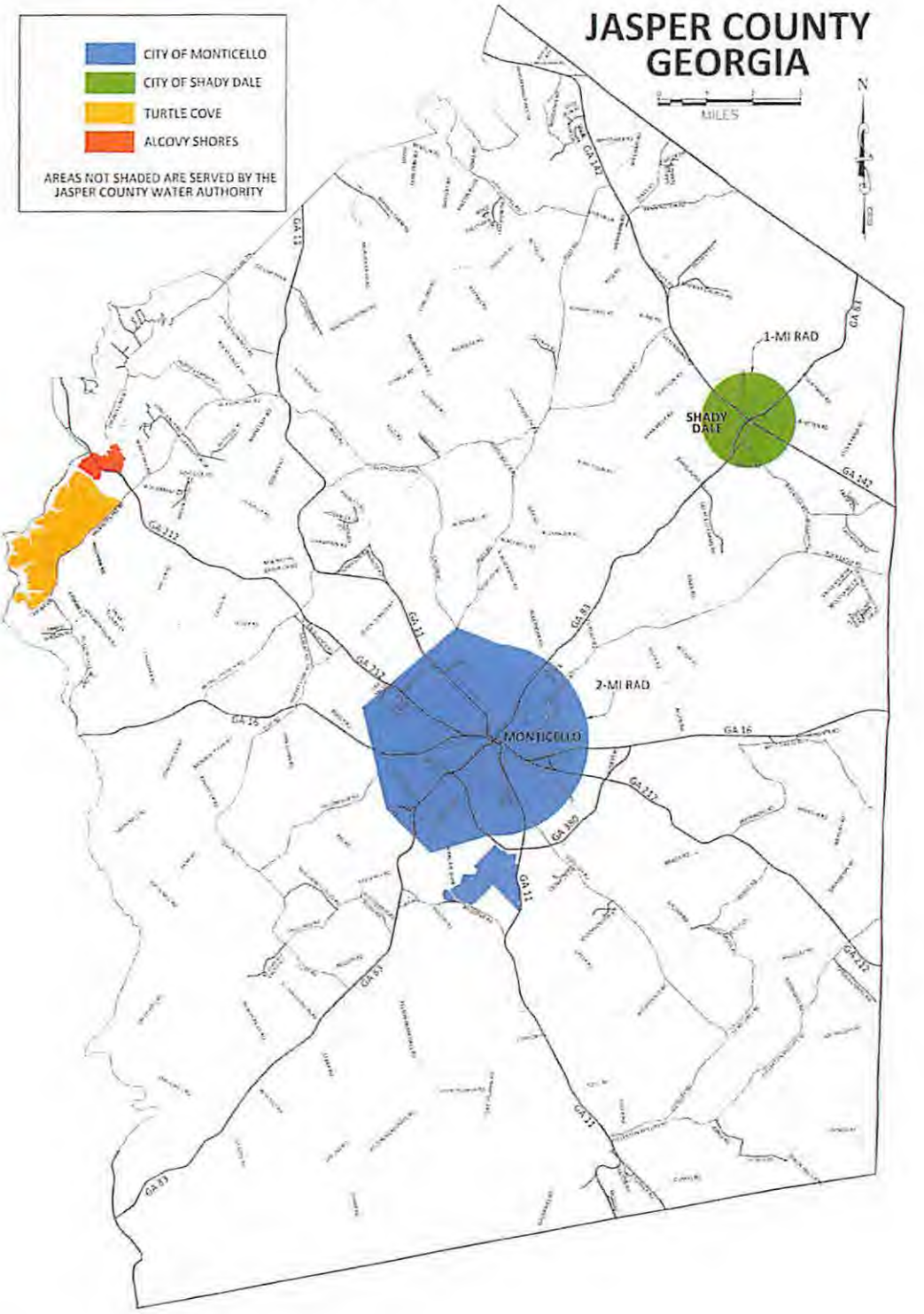
PER THE IGA INCLUDED IN PARAGRAPH 5, THE CITY OF MONTICELLO HEREBY AGREES TO NEGOTIATE WITH THE JASPER COUNTY WATER AND SEWER AUTHORITY REGARDING ALL ISSUES PERTAINING TO WATER SUPPLY AND DISTRIBUTION BETWEEN NON-CONTIGUOUS AREAS OF LAND INCORPORATED INTO THE CITY OF MONTICELLO.

7. Person completing form: **MIKE BENTON, COUNTY MANAGER**
Phone number: **706-468-4900** Date completed: Type Date Here

8. Is this the person who should be contacted by state agencies when evaluating whether proposed local government projects are consistent with the service delivery strategy? ☒Yes ☐No

If not, provide designated contact person(s) and phone number(s) below:

SERVICE DELIVERY STRATEGY
WATER SERVICE DISTRICTS



Georgia Department of Community Affairs

SERVICE DELIVERY STRATEGY

FORM 3: Summary of Land Use Agreements

Instructions:

Answer each question below, attaching additional pages as necessary. Please note that any changes to the answers provided will require an update of the service delivery strategy. If the contact person for this service (listed at the bottom of this page) changes, this should be reported to the Department of Community Affairs.

COUNTY:JASPER COUNTY

1. What incompatibilities or conflicts between the land use plans of local governments were identified in the process of developing the service delivery strategy?
JASPER COUNTY, CITY OF MONTICELLO AND CITY OF SHADY DALE UPDATED ITS JOINT COMPREHENSIVE PLAN IN 2018. POTENTIAL CONFLICTS WERE ELIMINATED DURING THE PLANNING PROCESS.

2. Check the boxes indicating how these incompatibilities or conflicts were addressed:

☐ Amendments to existing comprehensive plans

☒ Adoption of a joint comprehensive plan

☐ Other measures (amend zoning ordinances, add environmental regulations, etc.)

If "other measures" was checked, describe these measures:

NOTE:

If the necessary plan amendments, regulations, ordinances, etc. have not yet been formally adopted, indicate when each of the affected local governments will adopt them

3. What policies, procedures and/or processes have been established by local governments (and water and sewer authorities) to ensure that new extraterritorial water and sewer service will be consistent with all applicable land use plans and ordinances? ALL GOVERNMENTS AND WATER AUTHORITIES WATER SERVICE TERRITORY IS IDENTIFIED IN THE 2018 UPDATE TO THE SERVICE DELIVERY STRATEGY. THE CITY OF MONTICELLO HAS AGREED TO DEVELOP AN INTERGOVERNMENTAL AGREEMENT WITH THE JASPER COUNTY WATER AUTHORITY REGARDING WATER SUPPLY AND DISTRIBUTION. ALL OTHER WATER AUTHORITIES OPERATING IN JASPER COUNTY WILL BE REQUIRED TO DEVELOP INTERGOVERNMENTAL AGREEMENTS AS NEEDED.

4. Person completing form: **MIKE BENTON, COUNTY MANAGER**

Phone number: **706-468-4900** Date completed: Type Date Here

5. Is this the person who should be contacted by state agencies when evaluating whether proposed local government projects are consistent with the service delivery strategy? ☒Yes ☐No

If not, provide designated contact person(s) and phone number(s) below:

Georgia Department of Community Affairs

SERVICE DELIVERY STRATEGY

FORM 4: Certifications

Instructions:

This form must, at a minimum, be signed by an authorized representative of the following governments: 1) the county; 2) the city serving as the county seat; 3) all cities having a 2010 population of over 9,000 residing within the county; and 4) no less than 50% of all other cities with a 2010 population of between 500 and 9,000 residing within the county. Cities with a 2010 population below 500 and local authorities providing services under the strategy are not required to sign this form, but are encouraged to do so.

COUNTY: JASPER COUNTY

We, the undersigned authorized representatives of the jurisdictions listed below, certify that:

1. We have executed agreements for implementation of our service delivery strategy and the attached forms provide an accurate depiction of our agreed upon strategy (O.C.G.A 36-70-21);
2. Our service delivery strategy promotes the delivery of local government services in the most efficient, effective, and responsive manner (O.C.G.A. 36-70-24 (1));
3. Our service delivery strategy provides that water or sewer fees charged to customers located outside the geographic boundaries of a service provider are reasonable and are not arbitrarily higher than the fees charged to customers located within the geographic boundaries of the service provider (O.C.G.A. 36-70-24 (20); and
4. Our service delivery strategy ensures that the cost of any services the county government provides (including those jointly funded by the county and one or more municipalities) primarily for the benefit of the unincorporated area of the county are borne by the unincorporated area residents, individuals, and property owners who receive such service (O.C.G.A. 36-70-24 (3)).

JURISDICTION	TITLE	NAME	SIGNATURE	DATE
JASPER COUNTY BOARD OF COMMISSIONERS	CHAIRMAN	CARL PENNAMON	Carl Pennamon	10/15/18
MONTICELLO CITY COUNCIL	MAYOR	Bryan Standifer	Bryan Standifer	10/10/18
SHADY DALE CITY COUNCIL	MAYOR	LARRY CHAMPION	Larry Champion	10/12/18

Appendix D:

Worksheets Used in Planning Process

Jasper County Hazard Events

Date	Hazard Type	Deaths	Injuries	Total Damages
3/19/1996	Hail	0	0	$ -
4/21/1997	Hail	0	0	$ -
4/22/1997	Hail	0	0	$ -
10/25/1997	Hail	0	0	$ 58
11/1/1997	Hail	0	0	$ -
4/8/1998	Hail	0	0	$ -
4/21/1998	Hail	0	0	$ -
4/22/1998	Hail	0	0	$ -
6/16/1998	Hail	0	0	$ -
8/18/1998	Hail	0	0	$ -
5/13/1999	Hail	0	0	$ -
5/13/1999	Hail	0	0	$ -
6/4/1999	Hail	0	0	$ -
7/24/1999	Hail	0	0	$ -
2/22/2001	Hail	0	0	$ -
6/14/2001	Hail	0	0	$ -
6/27/2001	Hail	0	0	$ -
6/27/2001	Hail	0	0	$ -
5/3/2002	Hail	0	0	$ -
11/11/2002	Hail	0	0	$ -
5/2/2003	Hail	0	0	$ -
4/22/2005	Hail	0	0	$ -
7/3/2005	Hail	0	0	$ -
6/29/2007	Hail	0	0	$ -
3/15/2008	Hail	0	0	$ 106,638
3/15/2008	Hail	0	0	$ 69,314
5/20/2008	Hail	0	0	$ -
5/20/2008	Hail	0	0	$ -
2/18/2009	Hail	0	0	$ -
4/25/2010	Hail	0	0	$ -
9/27/2010	Hail	0	0	$ -
4/4/2011	Hail	0	0	$ -
9/27/2011	Hail	0	0	$ -
7/17/1962	Hail - Lightning - Severe Storm/Thunder Storm - Wind	0	0	$ 478
5/27/1963	Hail - Lightning - Severe Storm/Thunder Storm - Wind	0	0	$ 550
7/9/1967	Hail - Lightning - Severe Storm/Thunder Storm - Wind	0	0	$ 2,378
4/23/1971	Hail - Lightning - Severe Storm/Thunder Storm - Wind	0	0	$ 3,565
5/25/1960	Hail - Lightning - Wind	0	0	$ 488

Date	Hazard Type	Deaths	Injuries	Total Damages
5/16/1962	Hail - Lightning - Wind	0	0	$ 655
11/21/1965	Hail - Lightning - Wind	0	0	$ 229
6/2/1968	Hail - Lightning - Wind	0	0	$ 2,075
4/12/1965	Hail - Severe Storm/Thunder Storm	0	0	$ 657
2/10/1960	Hail - Severe Storm/Thunder Storm - Wind	0	0	$ 244
3/30/1960	Hail - Severe Storm/Thunder Storm - Wind	0	0	$ 244
5/25/1961	Hail - Severe Storm/Thunder Storm - Wind	0	0	$ 650
7/24/1962	Hail - Severe Storm/Thunder Storm - Wind	0	0	$ 427
3/17/1965	Hail - Wind	0	0	$ 6,876
3/1/2001	Heavy Rain	0	0	$ -
10/6/2002	Heavy Rain	0	0	$ -
9/7/2004	High Wind	0	0	$ 500,000
6/19/1972	Hurricane/Tropical Storm	0	0	$ 1,727
6/26/1992	Lightning	0	0	$ 818
7/6/2008	Lightning	0	0	$ 106,638
7/8/2011	Lightning	0	0	$ 255
6/28/2013	Lightning	0	0	$ 15,000
9/1/2014	Lightning	0	0	$ 5,000
7/22/1967	Lightning - Severe Storm/Thunder Storm - Wind	0	0	$ 2,888
3/18/1970	Lightning - Severe Storm/Thunder Storm - Wind	0	0	$ 1,861
8/7/1962	Lightning - Wind	0	0	$ 3,249
6/29/1969	Lightning - Wind	0	0	$ 6,384
6/22/1970	Lightning - Wind	0	0	$ 29,587
2/18/1961	Severe Storm/Thunder Storm	0	0	$ 12,067
4/2/1964	Severe Storm/Thunder Storm	0	0	$ 42,878
5/2/1964	Severe Storm/Thunder Storm	0	0	$ 46,580
1/18/1969	Severe Storm/Thunder Storm	0	0	$ 8,192
3/1/1971	Severe Storm/Thunder Storm	0	0	$ 18,005
6/14/1971	Severe Storm/Thunder Storm	0	0	$ 1,783
6/15/1971	Severe Storm/Thunder Storm	0	0	$ 1,181
6/9/1972	Severe Storm/Thunder Storm	0	0	$ 450
6/28/1972	Severe Storm/Thunder Storm	0	0	$ 1,727
2/1/1973	Severe Storm/Thunder Storm	0	0	$ 16,261
4/6/1973	Severe Storm/Thunder Storm	0	0	$ 336
5/15/1975	Severe Storm/Thunder Storm	0	0	$ 4,890
6/6/1977	Severe Storm/Thunder Storm	0	0	$ 25,510
1/30/1991	Severe Storm/Thunder Storm	0	0	$ 31
1/18/1992	Severe Storm/Thunder Storm	0	0	$ 11
9/28/1965	Severe Storm/Thunder Storm - Wind	0	0	$ 2,315

Date	Hazard Type	Deaths	Injuries	Total Damages
2/13/1966	Severe Storm/Thunder Storm - Wind	0	0	$ 24,512
3/1/1966	Severe Storm/Thunder Storm - Wind	0	0	$ 24,512
3/21/1974	Severe Storm/Thunder Storm - Wind	0	0	$ 146,449
4/4/1989	Severe Storm/Thunder Storm - Wind	0	0	$ 92,578
8/2/1990	Severe Storm/Thunder Storm - Wind	0	0	$ 878
3/29/1991	Severe Storm/Thunder Storm - Wind	0	0	$ 8,429
3/29/1991	Severe Storm/Thunder Storm - Wind	0	0	$ 8,429
4/27/1991	Severe Storm/Thunder Storm - Wind	0	0	$ 8,429
4/27/1991	Severe Storm/Thunder Storm - Wind	0	0	$ 843
4/27/1991	Severe Storm/Thunder Storm - Wind	0	0	$ 843
6/26/1992	Severe Storm/Thunder Storm - Wind	0	0	$ 818
6/26/1992	Severe Storm/Thunder Storm - Wind	0	0	$ 818
2/12/1993	Severe Storm/Thunder Storm - Wind	0	0	$ 794
5/15/1995	Severe Storm/Thunder Storm - Wind	0	0	$ 753,261
7/21/1995	Severe Storm/Thunder Storm - Wind	0	0	$ 753
7/29/1995	Severe Storm/Thunder Storm - Wind	0	0	$ 1,507
8/3/1995	Severe Storm/Thunder Storm - Wind	0	0	$ 753
9/1/1995	Severe Storm/Thunder Storm - Wind	0	0	$ 753
6/13/1996	Severe Storm/Thunder Storm - Wind	0	0	$ 732
8/24/1996	Severe Storm/Thunder Storm - Wind	0	0	$ 2,195
5/3/1997	Severe Storm/Thunder Storm - Wind	0	0	$ 1,430
7/27/1997	Severe Storm/Thunder Storm - Wind	0	0	$ 4,291
7/28/1997	Severe Storm/Thunder Storm - Wind	0	0	$ 2,861
6/16/1998	Severe Storm/Thunder Storm - Wind	0	0	$ 2,817
7/20/1998	Severe Storm/Thunder Storm - Wind	0	0	$ 5,634
5/23/1999	Severe Storm/Thunder Storm - Wind	0	0	$ 1,378
6/29/1999	Severe Storm/Thunder Storm - Wind	0	0	$ 689
7/6/1999	Severe Storm/Thunder Storm - Wind	0	0	$ 1,378
8/13/1999	Severe Storm/Thunder Storm - Wind	0	0	$ 2,756
2/16/2001	Severe Storm/Thunder Storm - Wind	0	0	$ 1,296
5/19/2001	Severe Storm/Thunder Storm - Wind	0	0	$ 19,446
6/3/2001	Severe Storm/Thunder Storm - Wind	0	0	$ 6,482
6/14/2001	Severe Storm/Thunder Storm - Wind	0	0	$ 1,296
7/3/2001	Severe Storm/Thunder Storm - Wind	0	0	$ 1,945
5/3/2002	Severe Storm/Thunder Storm - Wind	0	0	$ 2,552
11/11/2002	Severe Storm/Thunder Storm - Wind	0	0	$ 8,934
2/22/2003	Severe Storm/Thunder Storm - Wind	0	0	$ 1,248
3/22/2003	Severe Storm/Thunder Storm - Wind	0	0	$ 1,248
5/2/2003	Severe Storm/Thunder Storm - Wind	0	0	$ 6,239

Date	Hazard Type	Deaths	Injuries	Total Damages
5/2/2003	Severe Storm/Thunder Storm - Wind	0	0	$ 6,239
7/1/2003	Severe Storm/Thunder Storm - Wind	0	0	$ 31,195
6/21/2004	Severe Storm/Thunder Storm - Wind	0	0	$ 3,646
11/24/2004	Severe Storm/Thunder Storm - Wind	0	0	$ 608
7/3/2005	Severe Storm/Thunder Storm - Wind	0	0	$ 3,527
8/29/2005	Severe Storm/Thunder Storm - Wind	0	0	$ 5,878
8/29/2005	Severe Storm/Thunder Storm - Wind	0	0	$ 3,527
8/29/2005	Severe Storm/Thunder Storm - Wind	0	0	$ 588
1/2/2006	Severe Storm/Thunder Storm - Wind	0	0	$ 1,139
8/4/2006	Severe Storm/Thunder Storm - Wind	0	0	$ 569
6/5/2007	Severe Storm/Thunder Storm - Wind	0	0	$ 3,322
6/25/2007	Severe Storm/Thunder Storm - Wind	0	0	$ 1,107
6/29/2007	Severe Storm/Thunder Storm - Wind	0	0	$ 2,215
3/15/2008	Severe Storm/Thunder Storm - Wind	0	0	$ 2,133
6/28/2008	Severe Storm/Thunder Storm - Wind	0	0	$ 800
7/21/2008	Severe Storm/Thunder Storm - Wind	0	0	$ 2,133
12/2/2009	Severe Storm/Thunder Storm - Wind	0	0	$ 10,702
12/9/2009	Severe Storm/Thunder Storm - Wind	0	0	$ 1,605
6/15/2010	Severe Storm/Thunder Storm - Wind	0	0	$ 5,265
6/16/2010	Severe Storm/Thunder Storm - Wind	0	0	$ 1,053
7/9/2010	Severe Storm/Thunder Storm - Wind	0	0	$ 31,587
9/27/2010	Severe Storm/Thunder Storm - Wind	0	0	$ 1,579
4/4/2011	Severe Storm/Thunder Storm - Wind	0	0	$ 4,083
6/15/2011	Severe Storm/Thunder Storm - Wind	0	0	$ 7,145
6/15/2011	Severe Storm/Thunder Storm - Wind	0	0	$ 1,021
7/8/2011	Severe Storm/Thunder Storm - Wind	0	0	$ 1,021
2/24/2012	Severe Storm/Thunder Storm - Wind	0	0	$ 10,000
7/5/2012	Severe Storm/Thunder Storm - Wind	0	0	$ 2,500
7/6/2012	Severe Storm/Thunder Storm - Wind	0	0	$ 1,500
7/6/2012	Severe Storm/Thunder Storm - Wind	0	0	$ 500
7/18/2012	Severe Storm/Thunder Storm - Wind	0	0	$ 1,500
7/20/1998	Thunderstorm Wind	0	0	$ 2,000
6/27/2001	Thunderstorm Wind	0	0	$ -
4/3/2002	Thunderstorm Wind	0	0	$ -
2/22/2003	Thunderstorm Wind	0	0	$ 1,000
8/29/2005	Thunderstorm Wind	0	0	$ 500
8/29/2005	Thunderstorm Wind	0	0	$ 5,000
3/4/2008	Thunderstorm Wind	0	0	$ 1,000
1/30/2013	Thunderstorm Wind	0	0	$ 1,500

Date	Hazard Type	Deaths	Injuries	Total Damages
6/28/2013	Thunderstorm Wind	0	0	$ 2,500
10/14/2014	Thunderstorm Winds	0	0	$ 6,000
11/23/2014	Thunderstorm Winds	0	0	$ 2,000
5/26/2015	Thunderstorm Winds	0	0	$ -
7/3/2015	Thunderstorm Winds	0	0	$ 5,000
6/30/2016	Thunderstorm Winds	0	0	$ 3,000
3/10/17	Thunderstorm Winds	0	0	$ 1,000
5/30/2017	Thunderstorm Winds	0	0	$ 1,000
6/22/2017	Thunderstorm Winds	0	0	$ 1,000
7/7/2017	Thunderstorm Winds	0	0	$ 3,000
6/1/2018	Thunderstorm Winds	0	0	$ 2,000
6/3/2018	Thunderstorm Winds	0	0	$ 2,000
6/16/2018	Thunderstorm Winds	0	0	$ 3,000
3/6/1967	Tornado	0	0	$ 34,370
5/8/1978	Tornado	0	0	$ 17,607
2/18/2009	Tornado	0	0	$ 267,546
2/18/2009	Tornado	0	0	$ 133,773
9/14/2002	Tropical Storm	0	0	$ -
7/1/2003	Tropical Storm	0	0	$ -
9/16/2004	Tropical Storm	0	0	$ -
9/26/2004	Tropical Storm	0	0	$ -
6/12/2005	Tropical Storm	0	0	$ -
7/6/2005	Tropical Storm	0	0	$ -
10/5/2005	Tropical Storm	0	0	$ -
8/21/2008	Tropical Storm	0	0	$ -
11/10/2009	Tropical Storm	0	0	$ -
9/4/2011	Tropical Storm	0	0	$ -
9/11/2017	Tropical Storm	0	0	$ 75,000
10/10/2018	Tropical Storm	0	0	$ -
2/18/1960	Wind	0	0	$ 244
3/22/1968	Wind	0	0	$ 2,075
3/23/1969	Wind	0	0	$ 1,967
2/19/1972	Wind	0	0	$ 173
3/24/1975	Wind	0	0	$ 2,808
5/3/1975	Wind	0	0	$ 106,689
5/14/1975	Wind	0	0	$ 610
12/31/1975	Wind	0	0	$ 235
3/30/1977	Wind	0	0	$ 10,419
1/25/1978	Wind	0	0	$ 11,184

Date	Hazard Type	Deaths	Injuries	Total Damages
4/13/1979	Wind	0	0	$ 39,531
2/25/1980	Wind	0	0	$ 1,699
10/10/1982	Wind	0	0	$ 11,896
9/11/1983	Wind	0	0	$ 1,153
4/5/1985	Wind	0	0	$ 533
3/13/1993	Wind	0	0	$ 743,004
11/11/1993	Wind	0	0	$ 1,222
3/20/2001	Wind	0	0	$ 47,430
2/25/2004	Wind	0	0	$ 3,228
9/6/2004	Wind	0	0	$ 1,172,780
9/27/2004	Wind	0	0	$ 6,077
4/2/2005	Wind	0	0	$ 588
9/1/1997	Drought	0	0	$ 397,359
5/1/1999	Drought	0	0	$ -
8/1/1999	Drought	0	0	$ -
2/1/2000	Drought	0	0	$ -
4/1/2000	Drought	0	0	$ -
5/1/2000	Drought	0	0	$ -
6/1/2000	Drought	0	0	$ 4,215,697
7/1/2000	Drought	0	0	$ -
10/1/2000	Drought	0	0	$ -
10/1/2001	Drought	0	0	$ -
11/1/2001	Drought	0	0	$ -
12/1/2001	Drought	0	0	$ -
4/1/2002	Drought	0	0	$ -
8/1/2002	Drought	0	0	$ -
1/1/2003	Drought	0	0	$ -
3/1/2004	Drought	0	0	$ -
5/1/2007	Drought	0	0	$ -
9/1/2007	Drought	0	0	$ -
10/1/2007	Drought	0	0	$ -
11/1/2007	Drought	0	0	$ -
12/1/2007	Drought	0	0	$ -
9/1/2011	Drought	0	0	$ -
7/1/2016	Drought	0	0	$ -
8/1/2016	Drought	0	0	$ -
9/1/2016	Drought	0	0	$ -
11/1/2016	Drought	0	0	$ -
12/1/2016	Drought	0	0	$ -

Date	Hazard Type	Deaths	Injuries	Total Damages
1/1/2017	Drought	0	0	$ -
7/1/1986	Drought - Heat	1	2	$ 658,753
9/3/2002	Excessive Heat	0	0	$ -
8/1/2007	Excessive Heat	0	0	$ -
6/29/2012	Excessive Heat	0	0	$ -
7/1/2012	Excessive Heat	0	0	$ -
7/1/1980	Heat	0	0	$ 876,205
8/1/1980	Heat	0	0	$ -
7/20/1999	Heat	0	0	$ -
8/1/1999	Heat	0	0	$ -
11/1/2001	Heat	0	0	$ -
12/1/2001	Heat	0	0	$ -
1/24/2002	Heat	0	0	$ -
3/15/2002	Heat	0	0	$ -
4/16/2002	Heat	0	0	$ -
4/21/2009	Wildfire	0	0	$ 161
3/5/2012	Wildfire	0	0	$ 25,000
7/31/2012	Wildfire	0	0	$ 1,500
2/17/2014	Wildfire	0	0	$ -
3/25/2014	Wildfire	0	0	$ 1,000
2/3/1996	Extreme Cold/Wind Chill	0	0	$ -
6/1/1997	Extreme Cold/Wind Chill	0	0	$ -
4/9/2000	Extreme Cold/Wind Chill	0	0	$ -
6/7/2000	Extreme Cold/Wind Chill	0	0	$ -
10/8/2000	Extreme Cold/Wind Chill	0	0	$ -
12/1/2000	Extreme Cold/Wind Chill	0	0	$ -
9/26/2001	Extreme Cold/Wind Chill	0	0	$ -
10/27/2001	Extreme Cold/Wind Chill	0	0	$ -
2/26/2002	Extreme Cold/Wind Chill	0	0	$ -
3/1/2002	Extreme Cold/Wind Chill	0	0	$ -
5/18/2002	Extreme Cold/Wind Chill	0	0	$ -
1/11/2003	Extreme Cold/Wind Chill	0	0	$ -
1/23/2003	Extreme Cold/Wind Chill	0	0	$ -
12/16/2005	Freezing Fog	0	0	$ -
4/7/2007	Frost/Freeze	0	0	$ -
12/18/1996	Heavy Snow	0	0	$ -
1/2/2002	Heavy Snow	0	0	$ -
2/12/2010	Heavy Snow	0	0	$ -
2/25/1965	Wind - Winter Weather	0	0	$ 2,292

Date	Hazard Type	Deaths	Injuries	Total Damages
12/17/2000	Winter Storm	0	0	$ -
2/26/2004	Winter Storm	0	0	$ -
1/9/2011	Winter Storm	0	0	$ -
1/28/2014	Winter Storm	0	0	$ -
3/1/1960	Winter Weather	0	0	$ 538,650
1/25/1961	Winter Weather	0	0	$ 2,415
12/12/1962	Winter Weather	0	0	$ 2,415
1/23/1963	Winter Weather	0	0	$ 472
12/31/1963	Winter Weather	0	0	$ 235,946
1/13/1964	Winter Weather	0	0	$ 23
3/30/1964	Winter Weather	0	0	$ 23,523
1/29/1966	Winter Weather	0	0	$ 4,457
1/8/1970	Winter Weather	0	0	$ 1,861
2/9/1973	Winter Weather	0	0	$ 206,841
1/1/1977	Winter Weather	0	0	$ 119,141
2/17/1979	Winter Weather	0	0	$ 18,118
2/5/1980	Winter Weather	0	0	$ 1,531
1/20/1983	Winter Weather	0	0	$ 12,006
3/13/1993	Winter Weather	0	0	$ 226,984
1/15/1994	Winter Weather	0	0	$ 799
1/28/2000	Winter Weather	0	0	$ 44,443
1/25/2004	Winter Weather	0	0	$ 34,069
1/28/2005	Winter Weather	0	0	$ 115,110
3/1/2009	Winter Weather	0	0	$ 28,039
12/25/2010	Winter Weather	0	0	$ -
2/9/2011	Winter Weather	0	0	$ -
1/17/2018	Winter Weather	0	0	$ -
3/7/1996	Flash Flood	0	0	$ -
7/1/2003	Flash Flood	0	0	$ -
6/6/2016	Flash Flood	0	0	$ 2,000
3/8/1980	Flooding	0	0	$ 3,765
8/16/1994	Flooding	0	0	$ 22,132
2/16/1995	Flooding	0	0	$ 9,039
3/8/1998	Flooding	0	0	$ 17,607

2019 Jasper County Hazard Frequency

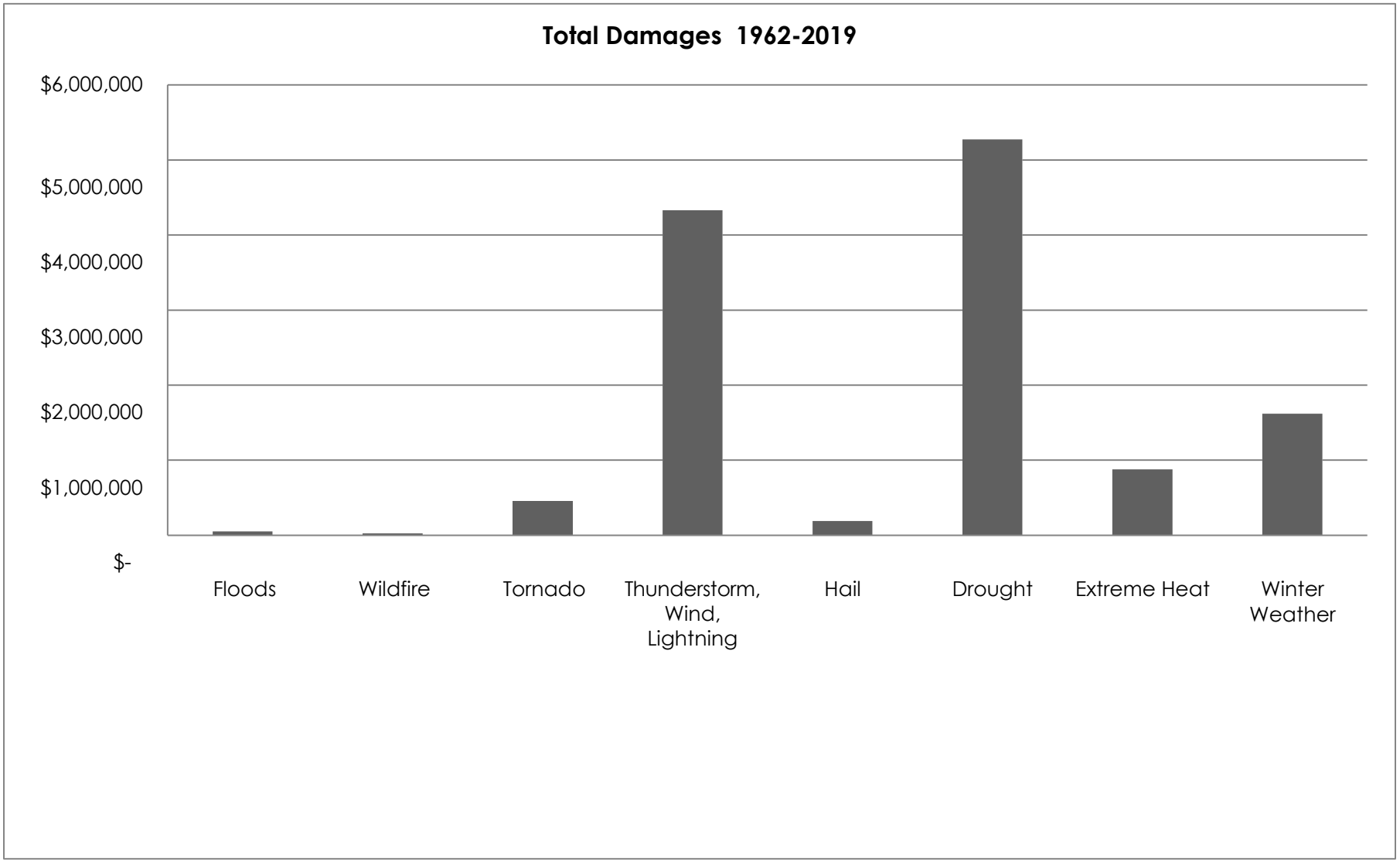
Hazard	Number of Events in Historic Record	Number of Years in Historic Record	Number of Events in Past 10 Years	Number of Events in Past 20 Years	Number of Events in Past 50 Years	Historic Recurrence Interval (years)	Historic Frequency % chance/ year	Past 10 Year Record Frequency Per Year	Past 20 Year Record Frequency Per Year	Past 50 Year Record Frequency Per Year
Floods	7	68	1	2	7	9.29	10.77%	0.1	0.1	0.14
Wildfire	5	68	5	5	5	13.00	7.69%	0.5	0.25	0.1
Tornado	4	68	0	2	3	16.25	6.15%	0	0.1	0.06
Thunderstorm Wind	141	68	29	74	129	0.46	216.92%	2.9	3.7	2.58
Hail	47	68	5	23	33	1.38	72.31%	0.5	1.15	0.66
Drought	28	68	7	28	23	2.32	43.08%	0.7	1.4	0.46
Extreme Heat	14	68	0	7	14	4.64	21.5%	0	0.35	0.28
Snow & Ice	45	68	5	22	37	1.44	69.2%	0.5	1.1	0.74
Earthquake	1	68	0	1	1	65	1.54%	0	.05	.02

The historic frequency of a hazard event over a given period of time determines the historic recurrence interval. For example: If there have been five Winter Weather Events in Jasper County in the past ten years, statistically you could expect that there will be 1 event every two years.

Realize that from a statistical standpoint, there are several variables to consider:

1) Accurate hazard history data and collection are crucial to an accurate recurrence interval and frequency.
2) Data collection and accuracy has been much better in the past 10-20 years (NCDC weatherrecords).
3) It is important to include all significant recorded hazard events which will include periodic updates to this table.

By updating and reviewing this table over time, it may be possible to see if certain types of hazard events are increasing in frequency.


Total Damages 1962-2019
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$-
Floods
Wildfire
Tornado
Thunderstorm, Wind, Lightning
Hail
Drought
Extreme Heat
Winter Weather

Report of Accomplishments 2014-2019

Action Item	Status	Comments	Carry Over?
Tornados			
Construct a shelter in manufactured home parks	Postponed	Lack of Funding/Concerns about private property.	Yes
Continue to promote the use of CodeRed mass notification system to alert the public in the case of immediate threats	In Progress (2020-2025)	Continuous through media	Yes
Use local newspapers and social media to encourage the public to purchase weather radios	In Progress (2020-2025)	Continuous use of current CodeRed System	Yes
Continue to raise awareness of tornado siren protocol through local newspapers and social media	Complete/In Progress	Ongoing program	Yes with revisions
Conduct regular assessments of zoning and building codes' ability to mitigate severe thunderstorm damage and update as needed	In Progress (2020-2025)	Ongoing program	Yes
Develop a prioritized list of critical facilities in need of backup power sources and provide new sources as needed	Postponed to 2020	List is nearly complete	Yes
Using ads in the local paper encourage the public to purchase and utilize power surge strips to reduce damage to property.	Completed	Will not carry over into the new plan	No
Drought			
Develop and conduct regular educational programs about water conservation, especially in regards to the effects of water shortages on the agricultural community	In Progress	Carry over to the 2020-2025 plan	Yes
Explore working with Farm Bureau on feed supply sharing programs during droughts	postponed	Will work with extension office for 2020 plan update	Yes
Thunderstorm Winds and Lightning Damage			
Provide weather radios to elderly citizens and those in high risk areas.	Postponed	Lack of Funding	Yes
Implement a public awareness program to encourage citizens to purchase weather radios or download apps on their phone.	In Progress 2020-2025)	Continuous through media	Yes
Utilize the effectiveness of the Mass Notification System to alert the public of any immediate threat	In Progress (2020-2025)	Continuous use of current CodeRed System	Yes
Using ads in the local paper encourage the public to purchase and utilize power surge strips to reduce damage to property.	Complete	Continuous through media	No

Action Item	Status	Comments	Carry Over?
Involve the use of social media (Facebook, Twitter, etc.) to educate and alert the public of potential threats.	Completed/In Progress (2020-2025)	Continuous project	Yes

Flooding

Develop county-wide policies to use floodplain areas for forestry, recreation, and green space preservation while limiting new construction	Complete		
Continue to identify and replace deficient bridges and culverts in flood-prone locations including: 1. River Rd. 2. Wicker RD. 3. New Hope Church Rd. 4. Kinard Creek Rd. 5. Cook Rd. 6. Pitts Chapel Rd. 7. Old Adgateville Rd. 8. Ozborne Rd. 9. Benton Rd. 10. Clay Tillman Rd. 11. Guy Jones Rd	In Progress	Guy Jones Rd Bridge is being elevated in 2020, and Pitts Chapel Rd bridge was just finished being elevated.	Yes
Continue to enforce and update floodplain maps and ordinances	In Progress (2020-2025)	Ongoing Project	Yes
Continue compliance with NFIP criteria by enforcing Land Development Regulations	In Progress (2020-2025)	Ongoing Project	Yes
Develop county-wide policies to use floodplain areas for forestry, recreation, and green space preservation while limiting new construction	In Progress	Looking into the policy	Yes

Winter Storms

Install generators at two emergency shelters	Postponed	Plan to apply for grant	Yes
Identify and implement new ways to educate public about the dangers posed by winter storms while continuing current educational initiatives	In Progress (2020-2025)	Lack of Funding in previous years	Yes, with revisions
Ensure adequate supplies of winter storm response materials, such as sand, salt, chainsaws, and safety gear	In Progress (2020-2025)	Continuous project	Yes
Develop and implement a county-wide winter storm sheltering plan	Postponed	Plan to implement in 2022	Yes

Action Item	Status	Comments	Carry Over?
Make available emergency preparedness pamphlets to citizens	Canceled	Continuous use of current CodeRed System	No

Earthquakes

Identify and implement new ways to educate the public on earthquake preparedness	In Progress (2020-2025)	Ongoing project	Yes
Continue to evaluate building codes' ability to protect against earthquake damage and update as needed	In Progress (2020-2025)	Ongoing project	Yes

Wildfires

Create and implement fire awareness programs for county/city employees.	Postponed (2022)	Lack of Funding	Yes
Inform the public through newspaper ads and flyers of the importance of clearing underbrush a safe distance from house.	In Progress (2020-2025)	Ongoing Project	Yes
Inform the public through newspaper ads and flyers of 911signs available through the Jasper County Fire Department.	In progress (2020-2025)	Ongoing Project	Yes, with revisions
Collaborate with state and county agencies to develop and conduct regular educational programs addressing the risks of wildfire and potential mitigation actions	In progress (2023)	Ongoing Project	Yes
Work to increase public awareness of the Community Wildfire Protection Plan and its provisions.	In Progress (2020-2025)	Ongoing Project	Yes
Purchase truck with skid unit for local wildland firefighting.	Postponed (2025)	Lack of Funding	Yes

Action Item	Status	Comments	Carry Over?
Hazardous Materials Spills			
Offer hazardous material operations and technician training to emergency personnel	Canceled	Not Feasible, lack of funding	No
Do annual tabletop exercise involving all responding organizations on hazardous material spills	Canceled	Not Feasible, lack of funding	No
Purchase two extra-large Hazwik Chemical Spill Truck Kits to store on the Special Ops Trailer	Canceled	Not Feasible, lack of funding	No
Purchase a fully equipped hazardous materials response truck	Canceled	Not Feasible, lack of funding	No
Continue to evaluate and review hazardous materials response plan	Canceled	Not Feasible, lack of funding	No
Offer hazardous material operations and technician training to new emergency personnel	Canceled	Not Feasible, lack of funding	No
Offer hazardous material operations and technician training to emergency personnel	Canceled	Not Feasible, lack of funding	No
All Hazards			
Develop a county-wide policy for using Facebook, Twitter, and other social media for public education about hazards	Complete	Completed	No
After developing a county-wide social media and internet policy, develop a public awareness site with information on emergencies, including contact numbers, shelters, and home safety procedures	Completed/ Ongoing	Using ESRI Story Map	Yes with Revisions
Provide weather radios to elderly citizens and those in high-risk areas	In Progress (2020-2025)	Ongoing project	Yes
Place signs along the roadway to alert people of to the County's emergency preparedness information	Postponed	Lack of funding	Yes

Action Item	Status	Comments	Carry Over?
Run a coordinated campaign to significantly increase the percentage of County residents registered for CodeRed alerts	In Progress (2020-2025)	Ongoing Project	Yes
Work with Tax Assessors Office to update critical facilities values, square footage and GIS information	In Progress (2020-2025)	Ongoing Project	Yes
Organize and conduct regular educational outreach activities through a variety of channels, including schools, churches, radio PSAs, refrigerator magnets, pamphlets, flyers, and social media	In Progress (2020-2025)	Ongoing Project	Yes with revisions
Develop a county-wide sheltering plan in coordination with DFACS and the Red Cross	Postponed	Lack of funding	Yes
Develop a storm spotter training program for county employees	Postponed	Lack of funding	Yes
Develop emergency response training programs for all appropriate county employees	Completed	Lack of funding	Yes
Develop a county-wide social media policy	Completed	All Departments having Social Media	No
Develop a county-wide policy for using Facebook, Twitter, and other social media for public education about hazards	Completed	All Departments having Social Media	No
After developing a county-wide social media and internet policy, develop a public awareness site with information on emergencies, including contact numbers, shelters, and home safety procedures	In Progress (2020-2025)	Ongoing Project	Yes

STAPLEE Criteria	S		T			A			P			L			E				E				
	(Social)		(Technical)			(Administrative)			(Political)			(Legal)			(Economic)				(Environmental)				
Considerations for Alternative Actions	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance / Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land / Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Environmental	Consistent With Federal Laws
Work with private land owners to construct a shelter in manufactured home parks	+	+	+	+	+	-	-	-	+	+	-	+	0	+	+	-	+	+	+	+	+	+	+
Continue to promote the use of CodeRed mass notification system to alert the public in the case of immediate threats	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Use local newspapers and social media to encourage the public to purchase weather radios	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Continue to raise awareness of tornado siren protocol through local newspapers and social media	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Conduct regular assessments of zoning and building codes' ability to mitigate severe thunderstorm damage and update as needed	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Develop a prioritized list of critical facilities in need of backup power sources and provide new sources as needed	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Develop and conduct regular educational programs about water conservation, especially in regards to the effects of water shortages on the agricultural community	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

STAPLEE Criteria	S		T			A			P			L			E				E				
	(Social)		(Technical)			(Administrative)			(Political)			(Legal)			(Economic)				(Environmental)				
Considerations for Alternative Actions	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance / Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land / Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Environmental	Consistent With Federal Laws
Educate farmers to work with Farm Bureau on feed supply sharing programs during droughts	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Provide weather radios to elderly citizens and those in high risk areas.	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
Implement a public awareness program to encourage citizens to purchase weather radios or download apps on their phone.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Utilize the effectiveness of the Mass Notification System to alert the public of any immediate threat	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Using ads in the local paper encourage the public to purchase and utilize power surge strips to reduce damage to property.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Involve the use of social media (Facebook, Twitter, etc.) to educate and alert the public of potential threats.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

STAPLEE Criteria	S		T			A			P			L			E				E				
	(Social)		(Technical)			(Administrative)			(Political)			(Legal)			(Economic)				(Environmental)				
Considerations for Alternative Actions	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance / Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land / Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Environmental	Consistent With Federal Laws
Continue to identify and replace deficient bridges and culverts in flood-prone locations including: 1. River Rd. 2. Wicker RD. 3. New Hope Church Rd. 4. Kinard Creek Rd. 5. Cook Rd. 6. Pitts Chapel Rd. 7. Old Adgateville Rd. 8. Ozborne Rd. 9. Benton Rd. 10. Clay Tillman Rd. 11. Guy Jones Rd.	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
Continue to enforce and update floodplain maps and ordinances	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Continue compliance with NFIP criteria by enforcing Land Development Regulations	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Develop county-wide policies to use floodplain areas for forestry, recreation, and green space preservation while limiting new construction	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

STAPLEE Criteria	S		T			A			P			L			E				E				
	(Social)		(Technical)			(Administrative)			(Political)			(Legal)			(Economic)				(Environmental)				
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Install generators at the local hospital	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
Identify and implement new ways to educate public about the dangers posed by winter storms while continuing current educational initiatives	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Ensure adequate supplies of winter storm response materials, such as sand, salt, chainsaws, and safety gear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Develop and implement a county-wide sheltering plan	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
Make available emergency preparedness pamphlets to citizens	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Identify and implement new ways to educate the public on earthquake preparedness	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

STAPLEE Criteria	S		T			A			P			L			E				E				
	(Social)		(Technical)			(Administrative)			(Political)			(Legal)			(Economic)				(Environmental)				
Considerations for Alternative Actions	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance / Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land / Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Environmental	Consistent With Federal Laws
Continue to evaluate building codes' ability to protect against earthquake damage and update as needed	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Offer hazardous material operations and technician training to emergency personnel	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Do annual tabletop exercise involving all responding organizations on hazardous material spills	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Purchase two extra-large Hazwik Chemical Spill Truck Kits to store on the Special Ops Trailer	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
Purchase a fully equipped hazardous materials response truck	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Continue to evaluate and review hazardous materials response plan	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Create and implement fire safety awareness programs for county/city employees.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Inform the public through social media of the importance of clearing underbrush a safe distance from house.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

STAPLEE Criteria	S		T			A			P			L			E				E				
	(Social)		(Technical)			(Administrative)			(Political)			(Legal)			(Economic)				(Environmental)				
Considerations for Alternative Actions	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance / Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land / Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Environmental	Consistent With Federal Laws
Inform the public through Jasper County FD Facebook page of 911 signs available through the Jasper County Fire Department.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Work to increase the awareness of the Community Wildfire Protection Plan among the public and county/city employees.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Appendix E:

Planning Process Documentation

Pre-Disaster Hazard Mitigation Steering & Planning Committee Meeting

Jasper County **Date: November 12, 2019**

Name	Organization	Phone	Email
Donna Holman	Jasper Memorial Hospital / The Retreat	706-468-4544	dholman@retreatnursinghome.com
Christa McMillian	Jasper Co Health Dept.	706 468 6850	christa.mcmillian@dph.ga.gov
Lauren Nation	Jasper Co Health Dept.	706 468 6850	lauren.nation@dph.ga.gov
Angela Walsh	Jasper Co Tax Commissioner	706-468-6201	awalsh@jaspercounty ga.org
Nichole Howell	Jasper Memorial Hospital / The Retreat	706-468-4539	NHowell@jaspermemorial.com
CHRISTOPHER FINCH	JASPER COUNTY FIRE RESCUE	678-603 8915	C finch@JASPERCOUNTY GA.ORG
JOHN DEVINE	NEGRC	706.369.5650	jdevine@negrc.org
KAREN PENNAMON	City Hall	706-468-6062	kpennamon@monticelloga.org
Kimberly Angel	Hazard mitigation Planning specialist GEMA/HS	706-424-8199	Kimberly.angel@gema.ga.gov
Melissa Alcantara	Hazard mitigation Planning Specialist GEMA/HS	850-559-3535	melissa_alcantara@gema.ga.gov

Pre-Disaster Hazard Mitigation Steering & Planning Committee Meeting

Jasper County **Date: November 12, 2019**

Name	Organization	Phone	Email
Betty Jump	EMA	706-468 4930	bjump@jaspercountyga.org
Robert Jordan	Jordan Engineering	706 318-6786	robert@jordan-eng.com
Jeffrey Lee	911 Authority	864-842-0650	Jeffreylee5r@yahoo.com
Dennis Pate	Board of Commissioners	706-468-4900	dpate@jaspercountyga.org
Robert Colvin	City Monticello	706819-0508	rcolvin@Monticello Ga.org
Sandra Stovall	City of Monticello Gas Dep	762-435 9016	sstovall@monticellogga.org
Preston Campbell	Jasper Co. Public Work	762-462-9118	PCampbell@jaspercounty@org
Michael Boykin	City of Monticello	706-819-0911	mboykin@monticellogga.org
WAYNE JONES	Electric Cities of GA	404 309 2280	wjones@ecogA.org
James Ray	Jasper Co Fire	678-350-6012	jray@jaspercountyga.org
Mike Benton	Jasper County	-	mbenton@jaspercountyga.org
Jon McBrayer	NEGRC	706-368-5650	JMcBrayer@negrc.org

Pre-Disaster Hazard Mitigation Steering Committee Meeting

Jasper County **Date: November 26, 2019**

Name	Organization	Phone	Email
Betty Jump	Jasper Co EMA	706-468 4930	bjump@jaspercountyga.org
CHRISTOPHER FINCH	JASPER COUNTY FIRE RESCUE	678-603 8915	cfinch@jaspercountyga.org
James Ray	JCFR	678-350-6012	jray@jaspercountyga.org
Bob Sharpless	JC SO	706 468 4914	BSharpless@JasperCosheriff.com
Michael Boykin	City of Monticello	706-819 0911	mboykin@monticellogg.org
Robert Colvin	City of Monticello	706-819 0308	rcolvin@monticello.org
Nichole Howell	Jasper Memorial Hospital + RNH	706-468-4539	NHowell@jaspermemorial.com.
Angela Walsh	Jasper Co Tax Com	706-816 8841	awalsh@jaspercountyga.org
Lauren Nation	Jasper Co Health Dept	706 468 6850	lauren.nation@dph.ga.gov
Christa McMillian	" "	" "	christa.mcmillian@dph.ga.gov

Pre-Disaster Hazard Mitigation Steering Committee Meeting

Jasper County **Date: November 26, 2019**

Name	Organization	Phone	Email
Sharon Robinson	Jasper Co BOC	706-468-490	srobinsan@jaspercountyga.org
Jim Young	City of Monticello	478 955 6059	tyoung@monticellaga.org
Karen Pennamon	City of Monticello	706 468 6062	kpennamon@monticellaga.org
LARRY Champion	City Shady Dale	706-476-0078	Shady dale ag@gmail.com
Waymon Cody	City of Monticello	706-468-6639	waymondcody@yahoo.com
Jeffrey Lee	911 Authority	864-812-0650	jeffreyleeSr@yahoo.com
[illegible]	BOC	706-468-4900	[illegible]@jaspercounty ga.org
Jon McBrayer	NEGRC	706-369-5650	JmcBrayer@negrc.org

Pre-Disaster Hazard Mitigation Steering Committee Meeting ~~3~~ 2

Jasper County **Date: December 10, 2019**

Name	Organization	Phone	Email
Brent Strite	ARES Radio (Ham)	706 468-6530	KA3ZPM@ATT.NET
Jeffrey Lee	911 Authority	864 812-0650	Jetrolee@yahoo.com
Betty Jump	Jasper Co. EMA	706-468-4930	bjump@jaspercounty.ga.org
CHRISTOPHER FINCH	JASPER COUNTY FIRE RESCUE	678.603 8915	CFINCH@JASPERCOUNTYGA.ORG
Mike Beck	BOC	706 468 4968	
Christa McMillian	JCHD	706 468 6850	christa.mcmillian@dph.ga.gov
Lauren Nation	JCHD	706 468 6850	lauren.nation@dph.ga.gov
Angela Walsh	Jasper Co Tax Office	706-468-4902	
Waymon Cady	City of Monticello	706-468 6639	waymondcady@yahoo.com
James Ray	JCFR	678-350-6012	jray@jcspercounty.ga.org

Pre-Disaster Hazard Mitigation Steering Committee Meeting ~~3~~ 2

Jasper County **Date: December 10, 2019**

Name	Organization	Phone	Email
Karen Pennamon	City Hall	7064666062	Kpennamon@monticelloga.org
Waymon Cody	City of Monticello	678-476-1444	waymondcody@yahoo.com
Jon McBrayer	NEGRC	706-369-5650	JmcBrayer@negrc.org

SLM

Pre-Disaster Hazard Mitigation Steering Committee Meeting 3

Jasper County **Date: December 17, 2019**

Name	Organization	Phone	Email
Jeffrey Lee	911 Authority	864-812-0650	Jefrolee@yahoo.com
James Ray	JCFR	678-350-6012	jray@jaspercountyga.org
Betty Jump	JasperCo EMA	706-468-4930	bjump@jaspercountyga.org.
Brent Strite	HAES	706-468-6530	K1A3ZM@aol.net
Nichole Howell	Jasper Memorial Hospital	706-468-4539	NHowell@jaspermemorial.com
Jon McBrayer	NEGRC	706-369-5650	JmcBrayer@negrc.org

Pre-Disaster Hazard Mitigation Steering Committee Meeting 4

Jasper County **Date: January 7, 2020**

Name	Organization	Phone	Email
Jeffrey Lee	911 Authority	864-812-0650	Jeffreyleesr@yahoo.com ✓
Betty Jump	Jasper Co EMA	706 468 4930	bjump@jaspercountyga.org ✗
Bruce Strube	Ares	706-468-6630	KA3ZPM@Att.Net ✓
Lauren Nation	Jasper Co Health Dept	706 468 6850	lauren.nation@dph.ga.gov ✗
Robert Colvin	Monticello GAS	(706) 819-0308	rcolvin@monticellogA.org ✓
Angela Walsh	Jasper Co Tax Office	706-468-4902	awalsh@jaspercountyga.org ✓
Michael Boykin	City of Monticello	706-468-8834	mboykin@monticelloga.org ✓
Mike Bettis	Jasper County BOC	706-819-2136	✗
Wayman Cody	City of Monticello	678-446 1444	waymandcody@yahoo.com ✓
Jon McBrayer	NEGRC	706-369-5650	JmcBrayer@negrc.org

Pre-Disaster Hazard Mitigation Steering Committee Meeting 4

Jasper County **Date: January 7, 2020**

Name	Organization	Phone	Email
Karen Pennamon	City Hall	706 468 6062	kpennamon@monticello ga. org

Pre-Disaster Hazard Mitigation Public Hearing 1

Jasper County **Date: December 10, 2019**

Name	Organization	Phone	Email
Jon McBrayer	NE GRC	770-356-3322	JMcBrayer@Negrc.org

Pre-Disaster Hazard Mitigation Public Hearing 2

Jasper County **Date: January 28, 2020**

Name	Organization	Phone	Email	
Angela Walsh	Jasper Co Tax Office	706-468-4902	awalsh@jaspercountyga.org	X
Bob Sharpless	JCSO	706 468 4912	BSharpless@jaspercosheriff.com	X
Mike Benton	Jasper Co BOC	706-468-4902	mbenton@jaspercountyga.org	X
James Ray	Jasper Co Fire & Rescue	678-350-6012	jray@jaspercountyga.org	X
Jon McBrayer	NEGRC	706-369-5650	JmcBrayer@negrc.org	

Pre-Disaster Hazard Mitigation Public Hearing 2

Jasper County **Date: January 28, 2020**

Name	Organization	Phone	Email
Betty Jump	JasperCo EMA	706-468 4930	bjump@jaspercountyga.org
Karen Pennamon	City Hall	706-468-6062	kpennamon@monticelloga.org
Tim Young	City of Monticello	706468606c	tyoung@monticelloga.org
Nichole Howell	Jasper Memorial Hospital	706-468-4539	NHowell@jaspermemorial.com
CHRISTOPHER FINCH	JASPER COUNTY FIRE RESCUE	678-603 8915	cfinch@JASPERCOUNTYGA.ORG

PUBLIC HEARING MEETING

A public hearing will be held for the Jasper County Pre-Disaster Mitigation Plan Update on Tuesday, December 10, 2019, at 1:30pm at the Jasper County Fire Station located at 185 Highway 212 W., Monticello, GA.

The purpose of this hearing will be to inform citizens of the planning process and to obtain input into the development of the plan update. Representatives from the Northeast Georgia Regional Commission will present information and receive comments.

Questions concerning the Jasper County Pre-Disaster Mitigation Plan Update should be directed to Jon McBrayer, Planner, (706) 369-5650 or email jmcbrayer@negra.org

RELAX FOR BUBBA

Local Masssage Therapist Loree Selman (right) last Saturday hosted a fund raiser for Bubba Pope who is battling cancer. Clients paid for a massage and all proceeds were donated to Bubba. Loree did nine massages and raised $700. There is account open at both local banks for Mr. Pope. This Saturday, Jan. 11 Bubba's Birthday & Benefit Bash will be at Shawn O'Brien's, 2400 Hwy. 36, Jackson, featuring Gannon Adams and Backwoodz Branded. One of Ms. Selman's clients was Faye Pope, affectionately known as "Granny" to the MKR crowd.

Clinic Set to Spay/Neuter Felines Here

A feline spay/neuter clinic is planned at Jasper County Animal Control, 126 Mack Tillman Dr., in Monticello, on Wednesday, Jan. 15.

Check-in begins at 7 a.m.

The cost is spay is $60, and neuter cost is $40. In addition rabies shots are offered, and if the animal does not need it, proof should be offered showing it's not needed.

Other services offered include take-home pain meds, distemper vaccine, leukemia vaccine, micro-chipping, and other testing. Flea medication will be available.

To schedule an appointment, interested persons should call 770-455-7077 or register at www.projectcatsnip.com.

All cats must be in a cat-specific carrier. Cardboard carriers are available for purchase for $7. Feral and community cats are welcome.

This service is provided by CatSnip spay/neutering services of Ga., LLC, a mobile low-cost feline veterinary clinic.

Plain Speaking

By CHRIS BRIDGES

Predicting Whether Georgia Turns Blue In 2020

With a presidential election year now looking us in the face, Georgia will be one of the more intriguing states to watch.

Democrats in Georgia believe this will be the year the state returns to its blue shade after being solidly Republican red for some time. It won't be easy but it is also not beyond the realm of possibility. That's the nature of politics both local and nationally.

President Trump remains very popular with about half of our state. It's really true for the President around the country. It boils down to you either love him or hate him. There really is no middle ground when it comes to President Trump.

In terms of the race for the White House there have been so many Democrats in the running that it has been tough for even the most dedicated campaign follower to keep track. It should be noted that Julian Castro was the latest to leave the race and Marianne Williamson's campaign is on life support.

The Democrats have a chance to swing Georgia into their camp this fall but it certainly will not be easy. Nominating the right candidate for president will be key and ironically Georgia will have little to say about that when all is said and done due to the late date of our primary.

In addition to the presidential election there will be two U.S. Senate seats before the voters in November. Republican incumbent David Perdue is facing his first re-election battle. Several Democrats are campaigning for their party's nomination.

In addition there will be a special election for Johnny Isakson's seat which is now being filled by Kelly Loeffler after she was appointed by Governor Brian Kemp. Loeffler was not the person President Trump wanted in the Senate as he pushed for Congressman Doug Collins.

Loeffler will go before the voters in November in a special election where all candidates will be listed on the ballot. There will not be a primary for this race. Collins is reportedly considering a run and the list of candidates will likely be a long one by the time everyone is finished signing up for the race. Special elections of this nature allow third party candidates and independents to be on the ballot as well since there is simply a qualifying fee to run.

Matt Lieberman, the son of former U.S. Senator and vice-presidential candidate Joseph Lieberman, is running for the seat Loeffler currently occupies. It should be noted that candidates will simply be listed by their name in this special election and will not have their party affiliation spelled out.

Democrats have been inching closer and closer to breaking the Republican stronghold on the state but until one actually wins a statewide race then Georgia remains firmly in the red and that's where the safe money will be.

BALLOT ACCESS

A U.S. District Court was scheduled to hear arguments in the De La Fuente vs. Raffensperger case earlier this week. The lawsuit is aimed at stopping the state Republican Party from eliminating candidates from the presidential primary ballot.

Rocky De La Fuente, along with Bill Weld and Joe Walsh, wanted to be on the ballot for Georgia's Republican Presidential Primary but the state party only allowed President Trump's name.

De La Fuente will be on the Republican primary ballot in several other states including California, Colorado, Florida, Indiana, Missouri, Oklahoma, Texas and Vermont as will Weld and Walsh.

The lawsuit is against Georgia's Secretary of State Brad Raffensperger, who is a Republican.

As stated in this space before all Georgians, whether they support President Trump or not, should be furious that the state Republican Party has decided no other candidates can be on its primary ballot. It goes against the very nature of open elections in our country. This is a tactic seen in country run by a dictator where only one name is permitted to be before the voters.

That is not an open election. The 2020 GOP presidential primary in Georgia will not be either.

Monticello native Chris Bridges has been a community newspaper journalist for three decades. He welcomes feedback from readers at pchrisbridges@gmail.com.

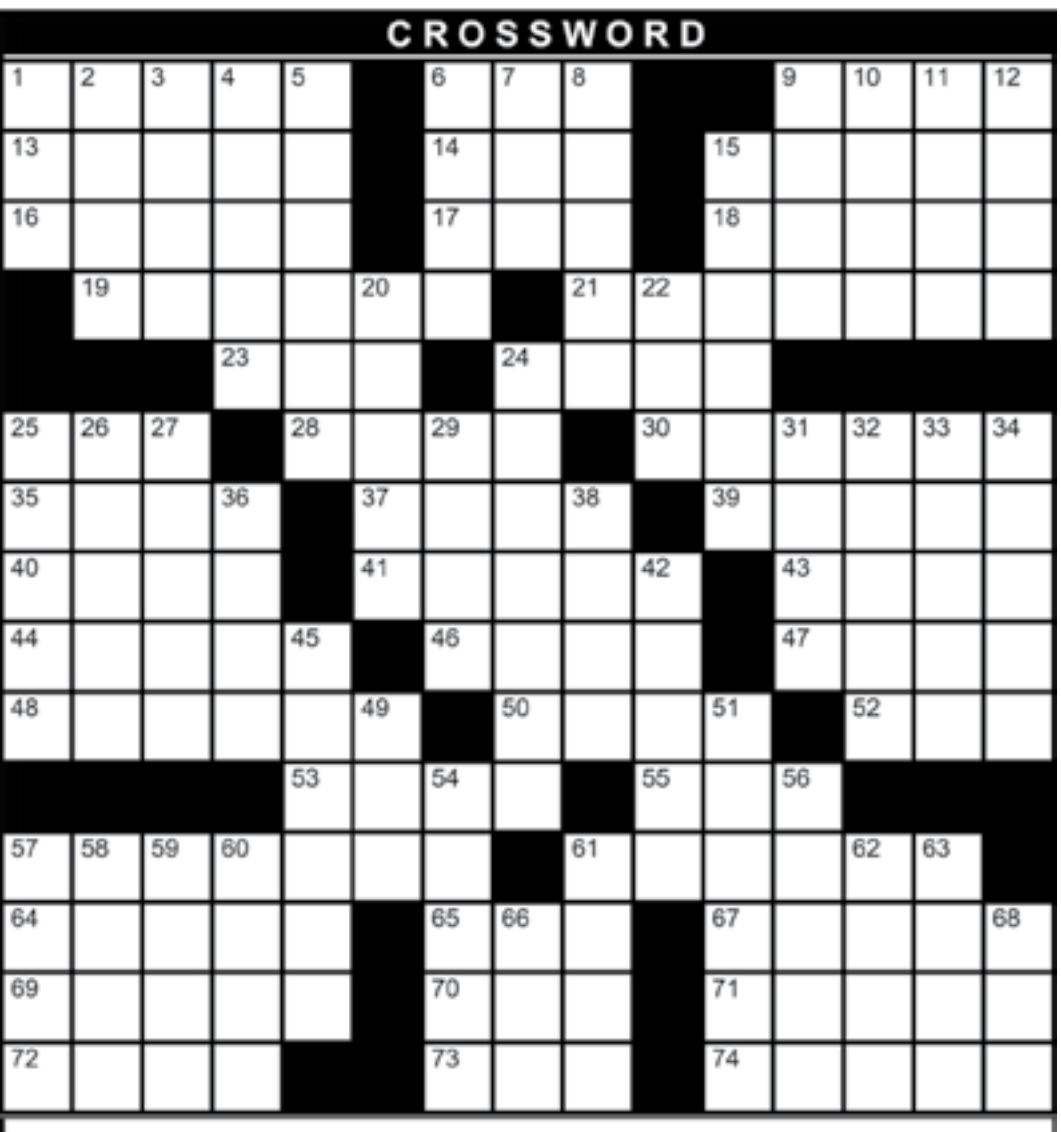
MOVIE CHARACTERS

ACROSS
1. Curaçao neighbor
6. Lungful
9. Not on a rolling stone
13. British unemployment checks
14. Schiller's famous poem, e.g.
15. "Will comply" in radio communication
16. Opposite of liability
17. Napoleon Bonaparte or Louis Vuitton, e.g.
18. Embedded design
19. *Teen with telescopic powers
21. *Adventurous professor with fear of snakes
23. *He played it in "Casablanca"
24. Sign of escape
25. Steampunk decoration
28. Thanksgiving tubers
30. Fear of flying, e.g.
35. Bun baker
37. "CliffsNotes," e.g.
39. Bound by oath
40. Nay, to a baby
41. Bread spreads
43. *She takes on PG&E
44. Sacrificial spot
46. Wedding promise?
47. Not yet final
48. Eats between meals
50. Blood-related problem
52. Ship pronoun
53. Diamond's corner
55. Be obliged
57. Name before X
61. *Orphan who wanted more gruel
64. Love between Abélard and Héloïse
65. Pitching stat
67. Nostrils, anatomically speaking
69. Pine
70. Fleur-de-____
71. Novelist Wharton
72. *Adopted orphan of Green Gables
73. Auction set
74. Like a disreputable neighborhood

DOWN
1. Palindromic title
2. CISC alternative
3. *Female Superman foe alongside General Zod
4. Afrikaners' ancestors
5. Off course
6. First-rate
7. Nuptial agreement
8. Version of a song
9. Mr. Bean's ride
10. Paella pot
11. Diagnostic test
12. Bean that rhymes with Goya
15. Distance from side to side, pl.
20. Insect in adult stage
22. Tiny bite
24. Most vital part
25. *A barbarian
26. Convex molding
27. Ladies and ____, for short
29. *a.k.a. The Mayor of Castro Street
31. *Hutch actor in 2004's "Starsky & Hutch"
32. *Famous Frankenstein portrayer
33. Like Michael Collins
34. *One of Miss Hannigan's orphans
36. *Russell Crowe's Biblical role
38. ____ of the trade
42. Bar seat
45. Type of realistic baby doll
49. *Pizzeria owner in "Do the Right Thing"
51. Strings
54. Olfactory sensation
56. Avoid
57. Poet Angelou
58. Flock's affirmation
59. Bank's provision
60. Dry or salt
61. Brewer's kiln
62. Great Lake
63. Retired, shortened
66. Spanish river
68. Like a wallflower

Solution on Page 9

CROSSWORD



Jasper County Emergency Services

Phone- (706) 468-4930 - P O Box 670, 77 Mack Tillman Dr, Monticello, Georgia 31064 – Fax- (706) 468-8287
Betty Jump – Director

November 4, 2019

Jones County EMA
ATTN: Don Graham

Re: Jasper County Hazard Mitigation Plan Update

Dear Mr. Graham:

Jasper County has had a FEMA approved Hazard Mitigation Plan since 2008. The current plan will expire in 2020 therefore we are ready to begin the update planning process. The Hazard Mitigation Plan outlines natural and manmade hazards that Jasper County is susceptible to; it also outlines mitigation efforts that the County as a whole can do to minimize damage.

The FEMA guideline for assembling a committee recommends that as many community partners are involved in the planning process as possible. Therefore, I would like to request that you serve on our **Planning Committee**. We will have the kick off meeting for both Committees at Fire Station #3 located at 185 Highway 212 W. Monticello, GA 31064, on November 12, 2019 at10:30 with light refreshments being served.

If you have any questions with regard to this appointment or the Hazard Mitigation Plan, please to not hesitate to contact me.

Sincerely,

Betty Jump
EMA Director

E-911

EMA

Jasper County Emergency Services

Phone- (706) 468-4930 - P O Box 670, 77 Mack Tillman Dr, Monticello, Georgia 31064 – Fax- (706) 468-8287
Betty Jump – Director

November 4, 2019

Butts County EMA
ATTN: Glen Goens

Re: Jasper County Hazard Mitigation Plan Update

Dear Mr. Goens:

Jasper County has had a FEMA approved Hazard Mitigation Plan since 2008. The current plan will expire in 2020 therefore we are ready to begin the update planning process. The Hazard Mitigation Plan outlines natural and manmade hazards that Jasper County is susceptible to; it also outlines mitigation efforts that the County as a whole can do to minimize damage.

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Sincerely,

Betty Jump
EMA Director

E-911

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Jasper County Emergency Services

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Betty Jump – Director

November 4, 2019

Morgan County EMA
ATTN: Gwen Ruark

Re: Jasper County Hazard Mitigation Plan Update

Dear Ms. Ruark:

Jasper County has had a FEMA approved Hazard Mitigation Plan since 2008. The current plan will expire in 2020 therefore we are ready to begin the update planning process. The Hazard Mitigation Plan outlines natural and manmade hazards that Jasper County is susceptible to; it also outlines mitigation efforts that the County as a whole can do to minimize damage.

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Sincerely,

Betty Jump
EMA Director

E-911

EMA

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Betty Jump – Director

November 4, 2019

Newton County EMA
ATTN: Jodi Nolan

Re: Jasper County Hazard Mitigation Plan Update

Dear Mr. Nolan:

Jasper County has had a FEMA approved Hazard Mitigation Plan since 2008. The current plan will expire in 2020 therefore we are ready to begin the update planning process. The Hazard Mitigation Plan outlines natural and manmade hazards that Jasper County is susceptible to; it also outlines mitigation efforts that the County as a whole can do to minimize damage.

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Sincerely,

Betty Jump
EMA Director

E-911

EMA

Jasper County Emergency Services

Phone- (706) 468-4930 - P O Box 670, 77 Mack Tillman Dr, Monticello, Georgia 31064 – Fax- (706) 468-8287
Betty Jump – Director

November 4, 2019

Monroe County EMA
ATTN: Matthew Perry

Re: Jasper County Hazard Mitigation Plan Update

Dear Mr. Perry:

Jasper County has had a FEMA approved Hazard Mitigation Plan since 2008. The current plan will expire in 2020 therefore we are ready to begin the update planning process. The Hazard Mitigation Plan outlines natural and manmade hazards that Jasper County is susceptible to; it also outlines mitigation efforts that the County as a whole can do to minimize damage.

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Sincerely,

Betty Jump
EMA Director

E-911

EMA

Jasper County Emergency Services

Phone- (706) 468-4930 - P O Box 670, 77 Mack Tillman Dr, Monticello, Georgia 31064 – Fax- (706) 468-8287
Betty Jump – Director

November 4, 2019

Putnam County EMA
ATTN: Sheriff Howard Sills

Re: Jasper County Hazard Mitigation Plan Update

Dear Sheriff Sills:

Jasper County has had a FEMA approved Hazard Mitigation Plan since 2008. The current plan will expire in 2020 therefore we are ready to begin the update planning process. The Hazard Mitigation Plan outlines natural and manmade hazards that Jasper County is susceptible to; it also outlines mitigation efforts that the County as a whole can do to minimize damage.

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Sincerely,

Betty Jump
EMA Director

E-911

EMA