

# MEMA District 7, MS Regional Hazard Mitigation Plan

DRAFT – October 2017

ATKINS



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# SECTION 1

## INTRODUCTION

This section provides a general introduction to the Mississippi Emergency Management Agency (MEMA) District 7 Regional Hazard Mitigation Plan. It consists of the following five subsections:

- 1.1 Background
- 1.2 Purpose
- 1.3 Scope
- 1.4 Authority
- 1.5 Summary of Plan Contents

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### 1.1 BACKGROUND

Natural hazards, such as hurricanes, floods, and tornadoes, are a part of the world around us. Their occurrence is natural and inevitable, and there is little we can do to control their force and intensity. We must consider these hazards to be legitimate and significant threats to human life, safety, and property.

The MEMA District 7 Region is located in the southwestern corner of Mississippi and includes the counties of Adams, Amite, Franklin, Jefferson, Lawrence, Lincoln, Pike, Walthall, and Wilkinson. This area is vulnerable to a wide range of natural hazards such as floods, drought, tornadoes, severe thunderstorms, and wildfires. These hazards threaten the life and safety of residents in the MEMA District 7 Region and have the potential to damage or destroy both public and private property, disrupt the local economy, and impact the overall quality of life of individuals who live, work, and vacation in the MEMA District 7 Region.

While the threat from hazardous events may never be fully eliminated, there is much we can do to lessen their potential impact upon our community and our citizens. By minimizing the impact of hazards upon our built environment, we can prevent such events from resulting in disasters. The concept and practice of reducing risks to people and property from known hazards is generally referred to as *hazard mitigation*.



**FEMA Definition of Hazard Mitigation:**

*“Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.”*

Hazard mitigation techniques include both structural measures (such as strengthening or protecting buildings and infrastructure from the destructive forces of potential hazards) and non-structural measures (such as the adoption of sound land use policies and the creation of public awareness programs). It is widely accepted that the most effective mitigation measures are implemented at the local government level, where decisions on the regulation and control of development are ultimately made. A comprehensive mitigation approach addresses hazard vulnerabilities that exist today and in the foreseeable future. Therefore, it is essential that projected patterns of future development are

evaluated and considered in terms of how that growth will increase or decrease a community's overall hazard vulnerability.

A key component in the formulation of a comprehensive approach to hazard mitigation is to develop, adopt, and update a local hazard mitigation plan as needed. A hazard mitigation plan establishes the broad community vision and guiding principles for reducing hazard risk, and further proposes specific mitigation actions to eliminate or reduce identified vulnerabilities.

Each of the 9 counties participating in the development of the MEMA District 7 Hazard Mitigation Plan has an existing hazard mitigation plan that has evolved over the years, as described in Section 2: *Planning Process*. This regional plan draws from the previous plan and documents the region's sustained efforts to incorporate hazard mitigation principles and practices into routine government activities and functions. At its core, the Plan recommends specific actions to minimize hazard vulnerability and protect residents from losses to those hazards that pose the greatest risk. These mitigation actions go beyond simply recommending structural solutions to reduce existing vulnerability, such as elevation, retrofitting, and acquisition projects. Local policies on community growth and development, incentives for natural resource protection, and public awareness and outreach activities are examples of other actions considered to reduce the MEMA District 7 Region's vulnerability to identified hazards. The Plan remains a living document, with implementation and evaluation procedures established to help achieve meaningful objectives and successful outcomes over time.

### **1.1.1 The Disaster Mitigation Act and the Flood Insurance Reform Act**

In an effort to reduce the Nation's mounting natural disaster losses, the U.S. Congress passed the Disaster Mitigation Act of 2000 (DMA 2000) in order to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Section 322 of DMA 2000 emphasizes the need for state, local, and Tribal government entities to closely coordinate on mitigation planning activities and makes the development of a hazard mitigation plan a specific eligibility requirement for any local or Tribal government applying for federal mitigation grant funds. In short, if a jurisdiction is not covered by an approved mitigation plan, it will not be eligible for mitigation grant funds. These funds include the Hazard Mitigation Grant Program (HMGP) and the Pre-Disaster Mitigation (PDM) program, both of which are administered by the Federal Emergency Management Agency (FEMA) under the Department of Homeland Security. Communities with an adopted and federally-approved hazard mitigation plan thereby become pre-positioned and more apt to receive available mitigation funds before and after the next disaster strikes.

Additionally, the Flood Insurance Reform Act of 2004 (P.L. 108-264) created two new grant programs, Severe Repetitive Loss (SRL) and Repetitive Flood Claim (RFC), and modified the existing Flood Mitigation Assistance (FMA) program. One of the requirements of this Act is that a FEMA-approved Hazard Mitigation Plan is now required if communities wish to be eligible for these FEMA mitigation programs. However, as of early 2014, these programs have been folded into a single Flood Mitigation Assistance (FMA) program.

This change was brought on by new, major federal flood insurance legislation that was passed in 2012 under the Biggert-Waters Flood Insurance Reform Act (P.L. 112-141) and the subsequent Homeowner Flood Insurance Affordability Act in 2014 which revised Biggert-Waters. These acts made several changes to the way the National Flood Insurance Program is to be run, including raises in rates to reflect true flood risk and changes in how Flood Insurance Rate Map (FIRM) updates impact policyholders. These acts further emphasize Congress' focus on mitigating vulnerable structures.

The MEMA District 7 Regional Hazard Mitigation Plan has been prepared in coordination with FEMA Region IV and the Mississippi Emergency Management Agency (MEMA) to ensure that the Plan meets all applicable FEMA and state requirements for hazard mitigation plans. A *Local Mitigation Plan Review Tool*, found in Appendix C, provides a summary of federal and state minimum standards and notes the location where each requirement is met within the Plan.

## **1.2 PURPOSE**

The purpose of the MEMA District 7 Regional Hazard Mitigation Plan is to:

- Complete an update of information in the existing plan to demonstrate progress and reflect current conditions
- Increase public awareness and education about the plan and planning process
- Maintain grant eligibility for participating jurisdictions
- Maintain compliance with state and federal legislative requirements for local hazard mitigation plans

## **1.3 SCOPE**

The focus of the MEMA District 7 Regional Hazard Mitigation Plan is on those hazards determined to be “high” or “moderate” risks to the MEMA District 7 Region, as determined through a detailed hazard risk assessment and input from local officials. Other hazards that pose a “low” or “negligible” risk will also be evaluated, but they may not be fully addressed by mitigation actions or projects. This enables the participating jurisdictions to prioritize mitigation actions based on those hazards which are understood to present the greatest risk to lives and property.

The geographic scope (i.e., the planning area) for the Plan includes 9 counties and 19 incorporated jurisdictions. **Table 1.1** lists the participating areas.

**TABLE 1.1: PARTICIPATING JURISDICTIONS IN THE MEMA DISTRICT 7  
REGIONAL HAZARD MITIGATION PLAN**

|                         |              |                         |           |
|-------------------------|--------------|-------------------------|-----------|
| <b>Adams County</b>     |              | <b>Lincoln County</b>   |           |
| Natchez                 |              | Brookhaven              |           |
| <b>Amite County</b>     |              | <b>Pike County</b>      |           |
| Gloster                 | Liberty      | Magnolia                | Osyka     |
| <b>Franklin County</b>  |              | McComb                  | Summit    |
| Bude                    | Roxie        | <b>Walthall County</b>  |           |
| Meadville               |              | Tylertown               |           |
| <b>Jefferson County</b> |              | <b>Wilkinson County</b> |           |
| Fayette                 |              | Centreville             | Woodville |
| <b>Lawrence County</b>  |              | Crosby                  |           |
| Monticello              | Silver Creek |                         |           |
| New Hebron              |              |                         |           |

## 1.4 AUTHORITY

The MEMA District 7 Regional Hazard Mitigation Plan has been developed in accordance with current state and federal rules and regulations governing local hazard mitigation plans and has been adopted by each participating county and local jurisdiction in accordance with standard local procedures. Copies of the adoption resolutions for each participating jurisdiction are provided in Appendix A. The Plan shall be routinely monitored and revised to maintain compliance with the following provisions, rules, and legislation:

- Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000 (P.L. 106-390)
- FEMA's Final Rule published in the Federal Register, at 44 CFR Part 201 (201.6 for local mitigation planning requirements and 201.7 for Tribal planning requirements)
- Flood Insurance Reform Act of 2004 (P.L. 108-264), Biggert-Waters Flood Insurance Reform Act of 2012 (P.L. 112-141) and the Homeowner Flood Insurance Affordability Act

## 1.5 SUMMARY OF PLAN CONTENTS

The contents of this Plan are designed and organized to be as reader-friendly and functional as possible. While significant background information is included on the processes used and studies completed (i.e., risk assessment, capability assessment), this information is separated from the more meaningful planning outcomes or actions (i.e., mitigation strategy, mitigation action plan).

Section 2, **Planning Process**, provides a complete narrative description of the process used to prepare the Plan. This includes the identification of participants on the hazard mitigation council and describes how the public and other stakeholders were involved. It also includes a detailed summary for each of the key meetings held, along with any associated outcomes.

The **Community Profile**, located in Section 3, provides a general overview of the MEMA District 7 Region, including relevant geographic, demographic, and economic characteristics. In addition, building characteristics and land use patterns are discussed where applicable/available. This baseline information provides a snapshot of the planning area and helps local officials recognize those social, environmental, and economic factors that ultimately play a role in determining the region's vulnerability to hazards.

The Risk Assessment is presented in three sections: Section 4, **Hazard Identification**; Section 5, **Hazard Profiles**; and Section 6, **Vulnerability Assessment**. Together, these sections serve to identify, analyze, and assess hazards that pose a threat to the MEMA District 7 Region. The risk assessment also attempts to define any hazard risks that may uniquely or exclusively affect specific areas of the MEMA District 7 Region.

The Risk Assessment begins by identifying hazards that threaten the MEMA District 7 Region. Next, detailed profiles are established for each hazard, building on available historical data from past hazard occurrences, spatial extent, and probability of future occurrence. This section culminates in a hazard risk ranking based on conclusions regarding the frequency of occurrence, spatial extent, and potential impact highlighted in each of the hazard profiles. In the vulnerability assessment, FEMA's HAZUS<sup>®MH</sup> loss estimation methodology is used to evaluate known hazard risks by their relative long-term cost in expected damages. In essence, the information generated through the risk assessment serves a critical function as the MEMA District 7 Region seeks to determine the most appropriate mitigation actions to pursue and implement—enabling it to prioritize and focus its efforts on those hazards of greatest concern and those structures or planning areas facing the greatest risk(s).

The **Capability Assessment**, found in Section 7, provides a comprehensive examination of the MEMA District 7 Region's capacity to implement meaningful mitigation strategies and identifies opportunities to increase and enhance that capacity. Specific capabilities addressed in this section include planning and regulatory capability, staff and organizational (administrative) capability, technical capability, fiscal capability, and political capability. Information was obtained through the use of a detailed survey questionnaire and an inventory and analysis of existing plans, ordinances, and relevant documents. The purpose of this assessment is to identify any existing gaps, weaknesses, or conflicts in programs or activities that may hinder mitigation efforts and to identify those activities that should be built upon in establishing a successful and sustainable local hazard mitigation program.

The *Community Profile*, *Risk Assessment*, and *Capability Assessment* collectively serve as a basis for determining the goals for the MEMA District 7 Regional Hazard Mitigation Plan, each contributing to the development, adoption, and implementation of a meaningful and manageable *Mitigation Strategy* that is based on accurate background information.

The **Mitigation Strategy**, found in Section 8, consists of broad goal statements as well as an analysis of hazard mitigation techniques for the jurisdictions participating in the MEMA District 7 Regional Hazard Mitigation Plan to consider in reducing hazard vulnerabilities. The strategy provides the foundation for a detailed **Mitigation Action Plan**, found in Section 9, which links specific mitigation actions for each county and municipal department or agency to locally-assigned implementation mechanisms and target completion dates. Together, these sections are designed to make the Plan both strategic, through the identification of long-term goals, and functional, through the identification of immediate and short-term actions that will guide day-to-day decision-making and project implementation.

In addition to the identification and prioritization of possible mitigation projects, emphasis is placed on the use of program and policy alternatives to help make the MEMA District 7 Region less vulnerable to the damaging forces of hazards while improving the economic, social, and environmental health of the community. The concept of multi-objective planning was emphasized throughout the planning process, particularly in identifying ways to link, where possible, hazard mitigation policies and programs with complimentary community goals related to disaster recovery, housing, economic development, recreational opportunities, transportation improvements, environmental quality, land development, and public health and safety.

**Plan Maintenance**, found in Section 10, includes the measures that the jurisdictions participating in the MEMA District 7 Regional plan will take to ensure the Plan's continuous long-term implementation. The procedures also include the manner in which the Plan will be regularly evaluated and updated to remain a current and meaningful planning document.

County-specific **Annexes** have been created for each of the counties participating in this plan. Each Annex contains information relevant to the county and the participating municipal jurisdictions in the county. Information included in each county-level Annex includes Community Profile, Risk Assessment and Capability Assessment information. The Mitigation Actions identified for that county and its municipal jurisdictions are also included in the county's Annex. This allows each county and jurisdiction to quickly locate the information contained in the plan that is most relevant for them.

# SECTION 2

## PLANNING PROCESS

This section describes the planning process undertaken by the Mississippi Emergency Management Agency (MEMA) District 7 counties and jurisdictions in the development of its 2017 Regional Hazard Mitigation Plan. It consists of the following eight subsections:

- 2.1 Overview of Hazard Mitigation Planning
- 2.2 History of Hazard Mitigation Planning in the MEMA District 7 Region
- 2.3 Preparing the 2017 Plan
- 2.4 The MEMA District 7 Regional Hazard Mitigation Council
- 2.5 Community Meetings and Workshops
- 2.6 Involving the Public
- 2.7 Involving the Stakeholders
- 2.8 Documentation of Plan Progress

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### 44 CFR Requirement

**44 CFR Part 201.6(c)(1):** The plan shall include documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process and how the public was involved.

## 2.1 OVERVIEW OF HAZARD MITIGATION PLANNING

Local hazard mitigation planning is the process of organizing community resources, identifying and assessing hazard risks, and determining how to best minimize or manage those risks. This process culminates in a hazard mitigation plan that identifies specific mitigation actions, each designed to achieve both short-term planning objectives and a long-term community vision.

To ensure the functionality of a hazard mitigation plan, responsibility is assigned for each proposed mitigation action to a specific individual, department, or agency along with a schedule or target completion date for its implementation (see Section 10: *Plan Maintenance*). Plan maintenance procedures are established for the routine monitoring of implementation progress, as well as the evaluation and enhancement of the mitigation plan itself. These plan maintenance procedures ensure that the Plan remains a current, dynamic, and effective planning document over time that becomes integrated into the routine local decision making process.

Communities that participate in hazard mitigation planning have the potential to accomplish many benefits, including:

- Saving lives and property
- Saving money
- Speeding up recovery following disasters

- Reducing future vulnerability through wise development and post-disaster recovery and reconstruction
- Expediting the receipt of pre-disaster and post-disaster grant funding
- Demonstrating a firm commitment to improving community health and safety

Typically, communities that participate in mitigation planning are described as having the potential to produce long-term and recurring benefits by breaking the repetitive cycle of disaster loss. A core assumption of hazard mitigation is that the investments made before a hazard event will significantly reduce the demand for post-disaster assistance by lessening the need for emergency response, repair, recovery, and reconstruction. Furthermore, mitigation practices will enable local residents, businesses, and industries to re-establish themselves in the wake of a disaster, getting the community economy back on track sooner and with less interruption.

The benefits of mitigation planning go beyond solely reducing hazard vulnerability. Mitigation measures such as the acquisition or regulation of land in known hazard areas can help achieve multiple community goals, such as preserving open space, maintaining environmental health, and enhancing recreational opportunities. Thus, it is vitally important that any local mitigation planning process be integrated with other concurrent local planning efforts, and any proposed mitigation strategies must take into account other existing community goals or initiatives that will help complement or hinder their future implementation.

## **2.2 HISTORY OF HAZARD MITIGATION PLANNING IN MEMA DISTRICT 7 REGION**

Each of the counties and jurisdictions participating in this Plan has a previously adopted hazard mitigation plan. The FEMA approval date for this plan, *The Southwest Mississippi Multi-Jurisdictional Hazard Mitigation Plan*, was in 2012.

This plan was developed using the multi-jurisdictional planning process recommended by the Federal Emergency Management Agency (FEMA). For the current update of this plan, all of the participating jurisdictions have again joined together form a regional plan.

## **2.3 PREPARING THE 2017 PLAN**

Local hazard mitigation plans are required to be updated every five years to remain eligible for federal mitigation funding. To simplify planning efforts for the jurisdictions in the MEMA District 7 Region, MEMA officials worked with each county to ask them to join together to create the *MEMA District 7 Regional Hazard Mitigation Plan*. This allows resources to be shared amongst the participating jurisdictions and eases the administrative duties of all of the participants by combining the nine counties into one regional plan.

To prepare the 2017 *MEMA District 7 Regional Hazard Mitigation Plan*, MEMA hired Atkins as an outside consultant to provide professional mitigation planning services. Ryan Wiedenman from Atkins served as the lead planner for this project and is a member of the American Institute of Certified Planners (AICP).

Per the contractual scope of work, the Atkins consulting team followed the mitigation planning process recommended by FEMA in the Local Multi-Hazard Mitigation Planning Guidance.<sup>1</sup> The Local Mitigation Plan Review Tool, found in Appendix C, provides a summary of FEMA's current minimum standards of acceptability for compliance with DMA 2000 and notes the location where each requirement is met within this Plan. These standards are based upon FEMA's Final Rule as published in the Federal Register in Part 201 of the Code of Federal Regulations (CFR). The Hazard Mitigation Council used FEMA's Local Mitigation Plan Review Guide (October 2011) for reference as they completed the Plan.

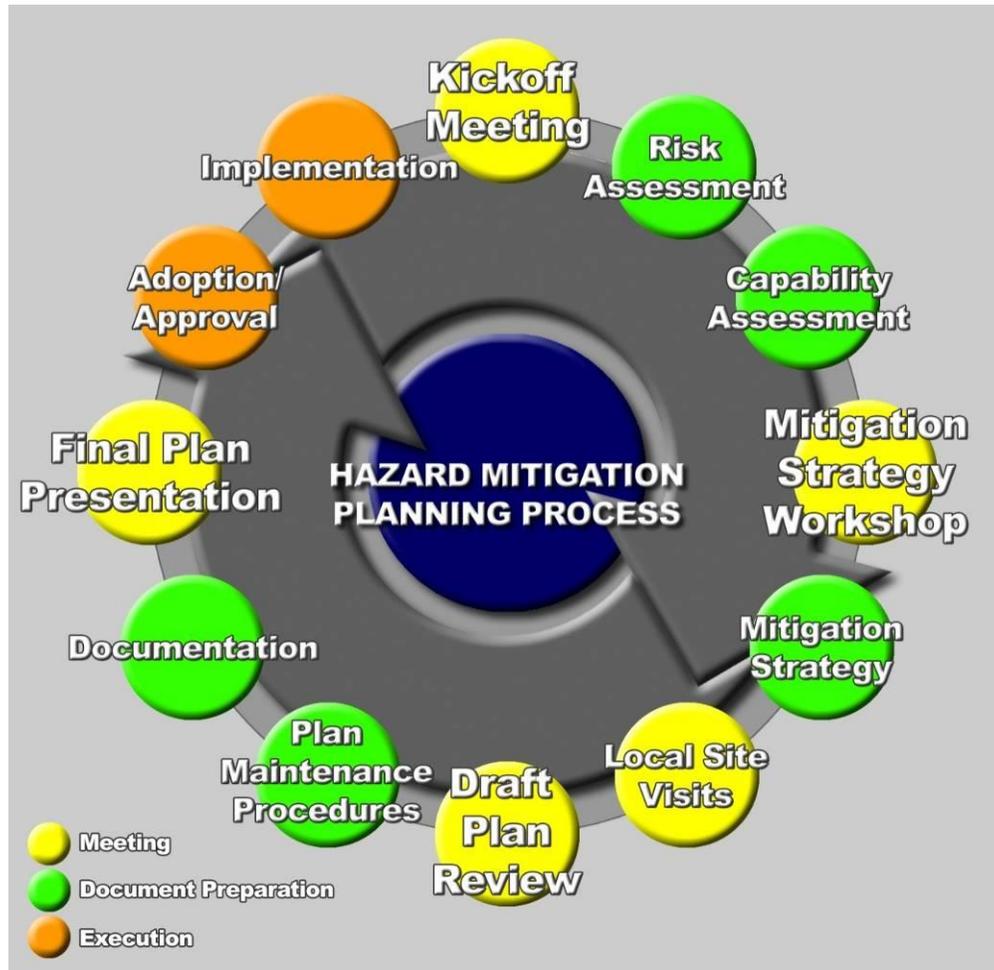
Although each jurisdiction had already participated in a regional hazard mitigation plan in the past, the combination of the nine counties into one regional plan still required making some plan update revisions based on FEMA's Local Multi-Hazard Mitigation Planning Guidance. Although there were some changes in participation between the previous plan and this one, key elements from the previous approved plan are referenced throughout the document (e.g., existing actions) and required a discussion of changes made. All of the risk assessment elements needed to be updated to include most recent information. It was also necessary to re-assess goals for the region, but these were based on previously determined goals (Section 8: *Mitigation Strategy*). The Capability Assessment section includes updated information for all of the participating jurisdictions and the Mitigation Action Plan provides implementation status updates for all of the actions identified in the previous plan.

The process used to prepare this Plan included twelve major steps that were completed over the course of approximately nine months beginning in May 2017. Each of these planning steps (illustrated in **Figure 2.1**) resulted in critical work products and outcomes that collectively make up the Plan. Specific plan sections are further described in Section 1: *Introduction*.

Over the past five years, each participating jurisdiction has been actively working to implement their existing plan. This is documented in the Mitigation Action Plan through the implementation status updates for each of the Mitigation Actions. The Capability Assessment also documents changes and improvements in the capabilities of each participating jurisdiction to implement the Mitigation Strategy.

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<sup>1</sup> A copy of the negotiated contractual scope of work between MEMA and Atkins is available through MEMA upon request.

**FIGURE 2.1: MITIGATION PLANNING PROCESS FOR THE MEMA DISTRICT 7 REGION**

As is further detailed below, the planning process was conducted through Hazard Mitigation Council meetings comprised primarily of local government staff from each of the participating jurisdictions and advisory stakeholders.

## 2.4 THE MEMA DISTRICT 7 REGIONAL HAZARD MITIGATION COUNCIL

In order to guide the development of this Plan, the counties in MEMA District 7 (Adams, Amite, Franklin, Jefferson, Lawrence, Lincoln, Pike, Walthall, and Wilkinson) and representatives from their participating municipal jurisdictions created the MEMA District 7 Regional Hazard Mitigation Council (RHMC). The RHMC represents a community-based planning team made up of representatives from various county departments and municipalities and other key stakeholders identified to serve as critical partners in the planning process.

Beginning in May 2017, the RHMC members engaged in regular discussions as well as local planning workshops to discuss and complete tasks associated with preparing the Plan. This working group coordinated on all aspects of plan preparation and provided valuable input to the process. In addition to regular meetings, committee members routinely communicated and were kept informed through an e-mail distribution list.

Specifically, the tasks assigned to the RHMC members included:

- Participate in RHMC meetings and workshops
- Provide best available data as required for the Risk Assessment portion of the Plan
- Help review the local Capability Assessment information and provide copies of any mitigation or hazard-related documents for review and incorporation into the Plan
- Support the development of the Mitigation Strategy, including the design and adoption of regional goal statements
- Help design and propose appropriate mitigation actions for their department/agency for incorporation into the Mitigation Action Plan
- Review and provide timely comments on all study findings and draft plan deliverables
- Support the adoption of the *2017 MEMA District 7 Hazard Mitigation Plan*

**Table 2.1** lists the members of the RHMC who were responsible for participating in the development of the Plan. Council members are listed in alphabetical order by last name.

**TABLE 2.1: MEMBERS OF THE MEMA DISTRICT 7 REGIONAL HAZARD MITIGATION COUNCIL**

| NAME                     | TITLE                       | DEPARTMENT/AGENCY        | COMMUNITY/ORGANIZATION              |
|--------------------------|-----------------------------|--------------------------|-------------------------------------|
| Robert L. Bradford*      | Director                    | Emergency Management     | Adams County                        |
| Richard Coghlan*         | Director                    | Emergency Management     | Pike County                         |
| Clifford Galey*          | Director                    | Emergency Management     | Town of Brookhaven – Lincoln County |
| Greg Gilmore             | Director                    | School Safety/Security   | McComb School District              |
| Brenda Hammitte*         | Director                    | Emergency Management     | Jefferson County                    |
| Ruby Husband             | Assistant Superintendent    | Student Support Services | McComb School District              |
| Grant McCurley*          | Director                    | Emergency Management     | Amite County                        |
| Tony Norwood*            | Director                    | Emergency Management     | Lawrence County                     |
| Bill Patrick             | Plans Bureau Director       | MEMA                     | MEMA                                |
| Tina Reed                | District 7 Area Coordinator | MEMA                     | MEMA                                |
| Loretta Robinson         | Hazard Mitigation Planner   | MEMA                     | MEMA                                |
| Percy Robinson           | Mayor                       | Administration           | Town of Summit                      |
| Darryl W. Smith          | Deputy Director             | Emergency Management     | Adams County                        |
| Mark S. Thornton*        | Director                    | Emergency Management     | Franklin County                     |
| Thomas C. Tolliver, Jr.* | Director                    | Emergency Management     | Wilkinson County                    |
| Roland Vandenweghe*      | Director                    | Emergency Management     | Walthall County                     |
| Martha Watts             | Mayor                       | Administration           | Town of Monticello                  |

\* Served as the county's main point of contact

Some of the Regional Hazard Mitigation Council Members listed above were designated to represent more than one community. Specifically:

- Robert Bradford represented Adams County and Natchez.
- Grant McCurley represented Amite County and Liberty.
- Mark Thornton represented Franklin County and Bude, Meadville, and Roxie.
- Tony Norwood represented Lawrence County and Monticello, New Hebron, and Silver Creek.
- Clifford Galey represented Lincoln County and Brookhaven.
- Richard Coghlan represented Pike County and McComb and Osyka.
- Roland Vandenweghe represented Walthall County and Tylertown.

Additional designated representatives for the remaining participating jurisdictions are listed below:

- Gary Sterling represented Gloster.
- Trent L. Hudson represented Fayette.
- T.J. Bowman represented Magnolia.
- Larry Lee represented Centreville.
- William Hall represented Crosby.
- Gary D'Aquilla represented Woodville.

This authorized representation is documented in signed letters that were provided to MEMA from each of these municipalities that designated these persons as their representatives. Copies of these letters can be obtained by contacting MEMA. Moreover, it is important to note that each of the municipalities participated in the planning process through county-level meetings and calls with their respective county's emergency management agency director, who discussed the risk assessment with them and helped them update their mitigation actions accordingly.

Additional participation and input from other identified stakeholders and the general public was sought by the MEMA District 7 counties during the planning process through phone calls and the distribution of e-mails, advertisements, and public notices aimed at informing people of the development of the Hazard Mitigation Plan (public and stakeholder involvement is further discussed later in this section). It should be noted that many neighboring communities were offered the opportunity to participate in the planning process through phone conversations and in-person discussions. Among those invited to participate were representatives from Emergency Management offices in several of the counties that surround the MEMA District 7 Region including Claiborne, Copiah, Jefferson Davis, Marion, and Simpson Counties. During these discussions, no major comments or suggestions were received concerning the plan.

### **2.4.1 Multi-Jurisdictional Participation**

The MEMA District 7 Hazard Mitigation Plan includes nine counties and nineteen incorporated municipalities. To satisfy multi-jurisdictional participation requirements, each county and its participating jurisdictions were required to perform the following tasks:

- Participate in mitigation planning workshops or designate a representative to do so
- Identify completed/new mitigation projects, if applicable
- Develop and adopt (or update) their local Mitigation Action Plan

Each jurisdiction participated in the planning process and has developed a local Mitigation Action Plan unique to their jurisdiction. Each jurisdiction will adopt their Mitigation Action Plan separately. This provides the means for jurisdictions to monitor and update their Plan on a regular basis.

## **2.5 COMMUNITY MEETINGS AND WORKSHOPS**

The preparation of this Plan required a series of meetings and workshops for facilitating discussion, gaining consensus and initiating data collection efforts with local government staff, community officials, and other identified stakeholders. More importantly, the meetings and workshops prompted continuous input and feedback from relevant participants throughout the drafting stages of the Plan. The following is a summary of the key meetings and community workshops held during the development of the plan update.<sup>2</sup> In many cases, routine discussions and additional meetings were held by local staff to accomplish planning tasks specific to their department or agency, such as the approval of specific mitigation actions for their department or agency to undertake and include in the Mitigation Action Plan.

### **Project Kickoff Meeting**

**May 3, 2017**

**Magnolia, MS**

Following the contractual Notice to Proceed, Atkins staff arranged for a project kickoff meeting. The MEMA District 7 Area Coordinator helped to arrange a meeting location. An email was distributed which invited representatives from the participating counties and municipalities, external stakeholders, and other local organizations to the meeting. The regional participants are collectively known as the Regional Hazard Mitigation Council (“RHMC” or “Council”). The meeting was held at the Pike County Safe Room and was attended by a range of stakeholders.



May 3, 2017 MEMA District 7 RHMC Meeting

Tina Reed, MEMA District 7 Area Coordinator, started the meeting by welcoming the representatives from each county, participating municipal jurisdictions, and other stakeholders. Ms. Reed then introduced Ryan Wiedenman, Project Manager from the project consulting team, Atkins.

Mr. Wiedenman led the kickoff meeting and began by providing an overview of the items to be discussed at the meeting and briefly reviewed each of the handouts that were distributed in the meeting

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<sup>2</sup> Copies of agendas, sign-in sheets, minutes, and handout materials for all meetings and workshops can be found in Appendix D.

packets (agenda, project description, and presentation slides). He then provided a brief overview of mitigation and discussed the Disaster Mitigation Act of 2000.

He gave a list of the participating jurisdictions for the regional plan, noting that nearly every local government in the region participated in the existing multi-jurisdictional hazard mitigation plan. This plan expires in 2018, so the planning team will plan to develop a draft to submit to FEMA by late 2017.

Mr. Wiedenman then explained the six different categories of mitigation techniques (emergency services; prevention; natural resource protection; structural projects; public education and awareness; and property protection) and gave examples of each. This explanation culminated with an Ice Breaker Exercise for the attendees.

Mr. Wiedenman instructed attendees on how to complete the exercise. Attendees were given an equal amount of fictitious FEMA money and asked to spend it in the various mitigation categories. Money could be thought of as grant money that communities received towards mitigation. Attendees were asked to target their money towards areas of mitigation that are of greatest concern for their community. Ideally, the exercise helps pinpoint areas of mitigation that the community may want to focus on when developing mitigation grants. Mr. Wiedenman also presented the Ice Breaker Exercise results which were:

- Prevention- \$5
- Property Protection- \$4
- Natural Resource Protection- \$10
- Structural- \$3
- Emergency Services- \$47
- Public Education- \$11

Mr. Wiedenman then discussed the key objectives and structure of the planning process, explaining the specific tasks to be accomplished for this project, including the planning process, risk assessment, vulnerability assessment, capability assessment, mitigation strategy and action plan, plan maintenance procedures, and documentation. The project schedule was presented along with the project staffing chart, which demonstrates the number of experienced individuals that will be working on this project. The data collection needs and public outreach efforts were also discussed.

Mr. Wiedenman then reviewed the roles and responsibilities of Atkins, participating jurisdictions, and stakeholders. The presentation concluded with a discussion of the next steps to be taken in the project development, which included discussing data collection efforts, continuing public outreach, and the next meeting for the HMPT.

The meeting was opened for questions and comments, but nothing of note was brought up from a technical perspective.

Mr. Wiedenman thanked everyone for attending and identified himself as the point of contact for any questions or issues. The meeting was adjourned.

**Mitigation Strategy Meeting**  
**August 29, 2017**  
**McComb, MS**

Ms. Tina Reed with MEMA welcomed everyone to the meeting and went over safety and administrative topics. She then passed the meeting over to Mr. Ryan Wiedenman to discuss the findings and information that Atkins pulled together.

Mr. Wiedenman initiated the meeting with a review of the meeting handouts, which included an agenda, presentation slides, proposed goals for the plan, mitigation actions from each county's existing plans, and capability assessment tables. Mr. Wiedenman reviewed the project schedule and stated that a draft of the Hazard Mitigation Plan would be presented to the Hazard Mitigation Council at the end of October.

He then presented the findings of the risk assessment, explaining the process for preparing Hazard Profiles and showed information collected on each hazard. He indicated that each hazard must be evaluated and then profiled and assessed to determine a relative risk for each hazard.

Mr. Wiedenman reviewed the Hazard Profiles and the following bullets summarize the information presented:

Flood-Related Hazards

- DAM/LEVEE FAILURE. There are 12 high hazard dams in the region with a concentration in Adams County.
- EROSION. There have been several instances of erosion reported in areas around the county that have caused issues with roads and bridges.
- FLOOD. There have been thousands of NFIP losses since 1978 and 8 of the 9 counties in the region had over \$1 million in losses according to the NCDC.

Fire-Related Hazards

- DROUGHT. There have been nine years (out of the past seventeen, 2000-2016) where drought conditions have been reported as severe to exceptional in the region.
- LIGHTNING. The flash density in the region is between 12 and 28 flashes per square kilometer per year.
- WILDFIRE. There is some vulnerability to wildfires throughout the region, with a somewhat greater risk in the eastern part of the region due to populations in the wildland urban interface.

Geologic Hazards

- EARTHQUAKES. There have been no recorded earthquake events in MEMA District 7 since 1985 and overall risk is relatively low.

### Wind-Related Hazards

- EXTREME HEAT. Heat events occur frequently in the region with major heat waves in 2000, 2005, 2006, 2007, and 2010.
- HAILSTORM. Hail stones as large as 2.75 inches in diameter have been recorded several times.
- HURRICANES AND TROPICAL STORMS. There have been 8 federal disaster declarations related to hurricanes/tropical storms.
- SEVERE THUNDERSTORM/HIGH WIND. Wind speeds up to 83 knots have been recorded in the region due to thunderstorms.
- TORNADOES. A tornado of F2 or greater has been recorded in every county in the region and an F4 has been recorded several times in the region.
- WINTER STORM. Snowfall of up to 10 inches has been recorded in some instances historically.
- RADIOLOGICAL EVENT. No major events have been recorded but much of the region is located in the 50-mile buffer area for fixed nuclear sites.

The results of the hazard identification and profiling process were used to generate a Priority Risk Index (PRI), which categorizes and prioritizes potential hazards as high, moderate or low risk based on probability, impact, spatial extent, warning time, and duration. The highest PRI was assigned to Hurricane/Tropical Storm followed by Tornado, Flood, Severe Thunderstorm/High Wind.

In concluding the review of Hazard Profiles, several comments were made concerning the hazards. Several county EMA directors noted that they felt that Erosion should be a higher risk as there were many areas where this hazard had caused issues in the past. They also noted that a major concern for radiological events is evacuees from neighboring counties. Mr. Wiedenman stated if anyone had additional information for the hazard profiles, or had concerns with any of the data presented, they should call or email him.

Mr. Wiedenman presented the Capability Assessment Findings. Atkins has developed a scoring system that was used to rank the participating jurisdictions in terms of capability in four major areas (Planning and Regulatory; Administrative and Technical; Fiscal; Political). Important capability indicators include National Flood Insurance Program (NFIP) participation, Building Code Effective Grading Schedule (BCEGS) score, Community Rating System (CRS) participation, and the Local Capability Assessment Survey conducted by Atkins.

Mr. Wiedenman reviewed the Relevant Plans and Ordinances, Relevant Staff/Personnel Resources, and Relevant Fiscal Resources. All of these categories were used to rate the overall capability of the participating counties and jurisdictions. Most jurisdictions are in the limited range for Planning and Regulatory Capability and in the limited range for Fiscal Capability. There is variation between the jurisdictions for Administrative and Technical Capability, mainly with respect to availability staff skilled in GIS and planning. Based upon the scoring methodology developed by Atkins, it was determined that most of the participating jurisdictions have limited to moderate capability to implement hazard mitigation programs and activities.

Mr. Wiedenman also discussed the results of the public participation survey that was posted on several of the participating counties' and municipal websites. As of the meeting date, 219 responses had been received. Mr. Wiedenman explained that the survey would close on September 30, so the HMPT could make one final push to get the survey out to the public. Based on preliminary survey results, respondents felt that Tornado posed the greatest threat to their neighborhood, followed by Hurricane and Tropical Storms, and Severe Thunderstorm and High Wind. 77 percent of the respondents were interested in making their homes more resistant to hazards. However, 53 percent don't know who to contact regarding reducing their risks to hazards.

Mr. Wiedenman gave an overview of Mitigation Strategy Development and presented the existing goals for each plan as well as a set of recommended goals that Atkins developed based on the previous plans' goals. The Hazard Mitigation Council accepted the existing goals for the plan. Mr. Wiedenman then provided an overview and examples of suggested mitigation actions tailored for MEMA District 7 counties and their municipalities. Mr. Wiedenman then asked each county and the municipalities to provide a status update for their existing mitigation actions (completed, deleted, or deferred) by September 22. Mr. Wiedenman also asked council members to include any new mitigation actions by that date.

Mr. Wiedenman thanked the group for taking the time to attend and explained that if council members had any issues or questions about the planning process or their next steps, they could contact him. The meeting was adjourned.

## **2.6 INVOLVING THE PUBLIC**

|                           |
|---------------------------|
| <b>44 CFR Requirement</b> |
|---------------------------|

|   |
|---|
| <b>44 CFR Part 201.6(b)(1):</b> The planning process shall include an opportunity for the public to comment on the plan during the drafting stage and prior to plan approval. |
|---|

An important component of the mitigation planning process involves public participation. Individual citizen and community-based input provides the entire Council with a greater understanding of local concerns and increases the likelihood of successfully implementing mitigation actions by developing community "buy-in" from those directly affected by the decisions of public officials. As citizens become more involved in decisions that affect their safety, they are more likely to gain a greater appreciation of the hazards present in their community and take the steps necessary to reduce their impact. Public awareness is a key component of any community's overall mitigation strategy aimed at making a home, neighborhood, school, business or entire city safer from the potential effects of hazards.

Public involvement in the development of the *MEMA District 7 Hazard Mitigation Plan* was sought using two methods: (1) public survey instruments (hard copy and web-based) were made available and (2) copies of draft Plan deliverables were made available for public review on county websites and at government offices. The Public was provided two opportunities to be involved in the actual plan development at two distinct periods during the planning process: (1) during the drafting stage of the Plan and (2) upon completion of a final draft Plan, but prior to official plan approval and adoption. A public participation survey (discussed in greater detail in Section 2.6.1) was made available during the planning process at various locations throughout the MEMA District 7 Region and at various locations on the internet.

It should be noted that many local officials explained that the best way to reach members of the public in their jurisdiction was often not through the internet and that many local governments do not have official websites on which to advertise an online survey link. Therefore, Atkins provided hard copies of the survey for all local governments and these were distributed to members of the public in the way each county felt would be most conducive to receiving responses. For instance, some communities brought hard copies to local community events and encouraged citizens to fill out the survey and send it directly to Atkins or to their local Emergency Management office.

Additionally, each of the participating jurisdictions will hold public meetings before the final plan is officially adopted by the local governing bodies. These meetings will occur at different times once FEMA has granted conditional approval of the Plan. Adoption resolutions will be included in Appendix A.

### 2.6.1 Public Participation Survey

The MEMA District 7 Region was successful in getting citizens to provide input to the mitigation planning process through the use of the *Public Participation Survey*. The *Public Participation Survey* was designed to capture data and information from residents of the Region that might not be able to participate through other means in the mitigation planning process, such as attending a public meeting at a specific time and location.

As mentioned above, hard copies of the *Public Participation Survey* were distributed to the RHMC to be made available for residents to complete at local public offices. A link to an electronic version of the survey was also posted at various locations on the internet.

A total of 239 survey responses were received, which provided valuable input for the RHMC to consider in the development of the plan update. Selected survey results are presented below.

- Approximately 78 percent of survey respondents were at least moderately concerned about the possibility of being impacted by a disaster.
- Respondents ranked Tornado as the highest threat to their neighborhood (84 percent), followed by Hurricane/Tropical Storm (80 percent).
- Only about 57 percent of respondents felt they were at least moderately prepared if a disaster were to occur.
- 49 percent of respondents do not know what office to contact regarding reducing their risks to hazards.
- Emergency Services and Public Education and Awareness were ranked as the most important activities for communities to pursue in reducing risks.

Public survey results were presented to the RHMC at the August 29 meeting. A copy of the survey and a detailed summary of the survey results are provided in Appendix B and Appendix D, respectively

## 2.7 INVOLVING THE STAKEHOLDERS

### 44 CFR Requirement

**44 CFR Part 201.6(b)(2):** The planning process shall include an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other non-profit interests to be involved in the planning process.

At the beginning of the planning process for the development of this plan, the project consultant worked with MEMA mitigation staff, the MEMA District 7 Area Coordinator, and each of the nine County Emergency Management leads to initiate outreach to stakeholders to be involved in the planning process. The project consultant sent out a list of recommended stakeholders provided from FEMA Publication 386-1 titled **Getting Started: Building Support for Mitigation Planning**. The list of recommended stakeholders is found in Appendix C of that publication (Worksheet #1: Build the Planning Team) and has been included in **Appendix B** of this plan to demonstrate the wide range of stakeholders that were considered to participate in the development of this plan. Each of the nine County Emergency Management leads used that list for reference as they invited stakeholders from their counties to participate in the planning process.

Additionally, the project consultant and the County EM leads contacted Mississippi Automated Resources Information System (MARIS), Mississippi Forestry Commission, Mississippi Department of Environmental Quality, representatives from each of the county-level school districts, and relevant representatives from higher education (universities, community colleges, etc.) to ask them to participate in the planning process and/or provide data that was used in the development of this plan.

In addition to the efforts described above, the participating jurisdictions in the MEMA District 7 plan went above and beyond the minimum requirements for stakeholder outreach by designing and distributing the *Public Participation Survey* described earlier in this section. In addition to collecting public input for the plan, the survey was generated to allow those stakeholders that could not attend Regional Hazard Mitigation Council meetings the opportunity to provide input to the plan and the planning process. All survey results were shared with the Regional Hazard Mitigation Council and represented input from citizens, local officials, businesses, academia, and other private interests in the Region. Several of these organizations contacted the consultant directly with comments as well. A list of representatives who participated from the aforementioned groups can be found in **Table 2.2**.

**TABLE 2.2: OTHER STAKEHOLDERS INVOLVED IN PLANNING PROCESS**

| NAME               | TITLE                  | DEPARTMENT/AGENCY  |
|--------------------|------------------------|--|
| Brian Mitchell     | GIS Program Director   | Mississippi Forestry Commission                                    |
| Jim Steil          | Director               | Mississippi Automated Resources Information System                 |
| Dusty Myers        | Chief                  | Mississippi Division of Environmental Quality- Dam Safety Division |
| Scotty Whittington | Superintendent         | Amite County School District                                       |
| Fred Butcher       | Interim Superintendent | Natchez Adams County School District                               |

| <b>NAME</b>         | <b>TITLE</b>   | <b>DEPARTMENT/AGENCY</b>                |
|---------------------|----------------|---|
| Chris Kent          | Superintendent | Franklin County School District         |
| Vincent Turner      | Superintendent | Jefferson County School District        |
| Tammy Fairburn      | Superintendent | Lawrence County School District         |
| Mickey Myers        | Superintendent | Lincoln County School District          |
| Ray Carlock         | Superintendent | Brookhaven School District              |
| Cederick Ellis, Sr. | Superintendent | McComb Separate School District         |
| Dennis Penton       | Superintendent | North Pike Consolidated School District |
| Johnnie Vick        | Superintendent | South Pike Consolidated School District |
| Wade Carney         | Superintendent | Walthall County School District         |
| Kimberly Jackson    | Superintendent | Wilkinson County School District        |

## **2.8 DOCUMENTATION OF PLAN PROGRESS**

Progress in hazard mitigation planning for the participating jurisdictions in the MEMA District 7 Region is documented in this plan update. Since hazard mitigation planning efforts officially began in the participating counties with the development of the initial Hazard Mitigation Plans in the late 1990s/early 2000s, many mitigation actions have been completed and implemented in the participating jurisdictions. These actions will help reduce the overall risk to natural hazards for the people and property in the Region. Actions that have been completed since the last update are documented in the Mitigation Action Plan found in Section 9.

In addition, community capability continues to improve with the implementation of new plans, policies, and programs that help to promote hazard mitigation at the local level. The current state of local capabilities for the participating jurisdictions is captured in Section 7: *Capability Assessment*. The participating jurisdictions continue to demonstrate their commitment to hazard mitigation and hazard mitigation planning and have proven this by reconvening their internal Hazard Mitigation Councils to update the Plan and by continuing to involve the public in the hazard mitigation planning process.

# SECTION 3

## COMMUNITY PROFILE

This section of the Plan provides a general overview of the Mississippi Emergency Management Agency (MEMA) District 7 Region. It consists of the following four subsections:

- 3.1 Geography and the Environment
- 3.2 Population and Demographics
- 3.3 Housing, Infrastructure, and Land Use
- 3.4 Employment and Industry

The county-specific annexes provide more detailed community profile information about each county.

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### 3.1 GEOGRAPHY AND THE ENVIRONMENT

The MEMA District 7 Region was named based on the Mississippi Emergency Management Agency districts lines and is one of nine MEMA regions throughout the state. The region is located in the southwestern portion of the state. It is bounded by the Mississippi/Louisiana State Line to the south and west. Interstate 55 runs north to south through the region, passing through Pike and Lincoln Counties. Other major roads include U.S. Highway 84, which runs east to west passing through Adams, Franklin, Lincoln, and Lawrence Counties and U.S. Highway 98 which east to west traveling through the Franklin, Lincoln, Pike, and Walthall Counties. The MEMA District 7 Region includes the counties of Adams, Amite, Franklin, Jefferson, Lawrence, Lincoln, Pike, Walthall, and Wilkinson. An orientation map is provided as **Figure 3.1**.

MEMA District 7 is located adjacent to the Mississippi River supplying diverse recreational and cultural activities. The total area of each of the participating counties is presented in **Table 3.1**.

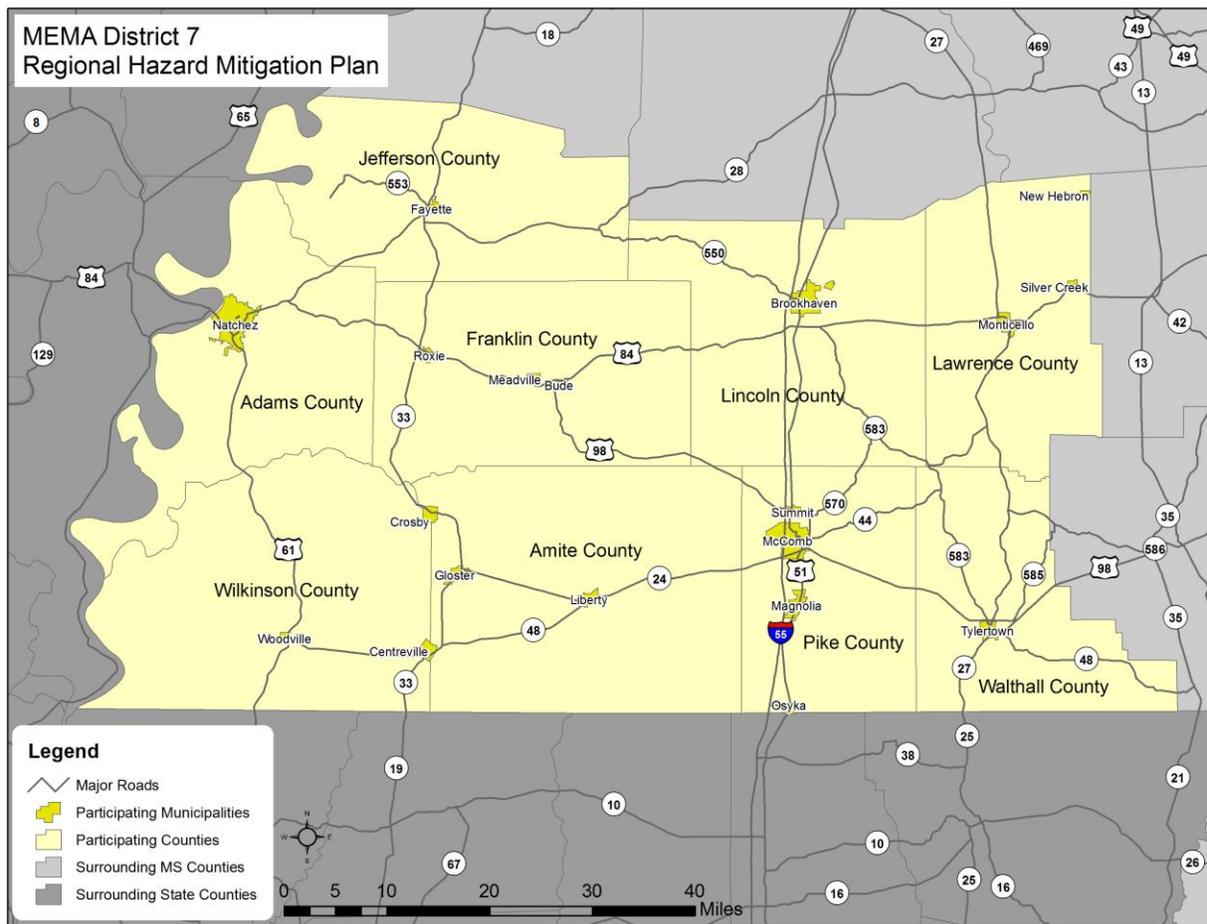
**TABLE 3.1: TOTAL AREA OF PARTICIPATING COUNTIES**

| County           | Land Area (sq. mi.) | Water Area (sq. mi.) | Total Area (sq. mi.) |
|------------------|---------------------|----------------------|----------------------|
| Adams County     | 462                 | 25                   | 488                  |
| Amite County     | 730                 | 2                    | 732                  |
| Franklin County  | 564                 | 3                    | 567                  |
| Jefferson County | 520                 | 7                    | 527                  |
| Lawrence County  | 431                 | 5                    | 436                  |
| Lincoln County   | 586                 | 2                    | 588                  |
| Pike County      | 409                 | 2                    | 411                  |
| Walthall County  | 404                 | <1                   | 404                  |
| Wilkinson County | 678                 | 10                   | 688                  |

Source: United States Census Bureau, 2010 Census

The MEMA District 7 Region enjoys four distinct seasons but the climate in the region is generally hot and humid compared to the rest of the United States given its latitude and relative proximity to the Gulf Coast. Precipitation is generally highest in winter months when the temperatures are moderately lower, but the likelihood of precipitation remains relatively constant throughout the year. Summers in the region can become fairly hot with average highs in the nineties and lows in the seventies. The region is also often susceptible to turbulent weather when warm, wet air from the Gulf of Mexico is pushed up into the region to mix with cooler air coming down from across the continent which can result in severe weather conditions. This is particularly true in the spring when seasons are changing and diverse weather patterns interact.

**FIGURE 3.1: MEMA DISTRICT 7 REGION ORIENTATION MAP**



### 3.2 POPULATION AND DEMOGRAPHICS

Although Amite County is the largest participating county by area, the largest population is found in Pike County. Between 2000 and 2015, a number of counties experienced population decline; however, Lincoln and Pike Counties experienced growth. Lincoln County had the highest rates of growth. County level population counts from the U.S. Census Bureau for 2000 and 2010 and from the American Community Survey for 2015 are presented in **Table 3.2**.

**TABLE 3.2: POPULATION COUNTS FOR PARTICIPATING COUNTIES**

| Jurisdiction     | 2000 Census Population | 2010 Census Population | 2015 American Community Survey Estimate | % Change 2000-2015 |
|------------------|------------------------|------------------------|---|--------------------|
| Adams County     | 34,340                 | 32,297                 | 31,979                                  | -6.9%              |
| Amite County     | 13,599                 | 13,131                 | 12,840                                  | -5.6%              |
| Franklin County  | 8,448                  | 8,118                  | 7,857                                   | -7.0%              |
| Jefferson County | 9,740                  | 7,726                  | 7,586                                   | -22.1%             |
| Lawrence County  | 13,258                 | 12,929                 | 12,586                                  | -5.1%              |
| Lincoln County   | 33,166                 | 34,869                 | 34,765                                  | 4.8%               |
| Pike County      | 38,940                 | 40,404                 | 40,075                                  | 2.9%               |
| Walthall County  | 15,156                 | 15,443                 | 14,978                                  | -1.2%              |
| Wilkinson County | 10,312                 | 9,878                  | 9,345                                   | -9.4%              |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

Based on the 2010 Census, the median age for residents of the participating counties ranges from 37 to 44 years with most counties around 37 to 39. The racial characteristics of the participating counties are presented in **Table 3.3**. Several counties in the region have majority white populations while others have majority black populations. Most of these counties have significant minority populations (whether white or black), with very small populations falling into any other racial categorization.

**TABLE 3.3: DEMOGRAPHICS OF PARTICIPATING COUNTIES**

| Jurisdiction     | White, Percent | Black or African American, Percent | American Indian or Alaska Native, Percent | Asian, Percent | Native Hawaiian or Other Pacific Islander, Percent | Other Race, Percent | Two or More Races, percent | Persons of Hispanic Origin, Percent* |
|------------------|----------------|------------------------------------|---|----------------|--|---------------------|----------------------------|--------------------------------------|
| Adams County     | 40.2%          | 55.5%                              | 0.1%                                      | 0.2%           | 0.0%   | 3.1%                | 0.8%                       | 5.9%                                 |
| Amite County     | 57.6%          | 42.2%                              | 0.0%                                      | 0.1%           | 0.0%   | 0.0%                | 0.1%                       | 0.4%                                 |
| Franklin County  | 63.6%          | 35.8%                              | 0.1%                                      | 0.1%           | 0.0%   | 0.0%                | 0.4%                       | 0.5%                                 |
| Jefferson County | 13.9%          | 85.9%                              | 0.0%                                      | 0.1%           | 0.0%   | 0.0%                | 0.0%                       | 0.1%                                 |
| Lawrence County  | 66.3%          | 32.3%                              | 0.1%                                      | 0.1%           | 0.0%   | 0.2%                | 1.0%                       | 0.6%                                 |
| Lincoln County   | 68.2%          | 30.8%                              | 0.0%                                      | 0.6%           | 0.0%   | 0.0%                | 0.3%                       | 1.1%                                 |
| Pike County      | 45.6%          | 52.5%                              | 0.4%                                      | 0.4%           | 0.0%   | 0.6%                | 0.5%                       | 1.4%                                 |
| Walthall County  | 53.2%          | 45.2%                              | 0.0%                                      | 0.3%           | 0.0%   | 0.6%                | 0.8%                       | 1.8%                                 |
| Wilkinson County | 28.9%          | 70.7%                              | 0.0%                                      | 0.0%           | 0.0%   | 0.5%                | 0.0%                       | 0.1%                                 |

\*Hispanics may be of any race, so also are included in applicable race categories

Source: 2011-2015 American Community Survey 5-Year Estimates

### 3.3 HOUSING, INFRASTRUCTURE, AND LAND USE

#### 3.3.1 Housing

According to the 2010 U.S. Census, there are 80,422 housing units in the MEMA District 7 Region, most of which are single family homes. Housing information for the nine participating counties is presented in

**Table 3.4.** As shown in the table, several counties have relatively high percentages of seasonal housing units.

**TABLE 3.4: HOUSING CHARACTERISTICS OF PARTICIPATING COUNTIES**

| Jurisdiction     | Housing Units (2000) | Housing Units (2010) | Seasonal Units, Percent (2010) | Median Home Value (2011-2015) |
|------------------|----------------------|----------------------|--------------------------------|-------------------------------|
| Adams County     | 15,175               | 14,656               | 2.7%                           | \$85,600                      |
| Amite County     | 6,446                | 6,635                | 7.9%                           | \$71,600                      |
| Franklin County  | 4,119                | 4,154                | 11.2%                          | \$73,200                      |
| Jefferson County | 3,819                | 3,673                | 8.0%                           | \$60,500                      |
| Lawrence County  | 5,688                | 6,019                | 4.4%                           | \$86,800                      |
| Lincoln County   | 14,052               | 15,255               | 2.0%                           | \$85,300                      |
| Pike County      | 16,720               | 17,861               | 3.0%                           | \$83,300                      |
| Walthall County  | 6,418                | 7,132                | 5.0%                           | \$93,200                      |
| Wilkinson County | 5,106                | 5,037                | 18.4%                          | \$59,600                      |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

### 3.3.2 Infrastructure

#### TRANSPORTATION

There are several major thoroughfares that traverse the MEMA District 7 Region. Interstate 55 is a major north-south interstate highway connecting through Lincoln and Pike Counties to areas around Memphis, Tennessee to the north and New Orleans, Louisiana to the south. U.S. Highway 84 runs east-west, more or less connecting Natchez and Brookhaven and U.S. Highway 98 runs northwest to southeast between Bude and McComb. Finally, U.S. Highway 61, a north-south highway, travels through Jefferson, Adams, and Wilkinson Counties, providing access to the north into Vicksburg and south into Louisiana. Various state highways operate within the region providing access to adjacent areas throughout the state.

There are several small general aviation airports within the MEMA District 7 Region, including one in nearly every county. The most prominent are Natchez-Adams County Airport (Hardy-Anders Field) and McComb-Pike County Airport (John E. Lewis Field). A list of all of the airports within MEMA District 7 can be found in **Table 3.5**.

**TABLE 3.5: AIRPORTS LOCATED IN MEMA DISTRICT 7**

| County           | Airports   |
|------------------|--|
| Adams County     | <ul style="list-style-type: none"> <li>Natchez-Adams County Airport</li> </ul>   |
| Amite County     | <ul style="list-style-type: none"> <li>Crosby Municipal Airport</li> <li>McGehee Air Park Airport</li> </ul>                     |
| Franklin County  | <i>None Identified</i>   |
| Jefferson County | <i>None Identified</i>   |
| Lawrence County  | <ul style="list-style-type: none"> <li>Clay Airport</li> </ul>   |
| Lincoln County   | <ul style="list-style-type: none"> <li>Brookhaven-Lincoln County Airport</li> </ul>  |
| Pike County      | <ul style="list-style-type: none"> <li>McComb-Pike County Airport</li> <li>Southwest Regional Medical Center Heliport</li> </ul> |

## SECTION 3: COMMUNITY PROFILE

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|                         |   |
|-------------------------|---|
| <b>Walthall County</b>  | <ul style="list-style-type: none"><li>• Paul Pittman Memorial Airport</li></ul>   |
| <b>Wilkinson County</b> | <ul style="list-style-type: none"><li>• Forest Home Airport</li><li>• Fred Netterville Lumber Company/Wilkinson Community Airport</li><li>• Green Acres Airport</li></ul> |

Source: Toll Free Airline

Multiple freight rail lines operate within the MEMA District 7 Region. Canadian National Railway, Natchez Railway, Inc., and Gloster Southern Railway travel throughout the area. Business and industries rely on and are bisected by these various rail lines within the MEMA District 7 Region.

### **UTILITIES**

Electric power in the MEMA District 7 Region is provided by several electricity cooperatives. Southwest Mississippi Electric Power Association serves residents throughout the western part of the region. Magnolia Electric Power Cooperative is present throughout much of the eastern part of the region, including many rural areas. Entergy is focused primarily on urban areas in Pike, Lincoln, and Walthall Counties, but also serves areas of Franklin, Amite, and Adams Counties. Much of Lawrence County is served by Southern Pine Electric Power Association and relatively small portions of Lawrence County and Walthall County are served by Pearl River Valley Electric Power Association.

Water and sewer service is provided by participating jurisdictions and/or community based associations in many of the urban areas, but unincorporated areas often rely on septic systems and wells in the MEMA District 7 Region.

### **COMMUNITY FACILITIES**

There are a number of public buildings and community facilities located throughout the MEMA District 7 Region. According to the data collected for the vulnerability assessment (Section 6.4.1), there are 67 fire stations, 31 police stations, and 74 schools located within the study area.

Forty-two hospitals and medical care facilities are located in the MEMA District 7 Region. These include several notable short term acute care facilities: Merit Health Natchez, a 179-bed facility located in Natchez; Southwest Mississippi Regional Medical Center, a 160-bed facility located in McComb; King's Daughter Medical Center, a 99-bed facility located in Brookhaven; Beecham Memorial Hospital, a 37-bed facility located in Magnolia; and Jefferson County Hospital, a 30-bed facility located in Fayette. There are also several additional medical care facilities located throughout the region as outlined in the vulnerability assessment (Section 6.4.1).

Several educational institutions are found in the MEMA District 7 Region. Alcorn State University has a location in Natchez and is a four-year undergraduate institution with several graduate programs. Southwest Mississippi Community College is a two-year community college located in Summit. Copiah-Lincoln Community College is also a two-year community college and has a location Natchez.

Museums based around the history and culture of MEMA District 7 Region are prevalent throughout the area. For example, in Centreville, the Camp Van Dorn World War II Museum highlights the achievements of soldiers who were trained at Camp Van Dorn during the war. The Jerry Clower Museum in Liberty chronicles the life and works of comedian Jerry Clower. In McComb, the Railroad Depot Museum

contains one of the best preserved collections of railroad history in the country. The Natchez Museum of African American History and Culture tells the story of African American culture in the southern United States and is dedicated to exploring the societal contributions of people of African origin and descent.

Recreational opportunities exist throughout the MEMA District 7 Region. The Homochitto National Forest comprises almost 200,000 acres of land located within a number of the MEMA District 7 counties. Visitors can camp, hike, hunt, and fish in the forest. In addition, St. Catherine Creek National Wildlife Refuge sits on roughly 25,000 acres and functions as a habitat for migratory waterfowl, birds, and other wildlife. Another prominent feature of the region is the Natchez Trace Parkway which begins in the City of Natchez and runs northeast to Nashville, Tennessee. This parkway commemorates the Old Natchez Trace which is an historic trail that was followed by Native Americans who were tracing bison along their migratory routes from the grazing pastures of central and western Mississippi to the salt licks of Tennessee.

The Mississippi River, which runs along the western border of the region, has played an integral part in the history of the region, especially in Adams, Jefferson, and Wilkinson Counties. The river acted as a major conduit for trade in the 19<sup>th</sup> century as plantations produced large quantities of cotton that could be easily shipped down to ports such as New Orleans. Today, the river is still an important part of the local economy as products are shipped worldwide out of the Natchez port. Apart from the Mississippi River there are multiple water based refuges, activities, and recreational features focused on local water bodies. For instance, in Adams County, the Old River, Lake St. John, and Lake Concordia all offer excellent boating opportunities. In Wilkinson County, Lake Mary is an oxbow lake formed by the Mississippi River and well-known for boating, fishing, and hunting. Fishing is also a major draw for visitors to Percy Quin State Park located in Pike County. This park contains Lake Tangipahoa which has experienced a boom in recreational tourism since it was re-opened in 2016 after Hurricane Isaac forced it to shut down in 2012. In Lincoln County, Lake Lincoln is great for camping, hiking, and water activities. As part of the Homochitto National Forest, Okhissa Lake in Franklin County offers over 1,000 acres of lake area for fishing, boating and leisure activities. There are also numerous other small lakes, creeks, and other water bodies throughout the region that offer the outstanding outdoor recreational opportunities for which the region is known.

### 3.3.3 Land Use

The MEMA District 7 Region has a blend of old and new development that contributes to physical, cultural, and economic attributes throughout the region. As shown in **Figure 3.1** above, there are many small incorporated municipalities located throughout the planning area, with a few larger urban economic hubs interspersed. These areas are where the region's population is generally concentrated. The incorporated areas are also where many of the businesses, commercial uses, and institutional uses are located. Land uses in the balance of the study area generally consist of residential development, agricultural uses, and recreational areas, although there are some notable exceptions in larger municipalities. There are multiple county- and regional-based agencies that serve to coordinate growth and promote economic development.

Local land use and associated regulations are further discussed in *Section 7: Capability Assessment*.

### 3.4 EMPLOYMENT AND INDUSTRY

Like many other parts of Mississippi, the MEMA District 7 Region's economy has traditionally been heavily reliant on the manufacturing industries. However, the region has suffered from numerous plant closings during the 1990s and 2000s. As a result, many of the communities have worked to develop place-based economies that will rely on the MEMA District 7 Region's unique location and cultural resources. Educational services, health care and social assistance industry employs the majority of residents within MEMA District 7 Region. Agriculture and livestock based operations also continue to play a major role in the local economy and throughout the region.

According to the U.S. Census Bureau's American Community Survey (ACS), in 2015, Adams County had an average annual employment of 25,935 workers and an average unemployment rate of 11.3 percent (compared to 10.3 percent for the state). In 2015, Educational services, and health care and social assistance accounted for 23.3 percent of the county's workforce followed by Retail trade (15.0%) and Arts, entertainment, recreation, and accommodation and food services (10.8%). The average annual median household in 2015 for Adams County was \$28,869 compared to \$39,665 in the State of Mississippi.

In 2015, Amite County had an average annual employment of 10,357 workers and an average unemployment rate of 12.7 percent. In 2015, the Educational services, and health care and social assistance industry employed 25.8 percent of the county's workforce followed by Manufacturing (11.4%) and Agriculture, forestry, fishing, and hunting (10.3%). The average annual median household in 2015 for Amite County was \$30,704.

Franklin County had an average annual employment of 6,074 workers and an average unemployment rate of 8.9 percent in 2015. According to the ACS, in 2015, the Educational services, and health care and social assistance employed 22.7 percent of the workforce followed by Agriculture, forestry, fishing, and hunting (14.4%) and Manufacturing (13.0%). The average annual median household in Franklin County was \$38,170.

In 2015, Jefferson County had an average annual employment of 6,013 workers and an average unemployment rate of 15.9 percent. According to the ACS in 2015, the Educational services, health care and social assistance industry employed 37.1 percent of the workforce. Manufacturing was the second largest industry, employing 13.6 percent of workers, and Transportation and warehousing followed behind (12.1%). The average annual median household in Jefferson County was \$20,743.

Lawrence County had an average annual employment of 9,826 workers and an average unemployment rate of 10.8 percent in 2015. According to the ACS, in 2015, the Educational services, health care and social assistance industry employed 25.2 percent of the workforce followed by Manufacturing (15.2%) and Agriculture, forestry, fishing and hunting, and mining (11.6%). The average annual median household in Lawrence County was \$35,634.

In 2015, Lincoln County had an average annual employment of 26,902 workers and an average unemployment rate of 7.5 percent. In 2015, according to the ACS, the Educational services, and health care and social assistance industry employed the most people, with 27.4 percent of the workforce, followed by Retail trade (13.0%) and Manufacturing (9.7%). The average annual median household in Lincoln County was \$36,473.

### SECTION 3: COMMUNITY PROFILE

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Pike County, in 2015, had an average annual employment of 30,450 workers and average unemployment rate of 9.5 percent. In 2015, according to the ACS, the Educational services, and health care and social assistance industry employed 21.1 percent of the workforce. Manufacturing was the next largest industry, employing 17.3 percent of workers, and Retail trade (13.0%). The average annual median household in Pike County was \$31,677.

Walthall County had an average annual employment of 11,702 workers and an average unemployment rate of 11.1 percent in 2015. According to the ACS, in 2015, the Educational services, and health care and social assistance industry employed 20.7 percent of the workforce followed by Manufacturing (14.6%) and then Agriculture, forestry, fishing, and hunting (12.2%). The average annual median household in Walthall County was \$31,384.

In 2015, Wilkinson County had an average annual employment of 7,481 workers and an average unemployment rate of 9.7 percent. In 2015, according to the ACS, the Public administration industry employed 21.2 percent of the workforce. Educational Services, health care and social assistance was the second largest industry, employing 19.5 percent of workers, and Retail trade followed behind (12.0%). The average annual median household in Wilkinson County was \$29,931.

# SECTION 4

## HAZARD IDENTIFICATION

This section describes how the Regional Hazard Mitigation Council identified the hazards to be included in this plan. It consists of the following five subsections:

- 4.1 Overview
- 4.2 Description of Full Range of Hazards
- 4.3 Disaster Declarations
- 4.4 Hazard Evaluation
- 4.5 Hazard Identification Results

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### 44 CFR Requirement

**44 CFR Part 201.6(c)(2)(i):** The risk assessment shall include a description of the type, location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

## 4.1 OVERVIEW

The MEMA District 7 Region is vulnerable to a wide range of natural hazards that threaten life and property. Current FEMA regulations and guidance under the Disaster Mitigation Act of 2000 (DMA 2000) require, at a minimum, an evaluation of a full range of natural hazards. An evaluation of human-caused (i.e., terrorism) and technological hazards (i.e., hazardous materials incident) is encouraged, though not required, for plan approval. In this plan, the MEMA District 7 Region has focused on completing a comprehensive assessment of all natural hazards that impact the region as well as one human-caused hazard that is of particular importance in the region. It should be noted however, that although great effort was made to identify all potential hazards, this list may not be all-inclusive and will be revisited with each plan update.

Upon a review of the full range of natural hazards suggested under FEMA planning guidance, the participating jurisdictions in the MEMA District 7 Regional Hazard Mitigation Plan have identified a number of hazards that are to be addressed in this Regional Hazard Mitigation Plan. These hazards were identified through an extensive process that utilized input from the MEMA District 7 Regional Hazard Mitigation Council members, research of past disaster declarations in the participating counties<sup>1</sup>, and review of the Mississippi State Hazard Mitigation Plan (2013). Readily available information from reputable sources (such as federal and state agencies) was also evaluated to supplement information from these key sources.

**Table 4.1** lists the full range of hazards initially identified for possible inclusion in the Plan and provides a brief description for each. This table includes 22 individual hazards. Some of these hazards are considered to be interrelated or cascading (one hazard event may cause another, i.e. – hurricanes cause

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<sup>1</sup> A complete list of disaster declarations for the MEMA District 7 Region can be found below in Section 4.3.

flooding), but for preliminary hazard identification purposes these individual hazards are broken out separately.

**Table 4.2** lists the disaster declarations that have impacted the MEMA District 7 Region.

**Table 4.3** documents the evaluation process used for determining which of the initially identified hazards are considered significant enough to warrant further evaluation in the risk assessment. For each hazard considered, the table indicates whether or not the hazard was identified as a significant hazard to be further assessed, how this determination was made, and why this determination was made. The table works to summarize not only those hazards that *were* identified (and why) but also those that *were not* identified (and why not). Hazard events not identified for inclusion at this time may be addressed during future evaluations and updates of the risk assessment if deemed necessary by the MEMA District 7 RHMC during the plan update process.

Lastly, **Table 4.4** provides a summary of the hazard identification and evaluation process noting that 14 of the 22 initially identified hazards are considered significant enough for further evaluation through this Plan’s risk assessment (marked with a “☑”). It should be noted that two hazards (Land Subsidence and Sinkhole) were combined and addressed as one hazard after the initial evaluation.

## **4.2 DESCRIPTION OF FULL RANGE OF HAZARDS**

In this section, hazards are classified into groups including flood-related hazards, fire-related hazards, geologic hazards, and wind-related hazards. In reality, some hazards cross several of these categorizations, but for the purposes of this planning effort, each was assigned to only one of the four categories identified above. As noted, several sources were consulted to determine a list of hazard to be considered by MEMA District 7. These include the MEMA District 7 RHMC members, research of past disaster declarations in the participating counties<sup>2</sup>, review of FEMA’s Multi-Hazard Identification and Risk Assessment (1997) and review of the State of Mississippi Hazard Mitigation Plan (2013). Readily available information from reputable sources (such as federal and state agencies) was also evaluated to supplement information from these key sources.

**TABLE 4.1: DESCRIPTIONS OF THE FULL RANGE OF INITIALLY IDENTIFIED HAZARDS**

| <b>Hazard</b>                | <b>Description</b>   |
|------------------------------|--|
| <b>FLOOD-RELATED HAZARDS</b> |  |
| <b>Avalanche</b>             | A rapid fall or slide of a large mass of snow down a mountainside.   |
| <b>Dam and Levee Failure</b> | Dam failure is the collapse, breach, or other failure of a dam structure resulting in downstream flooding. In the event of a dam failure, the energy of the water stored behind even a small dam is capable of causing loss of life and severe property damage if development exists downstream of the dam. Dam failure can result from natural events, human-induced events, or a combination of the two. The most common cause of dam failure is prolonged rainfall that produces flooding. Failures due to other natural events such as hurricanes, earthquakes, or landslides are significant because there is generally little or no advance warning. |

<sup>2</sup> A complete list of disaster declarations for the MEMA District 2 Region can be found below in Section 4.3.

**SECTION 4: HAZARD IDENTIFICATION**

|                             |   |
|-----------------------------|---|
| <b>Erosion</b>              | Erosion is the gradual breakdown and movement of land due to both physical and chemical processes of water, wind, and general meteorological conditions. Natural, or geologic, erosion has occurred since the Earth’s formation and continues at a very slow and uniform rate each year.  |
| <b>Flood</b>                | The accumulation of water within a water body which results in the overflow of excess water onto adjacent lands, usually floodplains. The floodplain is the land adjoining the channel of a river, stream ocean, lake, or other watercourse or water body that is susceptible to flooding. Most floods fall into the following three categories: riverine flooding, coastal flooding, or shallow flooding (where shallow flooding refers to sheet flow, ponding, and urban drainage).   |
| <b>Storm Surge</b>          | A storm surge is a large dome of water often 50 to 100 miles wide and rising anywhere from four to five feet in a Category 1 hurricane up to more than 30 feet in a Category 5 storm. Storm surge heights and associated waves are also dependent upon the shape of the offshore continental shelf (narrow or wide) and the depth of the ocean bottom (bathymetry). A narrow shelf, or one that drops steeply from the shoreline and subsequently produces deep water close to the shoreline, tends to produce a lower surge but higher and more powerful storm waves. Storm surge arrives ahead of a storm’s actual landfall and the more intense the hurricane is, the sooner the surge arrives. Storm surge can be devastating to coastal regions, causing severe beach erosion and property damage along the immediate coast. Further, water rise caused by storm surge can be very rapid, posing a serious threat to those who have not yet evacuated flood-prone areas. |
| <b>FIRE-RELATED HAZARDS</b> |   |
| <b>Drought</b>              | A prolonged period of less than normal precipitation such that the lack of water causes a serious hydrologic imbalance. Common effects of drought include crop failure, water supply shortages, and fish and wildlife mortality. High temperatures, high winds, and low humidity can worsen drought conditions and also make areas more susceptible to wildfire. Human demands and actions have the ability to hasten or mitigate drought-related impacts on local communities.   |
| <b>Lightning</b>            | Lightning is a discharge of electrical energy resulting from the buildup of positive and negative charges within a thunderstorm, creating a “bolt” when the buildup of charges becomes strong enough. This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Lightning rapidly heats the sky as it flashes, but the surrounding air cools following the bolt. This rapid heating and cooling of the surrounding air causes thunder. On average, 80 people are killed each year by lightning strikes in the United States.   |
| <b>Wildfire</b>             | An uncontrolled wildfire burning in an area of vegetative fuels such as grasslands, brush, or woodlands. Heavier fuels with high continuity, steep slopes, high temperatures, low humidity, low rainfall, and high winds all work to increase risk for people and property located within wildfire hazard areas or along the urban/wildland interface. Wildfires are part of the natural management of forest ecosystems, but most are caused by human factors. Over 80 percent of forest fires are started by negligent human behavior such as smoking in wooded areas or improperly extinguishing campfires. The second most common cause for wildfire is lightning.  |

| <b>GEOLOGIC HAZARDS</b> |   |
|-------------------------|---|
| <b>Earthquake</b>       | A sudden, rapid shaking of the Earth caused by the breaking and shifting of rock beneath the surface. This movement forces the gradual building and accumulation of energy. Eventually, strain becomes so great that the energy is abruptly released, causing the shaking at the earth’s surface which we know as an earthquake. Roughly 90 percent of all earthquakes occur at the boundaries where plates meet, although it is possible for earthquakes to occur entirely within plates. Earthquakes can affect hundreds of thousands of square miles, cause damage to property measured in the tens of billions of dollars, result in loss of life and injury to hundreds of thousands of persons, and disrupt the social and economic functioning of the affected area.   |
| <b>Expansive Soils</b>  | Soils that will exhibit some degree of volume change with variations in moisture conditions. The most important properties affecting degree of volume change in a soil are clay mineralogy and the aqueous environment. Expansive soils will exhibit expansion caused by the intake of water and, conversely, will exhibit contraction when moisture is removed by drying. Generally speaking, they often appear sticky when wet and are characterized by surface cracks when dry. Expansive soils become a problem when structures are built upon them without taking proper design precautions into account with regard to soil type. Cracking in walls and floors can be minor or can be severe enough for the home to be structurally unsafe.   |
| <b>Landslide</b>        | The movements of a mass of rock, debris, or earth down a slope when the force of gravity pulling down the slope exceeds the strength of the earth materials that comprise to hold it in place. Slopes greater than 10 degrees are more likely to slide, as are slopes where the height from the top of the slope to its toe is greater than 40 feet. Slopes are also more likely to fail if vegetative cover is low and/or soil water content is high.  |
| <b>Land Subsidence</b>  | The gradual settling or sudden sinking of the Earth’s surface due to the subsurface movement of earth materials. Causes of land subsidence include groundwater pumpage, aquifer system compaction, drainage of organic soils, underground mining, hydrocompaction, natural compaction, sinkholes, and thawing permafrost.   |
| <b>Sinkhole</b>         | Sinkholes are a natural and common geologic feature in areas with underlying limestone and other rock types that are soluble in natural water. Most limestone is porous, allowing the acidic water of rain to percolate through their strata, dissolving some limestone and carrying it away in solution. Over time, this persistent erosional process can create extensive underground voids and drainage systems in much of the carbonate rocks. Collapse of overlying sediments into the underground cavities produces sinkholes.  |
| <b>Tsunami</b>          | A series of waves generated by an undersea disturbance such as an earthquake. The speed of a tsunami traveling away from its source can range from up to 500 miles per hour in deep water to approximately 20 to 30 miles per hour in shallower areas near coastlines. Tsunamis differ from regular ocean waves in that their currents travel from the water surface all the way down to the sea floor. Wave amplitudes in deep water are typically less than one meter; they are often barely detectable to the human eye. However, as they approach shore, they slow in shallower water, basically causing the waves from behind to effectively “pile up,” and wave heights increase dramatically. As opposed to typical waves which crash at the shoreline, tsunamis bring with them a continuously flowing ‘wall of water’ with the potential to cause devastating damage in coastal areas located immediately along the shore. |

**SECTION 4: HAZARD IDENTIFICATION**

|                                       |  |
|---------------------------------------|--|
| <b>Volcano</b>                        | A mountain that opens downward to a reservoir of molten rock below the surface of the earth. While most mountains are created by forces pushing up the earth from below, volcanoes are different in that they are built up over time by an accumulation of their own eruptive products: lava, ash flows, and airborne ash and dust. Volcanoes erupt when pressure from gases and the molten rock beneath becomes strong enough to cause an explosion.  |
| <b>WIND-RELATED HAZARDS</b>           |  |
| <b>Extreme Heat (Heat Wave)</b>       | A heat wave may occur when temperatures hover 10 degrees or more above the average high temperature for the region and last for several weeks. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a “dome” of high atmospheric pressure traps hazy, damp air near the ground. Excessively dry and hot conditions can provoke dust storms and low visibility. A heat wave combined with a drought can be very dangerous and have severe economic consequences on a community.  |
| <b>Hailstorm</b>                      | Any storm that produces hailstones that fall to the ground; usually used when the amount or size of the hail is considered significant. Hail is formed when updrafts in thunderstorms carry raindrops into parts of the atmosphere where the temperatures are below freezing.  |
| <b>Hurricane and Tropical Storm</b>   | Hurricanes and tropical storms are classified as cyclones and defined as any closed circulation developing around a low-pressure center in which the winds rotate counter-clockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and with a diameter averaging 10 to 30 miles across. When maximum sustained winds reach or exceed 39 miles per hour, the system is designated a tropical storm, given a name, and is closely monitored by the National Hurricane Center. When sustained winds reach or exceed 74 miles per hour the storm is deemed a hurricane. The primary damaging forces associated with these storms are high-level sustained winds, heavy precipitation, and tornadoes. Coastal areas are also vulnerable to the additional forces of storm surge, wind-driven waves, and tidal flooding which can be more destructive than cyclone wind. The majority of hurricanes and tropical storms form in the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico during the official Atlantic hurricane season, which extends from June through November. |
| <b>Nor’easter</b>                     | Similar to hurricanes, nor’easters are ocean storms capable of causing substantial damage to coastal areas in the Eastern United States due to their associated strong winds and heavy surf. Nor’easters are named for the winds that blow in from the northeast and drive the storm up the East Coast along the Gulf Stream, a band of warm water that lies off the Atlantic coast. They are caused by the interaction of the jet stream with horizontal temperature gradients and generally occur during the fall and winter months when moisture and cold air are plentiful. Nor’easters are known for dumping heavy amounts of rain and snow, producing hurricane-force winds, and creating high surf that causes severe beach erosion and coastal flooding.   |
| <b>Severe Thunderstorm/ High Wind</b> | Thunderstorms are caused by air masses of varying temperatures meeting in the atmosphere. Rapidly rising warm moist air fuels the formation of thunderstorms. Thunderstorms may occur singularly, in lines, or in clusters. They can move through an area very quickly or linger for several hours. Thunderstorms may result in hail, tornadoes, or straight-line winds. Windstorms pose a threat to lives, property, and vital utilities primarily due to the effects of flying debris and can down trees and power lines.  |

**SECTION 4: HAZARD IDENTIFICATION**

|                                |   |
|--------------------------------|---|
| <b>Tornado</b>                 | A tornado is a violently rotating column of air that has contact with the ground and is often visible as a funnel cloud. Its vortex rotates cyclonically with wind speeds ranging from as low as 40 mph to as high as 300 mph. Tornadoes are most often generated by thunderstorm activity when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The destruction caused by tornadoes ranges from light to catastrophic depending on the intensity, size, and duration of the storm.  |
| <b>Winter Storm and Freeze</b> | Winter storms may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Blizzards, the most dangerous of all winter storms, combine low temperatures, heavy snowfall, and winds of at least 35 miles per hour, reducing visibility to only a few yards. Ice storms occur when moisture falls and freezes immediately upon impact on trees, power lines, communication towers, structures, roads, and other hard surfaces. Winter storms and ice storms can down trees, cause widespread power outages, damage property, and cause fatalities and injuries to human life. |
| <b>HUMAN-CAUSED HAZARDS</b>    |   |
| <b>Radiological Event</b>      | A nuclear and radiation accident is defined by the International Atomic Energy Agency as “an event that has led to significant consequences to people, the environment, or the facility.” Often, this type of incident results from damage to the reactor core of a nuclear power plant which can release radioactivity into the environment. The degree of exposure from nuclear accidents has varied from serious to catastrophic.  |

**4.3 DISASTER DECLARATIONS**

Disaster declarations provide initial insight into the hazards that may impact the MEMA District 7 Regional planning area. Since 1965, 26 presidential disaster declarations have occurred in the region. This includes 12 events related to tornadoes, 6 events related to severe storms/flooding, and 8 events related to hurricanes and tropical storms. It should be noted that several events were declared as disasters as a result of multiple hazards.

**TABLE 4.2: MEMA DISTRICT 7 REGION DISASTER DECLARATIONS BY COUNTY**

| Year | Disaster Number | Description                       | Adams | Amite | Franklin | Jefferson | Lawrence | Lincoln | Pike | Walthall | Wilkinson |
|------|-----------------|-----------------------------------|-------|-------|----------|-----------|----------|---------|------|----------|-----------|
| 1965 | 210             | HURRICANE BETSY                   | X     | X     | X        | X         |          | X       | X    |          | X         |
| 1969 | 271             | HURRICANE CAMILLE                 |       | X     |          |           | X        | X       | X    | X        | X         |
| 1972 | 318             | HEAVY RAINS & FLOODING            |       | X     | X        |           | X        | X       | X    | X        | X         |
| 1973 | 368             | HEAVY RAINS, TORNADOES & FLOODING | X     | X     | X        | X         | X        | X       | X    |          | X         |
| 1974 | 430             | HEAVY RAINS & FLOODING            | X     |       | X        | X         | X        | X       | X    |          |           |
| 1975 | 456             | TORNADOES                         |       |       |          |           |          | X       | X    |          |           |
| 1979 | 577             | STORMS, TORNADOES, FLOODS         | X     |       |          | X         | X        |         |      |          | X         |

**SECTION 4: HAZARD IDENTIFICATION**

| Year                                       | Disaster Number | Description   | Adams     | Amite     | Franklin  | Jefferson | Lawrence  | Lincoln   | Pike      | Walthall  | Wilkinson |
|--|-----------------|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1980                                       | 618             | STORMS, FLOOD, MUDSLIDES & TORNADOES                        | X         |           |           |           |           |           | X         | X         |           |
| 1983                                       | 678             | SEVERE STORMS, FLOODING & TORNADOES                         |           |           | X         |           | X         |           | X         | X         |           |
| 1983                                       | 683             | SEVERE STORMS, TORNADOES, AND FLOODING                      |           |           |           | X         |           |           |           |           | X         |
| 1990                                       | 859             | SEVERE STORMS, TORNADOES & FLOODING                         | X         | X         |           |           | X         | X         | X         | X         | X         |
| 1991                                       | 895             | SEVERE STORMS & FLOODING                                    | X         |           |           |           |           |           |           |           |           |
| 1992                                       | 968             | SEVERE STORMS, HIGH WINDS & TORNADOES                       |           | X         |           |           |           | X         |           |           | X         |
| 1998                                       | 1251            | HURRICANE GEORGES   |           |           |           |           |           |           | X         |           |           |
| 2001                                       | 1360            | SEVERE STORMS AND TORNADOES                                 |           | X         | X         |           |           | X         | X         | X         | X         |
| 2002                                       | 1436            | TROPICAL STORM ISIDORE                                      |           | X         |           |           |           | X         | X         |           |           |
| 2003                                       | 1459            | SEVERE STORMS, TORNADOES, FLOODS                            |           | X         | X         | X         | X         | X         | X         | X         |           |
| 2004                                       | 1550            | HURRICANE IVAN  | X         | X         | X         | X         | X         | X         | X         | X         | X         |
| 2005                                       | 1604            | HURRICANE KATRINA   | X         | X         | X         | X         | X         | X         | X         | X         | X         |
| 2008                                       | 1753            | SEVERE STORMS AND FLOODING                                  |           |           |           |           |           |           |           |           | X         |
| 2008                                       | 1794            | HURRICANE GUSTAV  | X         | X         | X         | X         | X         | X         | X         | X         | X         |
| 2009                                       | 1837            | SEVERE STORMS, FLOODING, AND TORNADOES                      | X         |           |           |           | X         | X         |           | X         | X         |
| 2011                                       | 1983            | FLOODING  | X         |           |           | X         |           |           |           |           | X         |
| 2012                                       | 4081            | HURRICANE ISAAC   | X         | X         | X         | X         | X         | X         | X         | X         | X         |
| 2016                                       | 4268            | SEVERE STORMS AND FLOODING                                  |           |           |           |           | X         | X         |           | X         |           |
| 2017                                       | 4314            | SEVERE STORMS, TORNADOES, STRAIGHT-LINE WINDS, AND FLOODING | X         |           |           | X         |           |           |           |           |           |
| <b>TOTAL NUMBER OF DECLARED DISASTERS:</b> |                 |   | <b>14</b> | <b>13</b> | <b>11</b> | <b>12</b> | <b>14</b> | <b>17</b> | <b>17</b> | <b>13</b> | <b>16</b> |

## 4.4 HAZARD EVALUATION

TABLE 4.3: DOCUMENTATION OF THE HAZARD EVALUATION PROCESS

| Hazards Considered           | Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No) | How was this determination made?  | Why was this determination made?   |
|------------------------------|--|---|--|
| <b>FLOOD-RELATED HAZARDS</b> |  |   |  |
| Avalanche                    | NO   | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of US Forest Service National Avalanche Center web site</li> </ul> | <ul style="list-style-type: none"> <li>• The United States avalanche hazard is limited to mountainous western states including Alaska, as well as some areas of low risk in New England.</li> <li>• Avalanche was not considered in the State of Mississippi Hazard Mitigation Plan since it poses no threat to the state.</li> <li>• Avalanche is not included in the previous MEMA District 7 Region hazard mitigation plan.</li> <li>• There is no risk or history of avalanche events in Mississippi.</li> </ul> |
| Dam and Levee Failure        | YES  | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of MS Department of Environmental Quality dam inventory</li> </ul> | <ul style="list-style-type: none"> <li>• The National Inventory of Dams shows dams are located in every state.</li> <li>• Dam/levee failure is identified in the state plan as a limited hazard.</li> <li>• The previous MEMA District 7 Region hazard mitigation plan addresses dam failure.</li> <li>• 12 dams in the region are classified as high-hazard (high hazard is defined where dam failure may cause loss of life or serious damage).</li> </ul>   |

**SECTION 4: HAZARD IDENTIFICATION**

| Hazards Considered | Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No) | How was this determination made?  | Why was this determination made?   |
|--------------------|--|---|--|
| Erosion            | YES  | <ul style="list-style-type: none"> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> </ul>   | <ul style="list-style-type: none"> <li>• Coastal erosion was excluded from the State of MS Hazard Mitigation Plan as a hazard, however, it is addressed under the hurricane hazard. Riverine erosion is not addressed in the plan.</li> <li>• Although erosion is not identified as a hazard in the previous MEMA District 7 Region hazard mitigation plan, it was identified as a potential hazard during planning meetings.</li> <li>• Erosion is a natural and continuous process that may impact the region.</li> </ul>  |
| Flood              | YES  | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of NOAA NCDC Storm Events Database</li> <li>• Review of historical disaster declarations</li> <li>• Review of FEMA FIRM/DFIRM data</li> <li>• Review of FEMA’s NFIP Community Status Book and Community Rating System (CRS)</li> </ul> | <ul style="list-style-type: none"> <li>• Floods occur in all 50 states and in the U.S. territories.</li> <li>• The flood hazard is thoroughly discussed in the state plan. Much of the state is located in the 100-year floodplain. Further, flash floods are a common occurrence during rain storms.</li> <li>• The previous MEMA District 7 Region hazard mitigation plan addresses the flood hazard.</li> <li>• NCDC reports that MEMA District 7 Region counties have been affected by 177 flood events since 1997. In total, these events caused an estimated \$30.8 million (2017 dollars) in property damages.</li> <li>• 6 out of 26 disaster declarations were primarily flood-related, an additional 12 were hurricane or tropical storm-related which caused flooding issues, and several others listed flooding as one of the causes of the declaration.</li> <li>• 24 of the 28 MEMA District 7 jurisdictions participate in the NFIP.</li> </ul> |

**SECTION 4: HAZARD IDENTIFICATION**

| Hazards Considered          | Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No) | How was this determination made?   | Why was this determination made?  |
|-----------------------------|--|--|---|
| Storm Surge                 | NO   | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of NOAA NCDC Storm Events Database</li> </ul>   | <ul style="list-style-type: none"> <li>• Given the inland location of the MEMA District 7 Region, storm surge would not affect the area.</li> <li>• Storm surge is discussed in the state plan under the hurricane hazard and indicates that only the costal shoreline counties are subject to storm surge.</li> <li>• None the previous hazard mitigation plans in the MEMA District 7 Region identify storm surge as a potential hazard.</li> <li>• No historical events were reported by NCDC.</li> </ul>  |
| <b>FIRE-RELATED HAZARDS</b> |  |  |   |
| Drought                     | YES  | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of US Drought Monitor website</li> <li>• Review of NOAA NCDC Storm Events Database</li> </ul> | <ul style="list-style-type: none"> <li>• Drought is a normal part of virtually all climatic regimes, including areas with high and low average rainfall.</li> <li>• Droughts are identified in the State of MS Hazard Mitigation Plan as a limited hazard.</li> <li>• Drought is addressed in the previous MEMA District 7 Region hazard mitigation plans.</li> <li>• There are reports of the most extreme (exceptional) drought in each of the MEMA District 7 Region counties according to the US Drought Monitor.</li> <li>• NCDC reports that the MEMA District 7 Region counties have been affected by 35 drought events since 2006.</li> </ul> |

**SECTION 4: HAZARD IDENTIFICATION**

| Hazards Considered | Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No) | How was this determination made?  | Why was this determination made?   |
|--------------------|--|---|--|
| Lightning          | YES  | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 hazard mitigation plans</li> <li>• Review of NOAA NCDC Storm Events Database</li> <li>• Review of Vaisala’s NLDN Lightning Flash Density Map</li> </ul> | <ul style="list-style-type: none"> <li>• The central region of the Florida has the highest density of lightning strikes in the mainland U.S.; however, lightning events are experienced in nearly every region.</li> <li>• Lightning events are discussed in the MS State Hazard Mitigation Plan.</li> <li>• NCDC reports 26 lightning events for the MEMA District 7 Region since 1997. These events have resulted in 2 deaths, 1 recorded injury, and \$800,000 (2017 dollars) in property damage.</li> <li>• According to Vaisala’s U.S. National Lightning Detection Network, the MEMA District 7 Region is located in an area that experienced an average of 12 to 28 lightning flashes per square kilometer per year between 2007 and 2016.</li> </ul> |

**SECTION 4: HAZARD IDENTIFICATION**

| Hazards Considered | Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No) | How was this determination made?  | Why was this determination made?   |
|--------------------|--|---|--|
| Wildfire           | YES  | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of Southern Wildfire Risk Assessment (SWRA) Data</li> <li>• Review of Mississippi Forestry Commission website</li> </ul> | <ul style="list-style-type: none"> <li>• Wildfires occur in virtually all parts of the United States. Wildfire hazard risks will increase as low-density development along the urban/wildland interface increases.</li> <li>• The State of MS Hazard Mitigation Plan identifies wildfire as a significant hazard and regular occurrence.</li> <li>• The previous MEMA District 7 Region hazard mitigation plan addresses wildfire.</li> <li>• A review of SWRA data indicates that there are areas of concern in the MEMA District 7 Region. Wildfire hazard risks will increase as low-density development along the urban/wildland interface increases.</li> <li>• According to the Mississippi Forestry Commission, the MEMA District 7 Region experiences an average of 230 fires each year which burn a combined 2,929 acres annually.</li> </ul> |

**SECTION 4: HAZARD IDENTIFICATION**

| Hazards Considered      | Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No) | How was this determination made?   | Why was this determination made?   |
|-------------------------|--|--|--|
| <b>GEOLOGIC HAZARDS</b> |  |  |  |
| Earthquake              | YES  | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of National Geophysical Data Center</li> <li>• USGS Earthquake Hazards Program website</li> </ul> | <ul style="list-style-type: none"> <li>• Although the zone of greatest seismic activity in the United States is along the Pacific Coast, eastern and central regions have experienced significant earthquakes.</li> <li>• Earthquake events are identified as a limited hazard in the State of MS Hazard Mitigation Plan, and all counties in MS are considered to be susceptible to the effects of earthquakes.</li> <li>• Earthquakes have occurred in and around the State of Mississippi in the past. The state is affected by the New Madrid (near Missouri) and White River Fault lines which have generated a magnitude 8.0 earthquake in the last 200 years.</li> <li>• The previous MEMA District 7 Region hazard mitigation plan addresses earthquake.</li> <li>• Several events are known to have occurred in the region according to the National Geophysical Data Center. The greatest MMI reported was a 6.</li> </ul> |
| Expansive Soils         | NO   | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of USGS Swelling Clays Map</li> </ul>   | <ul style="list-style-type: none"> <li>• The effects of expansive soils are most prevalent in parts of the Southern, Central, and Western U.S.</li> <li>• Expansive soils are not addressed in the previous MEMA District 7 Region hazard mitigation plans.</li> <li>• According to USGS, the MEMA District 7 Region is predominately located in an area that is underlain with “generally less than 50%” clay having high swelling potential.</li> </ul>  |

**SECTION 4: HAZARD IDENTIFICATION**

| Hazards Considered           | Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No) | How was this determination made?  | Why was this determination made?   |
|------------------------------|--|---|--|
| Landslide                    | NO   | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of USGS Landslide Incidence and Susceptibility Hazard Map</li> </ul> | <ul style="list-style-type: none"> <li>• Landslides occur in every state in the U.S., and they are most common in the coastal ranges of California, the Colorado Plateau, the Rocky Mountains, and the Appalachian Mountains.</li> <li>• The State of MS Hazard Mitigation Plan excludes the landslide hazard because there is no extensive history of landslides in Mississippi.</li> <li>• The previous MEMA District 7 Region hazard mitigation plan does not address landslides.</li> </ul>                              |
| Land Subsidence/<br>Sinkhole | NO   | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> </ul>   | <ul style="list-style-type: none"> <li>• Land subsidence affects at least 45 states, including Mississippi. However, because of the broad range of causes and impacts, there has been limited national focus on this hazard.</li> <li>• The state plan does not identify land subsidence as a hazard because there is no significant historical record of the hazard in the region.</li> <li>• The previous MEMA District 7 Region hazard mitigation plan did not identify land subsidence as a potential hazard.</li> </ul> |

**SECTION 4: HAZARD IDENTIFICATION**

| Hazards Considered | Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No) | How was this determination made?  | Why was this determination made?   |
|--------------------|--|---|--|
| Tsunami            | NO   | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of USGS Regional Assessment of Tsunami potential in the Gulf of Mexico</li> <li>• Review of FEMA “How-to” mitigation planning guidance (Publication 386-2, “Understanding Your Risks – Identifying Hazards and Estimating Losses)</li> </ul> | <ul style="list-style-type: none"> <li>• No record exists of a catastrophic tsunami impacting the Gulf of Mexico coast.</li> <li>• Tsunami inundation zone maps are not available for communities located along the U.S. Gulf Coast.</li> <li>• The tsunami hazard is excluded from the state plan. There is no historical record of tsunamis in the Gulf of Mexico.</li> <li>• None of the previous MEMA District 7 Region hazard mitigation plans address tsunami.</li> <li>• FEMA mitigation planning guidance suggests that locations along the U.S. Gulf Coast have a relatively low tsunami risk and need not conduct a tsunami risk assessment at this time.</li> </ul> |
| Volcano            | NO   | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of USGS Volcano Hazards Program website</li> </ul>  | <ul style="list-style-type: none"> <li>• More than 65 potentially active volcanoes exist in the United States and most are located in Alaska. The Western states and Hawaii are also potentially affected by volcanic hazards.</li> <li>• There are no active volcanoes in Mississippi.</li> <li>• The volcano hazard is excluded from the state plan. There is no historical record of this hazard in the region.</li> </ul>  |

**SECTION 4: HAZARD IDENTIFICATION**

| Hazards Considered          | Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No) | How was this determination made?   | Why was this determination made?  |
|-----------------------------|--|--|---|
| <b>WIND-RELATED HAZARDS</b> |  |  |   |
| Extreme Heat                | YES  | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of NOAA NCDC Storm Events Database</li> </ul> | <ul style="list-style-type: none"> <li>• Many areas of the United States are susceptible to extreme heat and heat waves, including Mississippi which is located in the hot and humid southeastern United States.</li> <li>• Extreme heat was excluded from the State of MS hazard mitigation plan even though it was recognized that it can create emergencies in the state.</li> <li>• Extreme heat is not addressed in the previous MEMA District 7 Region hazard mitigation plan, but it was determined in planning meetings that it should be addressed.</li> <li>• NCDC reports that the MEMA District 7 Region counties have been affected by 21 extreme heat events since 2000.</li> </ul> |
| Hailstorm                   | YES  | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of NOAA NCDC Storm Events Database</li> </ul> | <ul style="list-style-type: none"> <li>• Although hailstorms occur primarily in the Midwestern states, they do occur in every state on the mainland U.S. Most inland regions experience hailstorms at least two or more days each year.</li> <li>• Hailstorm events are discussed in the MS State Hazard Mitigation Plan.</li> <li>• Hail is not addressed in the previous MEMA District 7 hazard mitigation plan, but given the frequency of the event, individual analysis is warranted.</li> <li>• NCDC reports 599 hailstorm events for the MEMA District 7 Region since 1950. For these events, there was over \$5.5 million (2017 dollars) in property damages reported.</li> </ul>         |

**SECTION 4: HAZARD IDENTIFICATION**

| Hazards Considered           | Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No) | How was this determination made?   | Why was this determination made?  |
|------------------------------|--|--|---|
| Hurricane and Tropical Storm | YES  | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Analysis of NOAA historical tropical cyclone tracks and National Hurricane Center Website</li> <li>• Review of NOAA NCDC Storm Events Database</li> <li>• Review of historical presidential disaster declarations</li> </ul> | <ul style="list-style-type: none"> <li>• The Atlantic and Gulf regions are most prone to landfall by hurricanes and tropical storms.</li> <li>• The State Hazard Mitigation Plan profiles the hurricane hazard and identifies it as a significant hazard, noting its devastating impacts on the state.</li> <li>• The hurricane and tropical storm hazard is addressed in the previous MEMA District 7 Region hazard mitigation plan.</li> <li>• NOAA historical records indicate 86 hurricanes and tropical storms have come within 100 miles of the MEMA District 7 Region since 1850.</li> <li>• 8 out of 26 disaster declarations in the MEMA District 7 Region are directly related to hurricane and tropical storm events.</li> </ul> |
| Nor’easter                   | NO   | <ul style="list-style-type: none"> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of NOAA NCDC Storm Events Database</li> </ul>   | <ul style="list-style-type: none"> <li>• Nor’easters are not profiled or discussed in the state plan.</li> <li>• Nor’easters are not identified in the previous MEMA District 7 Region hazard mitigation plans.</li> <li>• NCDC does not report any nor’easter activity for the MEMA District 7 Region counties.</li> </ul>   |

**SECTION 4: HAZARD IDENTIFICATION**

| Hazards Considered                | Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No) | How was this determination made?  | Why was this determination made?  |
|-----------------------------------|--|---|---|
| Severe Thunderstorm/<br>High Wind | YES  | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of NOAA NCDC Storm Events Database</li> <li>• Review of historical presidential disaster declarations</li> </ul> | <ul style="list-style-type: none"> <li>• Over 1,000 thunderstorms are estimated to occur each year or the U.S. mainland, and they are experienced in nearly every region.</li> <li>• Severe thunderstorm events were not profiled in the State Hazard Mitigation Plan because they do not typically impact the entire state, invoking a state response. However, severe thunderstorms were identified as a significant concern at the local level.</li> <li>• Severe thunderstorms and high winds are addressed in the previous MEMA District 7 Region hazard mitigation plan.</li> <li>• NCDC reports 1,209 thunderstorm events in the MEMA District 7 Region counties since 1950. These events have resulted in 3 deaths, 25 injuries, and \$68.6 million (2017 dollars) in property damage.</li> <li>• 13 of 20 disaster declarations in the MEMA District 7 Region are related to severe storm and high wind events.</li> </ul> |

**SECTION 4: HAZARD IDENTIFICATION**

| Hazards Considered      | Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No) | How was this determination made?  | Why was this determination made?  |
|-------------------------|--|---|---|
| Tornado                 | YES  | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of NOAA NCDC Storm Events Database</li> <li>• Review of historical presidential disaster declarations</li> </ul> | <ul style="list-style-type: none"> <li>• From 1991 to 2010, Mississippi experienced 9.2 tornadoes per 10,000 miles, making it the 5<sup>th</sup> ranked “tornado state” in the U.S.</li> <li>• Tornado events are listed in the State of MS Hazard Mitigation Plan as a significant hazard and are referenced as a common disaster.</li> <li>• Tornado events are addressed in the previous MEMA District 7 Region hazard mitigation plan.</li> <li>• NCDC reports 214 tornado events in MEMA District 7 Region counties since 1950. These events have resulted in 14 recorded deaths, 379 injuries, and \$752.5 million (2017 dollars) in property damage.</li> <li>• 12 out of 20 disaster declarations in the MEMA District 7 Region are related to tornado events.</li> </ul> |
| Winter Storm and Freeze | YES  | <ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of State of MS Hazard Mitigation Plan</li> <li>• Review of previous MEMA District 7 Region hazard mitigation plans</li> <li>• Review of NOAA NCDC Storm Events Database</li> <li>• Review of historical presidential disaster declarations</li> </ul> | <ul style="list-style-type: none"> <li>• Winter storms affect every state in the continental U.S. and Alaska.</li> <li>• Extreme winter weather is identified in the state plan as a limited hazard.</li> <li>• Winter storm events are addressed in the previous MEMA District 7 Region hazard mitigation plans.</li> <li>• NCDC reports that the MEMA District 7 Region counties have been affected by 81 winter weather events since 1996. These events resulted in roughly \$6.7 million (2017 dollars) in property damages.</li> </ul>   |

| Hazards Considered          | Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No) | How was this determination made?  | Why was this determination made?  |
|-----------------------------|--|---|---|
| <b>HUMAN CAUSED HAZARDS</b> |  |   |   |
| Radiological Event          | YES  | <ul style="list-style-type: none"> <li>• Review of IAEA data on the location of nuclear reactors.</li> <li>• Discussion with local officials about location of nuclear power stations.</li> </ul> | <ul style="list-style-type: none"> <li>• The Grand Gulf Nuclear Station and River Bend Nuclear Station are located within fifty miles of the region.</li> <li>• The previous hazard mitigation plan included nuclear power plant emergency and it remains a hazard of concern.</li> <li>• A nuclear accident is unlikely to occur, but could cause severe damage in the event of a major incident.</li> </ul> |

### 4.5 HAZARD IDENTIFICATION RESULTS

**TABLE 4.4: SUMMARY RESULTS OF THE HAZARD IDENTIFICATION AND EVALUATION PROCESS**

| <b>FLOOD-RELATED HAZARDS</b>                              | <b>GEOLOGIC HAZARDS</b>   |
|---|---|
| <input type="checkbox"/> Avalanche                        | <input checked="" type="checkbox"/> Earthquake                    |
| <input checked="" type="checkbox"/> Dam and Levee Failure | <input type="checkbox"/> Expansive Soils                          |
| <input checked="" type="checkbox"/> Erosion               | <input type="checkbox"/> Landslide                                |
| <input checked="" type="checkbox"/> Flood                 | <input type="checkbox"/> Land Subsidence/Sinkhole                 |
| <input type="checkbox"/> Storm Surge                      | <input type="checkbox"/> Tsunami                                  |
| <b>FIRE-RELATED HAZARDS</b>                               | <input type="checkbox"/> Volcano                                  |
| <input checked="" type="checkbox"/> Drought               | <b>WIND-RELATED HAZARDS</b>                                       |
| <input checked="" type="checkbox"/> Lightning             | <input checked="" type="checkbox"/> Extreme Heat                  |
| <input checked="" type="checkbox"/> Wildfire              | <input checked="" type="checkbox"/> Hailstorm                     |
| <b>HUMAN CAUSED HAZARDS</b>                               | <input checked="" type="checkbox"/> Hurricane and Tropical Storm  |
| <input checked="" type="checkbox"/> Radiological Event    | <input type="checkbox"/> Nor'easter                               |
|   | <input checked="" type="checkbox"/> Severe Thunderstorm/High Wind |
|   | <input checked="" type="checkbox"/> Tornado                       |
|   | <input checked="" type="checkbox"/> Winter Storm and Freeze       |

= Hazard considered significant enough for further evaluation in the MEMA District 7 Region hazard risk assessment.

# SECTION 5

## HAZARD PROFILES

This section includes detailed hazard profiles for each of the hazards identified in the previous section (*Hazard Identification*) as significant enough for further evaluation in the MEMA District 7 Regional Hazard Mitigation Plan. It contains the following subsections:

- 5.1 Overview
- 5.2 Study Area
- Flood-Related Hazards
  - 5.3 Dam and Levee Failure
  - 5.4 Erosion
  - 5.5 Flood
- Fire-Related Hazards
  - 5.6 Drought
  - 5.7 Lightning
  - 5.8 Wildfire
- Geologic Hazards
  - 5.9 Earthquake
- Wind-Related Hazards
  - 5.10 Extreme Heat
  - 5.11 Hailstorm
  - 5.12 Hurricane and Tropical Storm
  - 5.13 Severe Thunderstorm/High Wind
  - 5.14 Tornado
  - 5.15 Winter Storm and Freeze
- Human-Caused Hazards
  - 5.16 Radiological Event
  - 5.17 Conclusions on Hazard Risk
  - 5.18 Final Determinations

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### 44 CFR Requirement

**44 CFR Part 201.6(c)(2)(i):** The risk assessment shall include a description of the type, location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events

## 5.1 OVERVIEW

This section includes detailed hazard profiles for each of the hazards identified in the previous section (*Hazard Identification*) as significant enough for further evaluation in the MEMA District 7 Region hazard risk assessment by creating a hazard profile. Each hazard profile includes a general description of the hazard including its location, extent (or severity), historical occurrences, and probability of future occurrences. Each profile also includes specific items noted by members of the MEMA District 7 Regional Hazard Mitigation Council (RHMC) as it relates to unique historical or anecdotal hazard information for the counties in the MEMA District 7 Region or a participating municipality within them.

The following hazards were identified:

- **Flood-related Hazards**
  - Dam and Levee Failure
  - Erosion
  - Flood

- **Fire-related Hazards**
  - Drought
  - Lightning
  - Wildfire
- **Geologic Hazards**
  - Earthquake
- **Wind-related Hazards**
  - Extreme Heat
  - Hailstorm
  - Hurricane and Tropical Storm
  - Severe Thunderstorm/High Wind
  - Tornado
  - Winter Storm and Freeze
- **Human-caused Hazards**
  - Radiological Event

## 5.2 STUDY AREA

The MEMA District 7 Region includes 9 counties and 19 incorporated jurisdictions. **Table 5.1** provides a summary table of the participating jurisdictions within each county. In addition, **Figure 5.1** provides a base map, for reference, of the MEMA District 7 Region.

**TABLE 5.1: PARTICIPATING JURISDICTIONS IN THE MEMA DISTRICT 7 REGIONAL HAZARD MITIGATION PLAN**

|                         |              |                         |           |
|-------------------------|--------------|-------------------------|-----------|
| <b>Adams County</b>     |              | <b>Lincoln County</b>   |           |
| Natchez                 |              | Brookhaven              |           |
| <b>Amite County</b>     |              | <b>Pike County</b>      |           |
| Gloster                 | Liberty      | Magnolia                | Osyka     |
| <b>Franklin County</b>  |              | McComb                  | Summit    |
| Bude                    | Roxie        | <b>Walthall County</b>  |           |
| Meadville               |              | Tylertown               |           |
| <b>Jefferson County</b> |              | <b>Wilkinson County</b> |           |
| Fayette                 |              | Centreville             | Woodville |
| <b>Lawrence County</b>  |              | Crosby                  |           |
| Monticello              | Silver Creek |                         |           |
| New Hebron              |              |                         |           |

FIGURE 5.1: MEMA DISTRICT 7 REGION BASE MAP

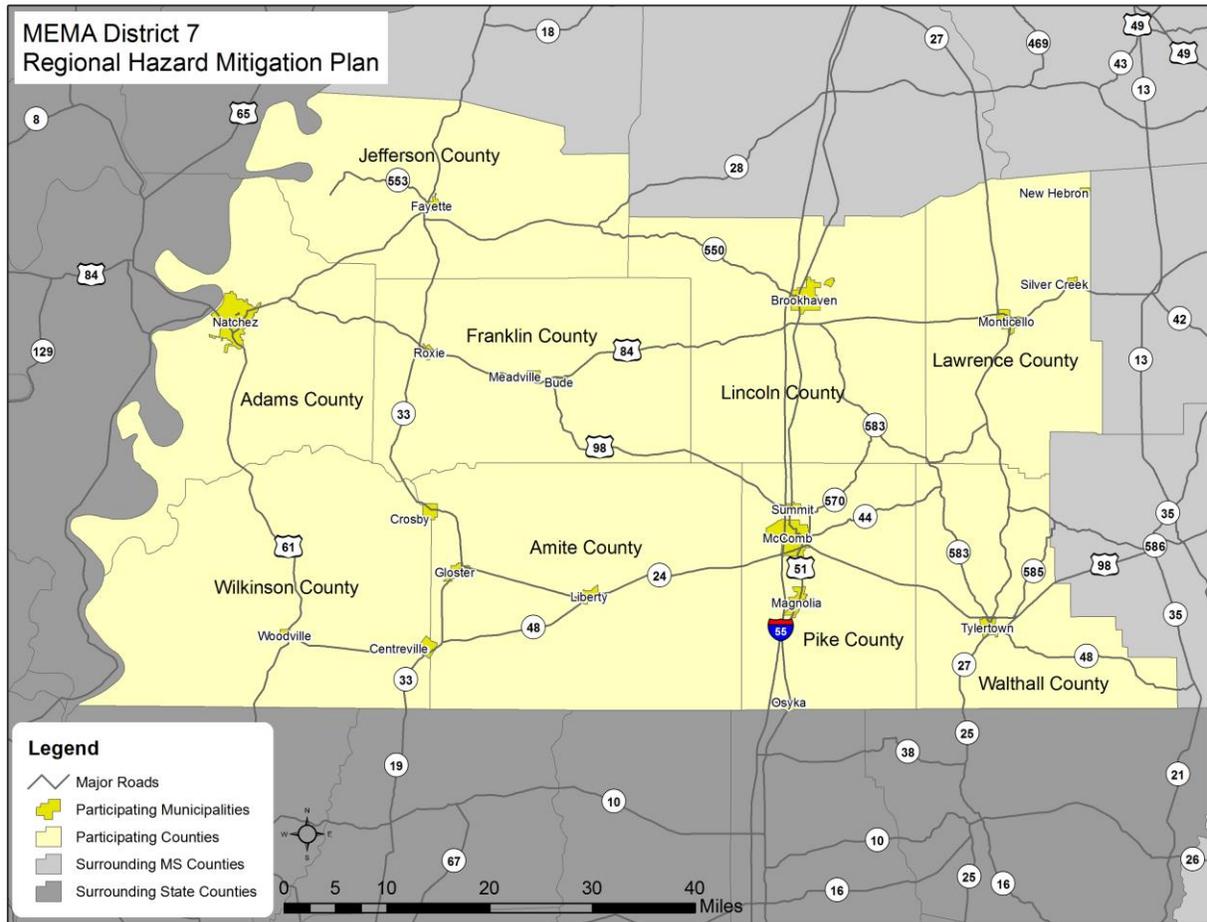


Table 5.2 lists each significant hazard for the MEMA District 7 Region and identifies whether or not it has been determined to be a specific hazard of concern for the municipal jurisdictions and the unincorporated areas of the counties. This is based on the best available data and information from the MEMA District 7 Regional Hazard Mitigation Council. (● = hazard of concern)

TABLE 5.2 SUMMARY OF IDENTIFIED HAZARD EVENTS IN THE MEMA DISTRICT 7 REGION

| Jurisdiction        | Flood-related     |         |       | Fire-related |           |          | G          | Wind-related |           |           |              |         | H                       |                    |
|---------------------|-------------------|---------|-------|--------------|-----------|----------|------------|--------------|-----------|-----------|--------------|---------|-------------------------|--------------------|
|                     | Dam/Levee Failure | Erosion | Flood | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane | Thunderstorm | Tornado | Winter Storm/<br>Freeze | Radiological Event |
| <b>Adams County</b> |                   |         |       |              |           |          |            |              |           |           |              |         |                         |                    |
| Natchez             | ●                 | ●       | ●     | ●            | ●         | ●        | ●          | ●            | ●         | ●         | ●            | ●       | ●                       | ●                  |
| Unincorporated Area | ●                 | ●       | ●     | ●            | ●         | ●        | ●          | ●            | ●         | ●         | ●            | ●       | ●                       | ●                  |

SECTION 5: HAZARD PROFILES

| Jurisdiction            | Flood-related     |         |       | Fire-related |           |          | G          | Wind-related |           |           |              |         | H                       |                    |
|-------------------------|-------------------|---------|-------|--------------|-----------|----------|------------|--------------|-----------|-----------|--------------|---------|-------------------------|--------------------|
|                         | Dam/Levee Failure | Erosion | Flood | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane | Thunderstorm | Tornado | Winter Storm/<br>Freeze | Radiological Event |
| <b>Amite County</b>     |                   |         |       |              |           |          |            |              |           |           |              |         |                         |                    |
| Gloster                 | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Liberty                 | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Unincorporated Area     | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| <b>Franklin County</b>  |                   |         |       |              |           |          |            |              |           |           |              |         |                         |                    |
| Bude                    | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Meadville               | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Roxie                   | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Unincorporated Area     | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| <b>Jefferson County</b> |                   |         |       |              |           |          |            |              |           |           |              |         |                         |                    |
| Fayette                 | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Unincorporated Area     | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| <b>Lawrence County</b>  |                   |         |       |              |           |          |            |              |           |           |              |         |                         |                    |
| Monticello              | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| New Hebron              | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Silver Creek            | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Unincorporated Area     | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| <b>Lincoln County</b>   |                   |         |       |              |           |          |            |              |           |           |              |         |                         |                    |
| Brookhaven              | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Unincorporated Area     | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| <b>Pike County</b>      |                   |         |       |              |           |          |            |              |           |           |              |         |                         |                    |
| Magnolia                | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| McComb                  | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Osyka                   | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Summit                  | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Unincorporated Area     | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| <b>Walthall County</b>  |                   |         |       |              |           |          |            |              |           |           |              |         |                         |                    |
| Tylertown               | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Unincorporated Area     | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| <b>Wilkinson County</b> |                   |         |       |              |           |          |            |              |           |           |              |         |                         |                    |
| Centreville             | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Crosby                  | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Woodville               | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |
| Unincorporated Area     | •                 | •       | •     | •            | •         | •        | •          | •            | •         | •         | •            | •       | •                       | •                  |

## FLOOD-RELATED HAZARDS

### 5.3 DAM AND LEVEE FAILURE

#### 5.3.1 Background

Worldwide interest in dam and levee safety has risen significantly in recent years. Aging infrastructure, new hydrologic information, and population growth in floodplain areas downstream from dams and near levees have resulted in an increased emphasis on safety, operation, and maintenance.

There are approximately 80,000 dams in the United States today, the majority of which are privately owned. Other owners include state and local authorities, public utilities, and federal agencies. The benefits of dams are numerous: they provide water for drinking, navigation, and agricultural irrigation. Dams also provide hydroelectric power, create lakes for fishing and recreation, and save lives by preventing or reducing floods.

Though dams have many benefits, they also can pose a risk to communities if not designed, operated, and maintained properly. In the event of a dam failure, the energy of the water stored behind even a small dam is capable of causing loss of life and great property damage if development exists downstream. If a levee breaks, scores of properties may become submerged in floodwaters and residents may become trapped by rapidly rising water. The failure of dams and levees has the potential to place large numbers of people and great amounts of property in harm's way.

#### 5.3.2 Location and Spatial Extent

The Mississippi Department of Environmental Quality provides information on dams including a hazard potential classification. There are three hazard classifications—high, significant, and low—that correspond to qualitative descriptions. **Table 5.3** explains these classifications.

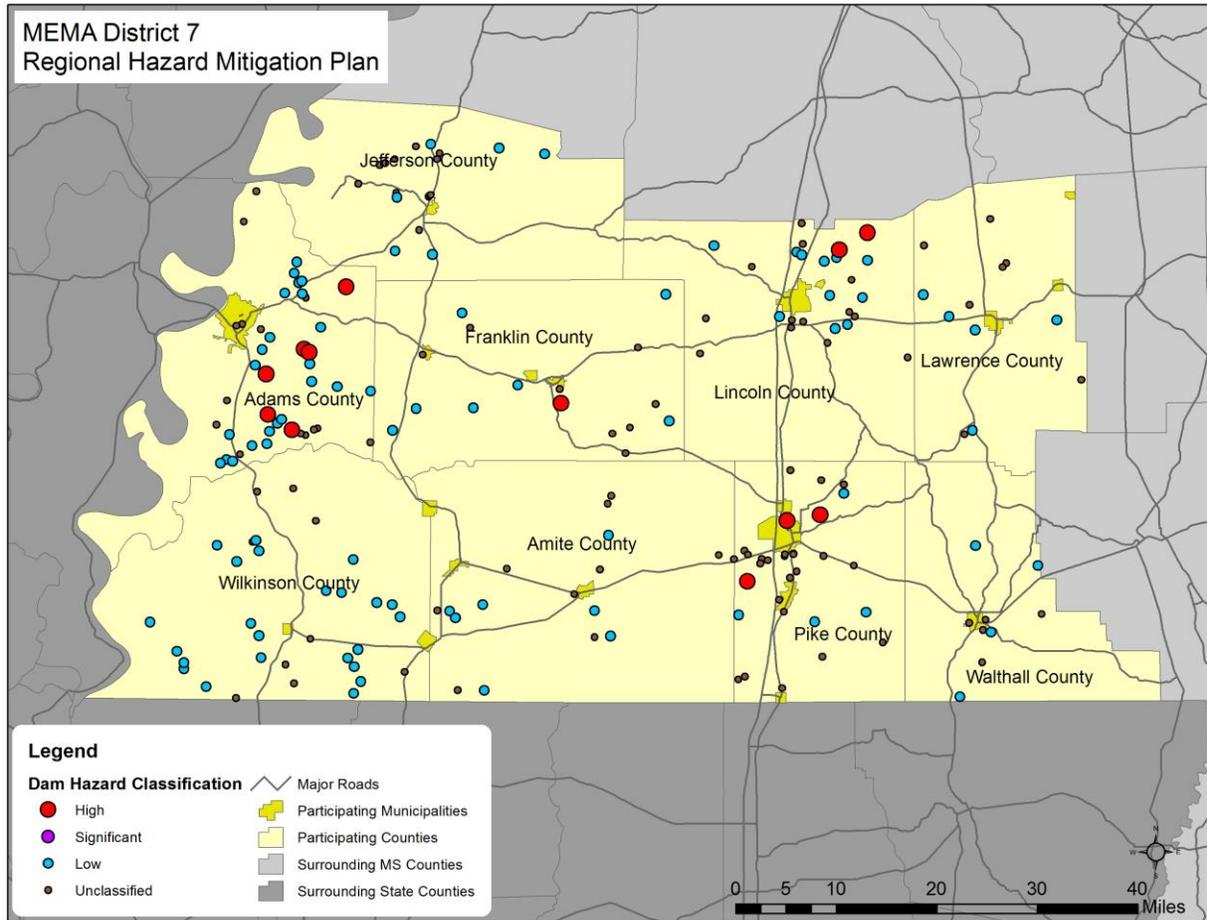
**TABLE 5.3: MISSISSIPPI DAM HAZARD CLASSIFICATIONS**

| Hazard Classification | Description  |
|-----------------------|--|
| Low                   | Dam failure may cause damage to farm buildings (excluding residences), agricultural land, or county or minor roads.  |
| Significant           | Dam failure may cause significant damage to main roads, minor railroads, or cause interruption of use or service of relatively important public utilities.   |
| High                  | Dam failure may cause loss of life, serious damage to homes, industrial or commercial buildings, important public utilities, main highways or railroads. Dams constructed in existing or proposed residential, commercial or industrial areas will be classified as high hazard dams, unless the applicant presents clear and convincing evidence to the contrary. |

Source: Mississippi Department of Environmental Quality

According to the Mississippi Department of Environmental Quality, there are 12 high hazard dams located within the MEMA District 7 Region.<sup>1</sup> **Figure 5.2** and **Figure 5.3** show the location of each of these high hazard dams as well as mapped dam inundation areas, and **Table 5.4** lists them by name.

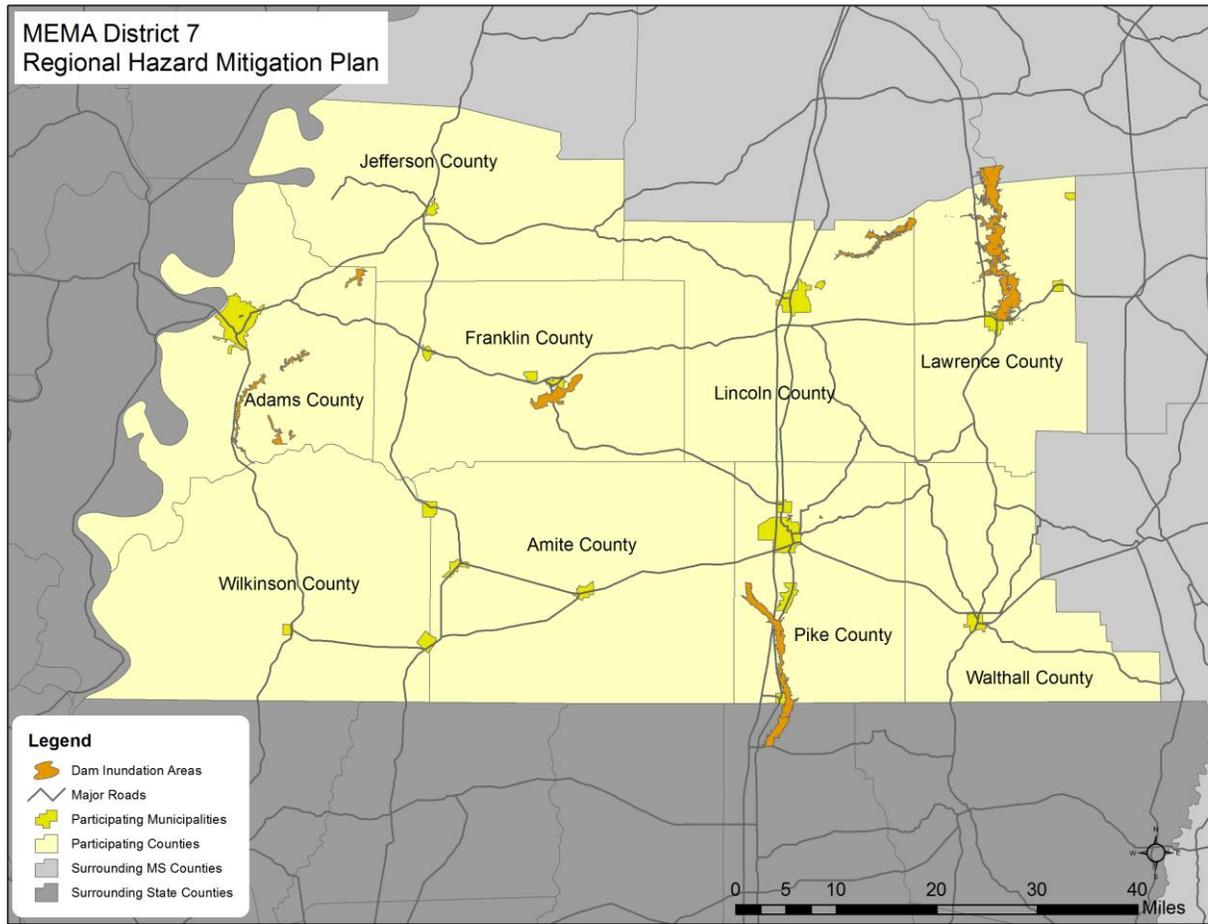
**FIGURE 5.2: MEMA DISTRICT 7 REGION HIGH HAZARD DAM LOCATIONS**



Source: Mississippi Department of Environmental Quality

<sup>1</sup> The list of high hazard dams obtained from the Mississippi Department of Environmental Quality was reviewed and amended by local officials to the best of their knowledge.

**FIGURE 5.3: MEMA DISTRICT 7 DAM INUNDATION AREAS**



Source: Mississippi Department of Environmental Quality

**TABLE 5.4: MEMA DISTRICT 7 REGION HIGH HAZARD DAMS**

| Dam Name                        | Hazard Potential | Max Storage (ac/ft) | Dam Height (ft) |
|---------------------------------|------------------|---------------------|-----------------|
| <b>Adams County</b>             |                  |                     |                 |
| NATCHEZ STATE PARK DAM          | High             | 5,800               | 64.0            |
| SECOND CREEK WS STR NO. 10B DAM | High             | 1,127               | 40.0            |
| SECOND CREEK WS STR NO. 12 DAM  | High             | 1,630               | 31.0            |
| SECOND CREEK WS STR NO. 6A DAM  | High             | 3,087               | 53.0            |
| SECOND CREEK WS STR NO. 6B DAM  | High             | 4,155               | 52.0            |
| SECOND CREEK WS STR NO. 7 DAM   | High             | 9,925               | 52.0            |
| <b>Amite County</b>             |                  |                     |                 |
| NONE                            | N/A              | N/A                 | N/A             |
| <b>Franklin County</b>          |                  |                     |                 |
| LAKE OKHISSA                    | High             | 44,065              | 98.0            |
| <b>Jefferson County</b>         |                  |                     |                 |
| NONE                            | N/A              | N/A                 | N/A             |

**SECTION 5: HAZARD PROFILES**

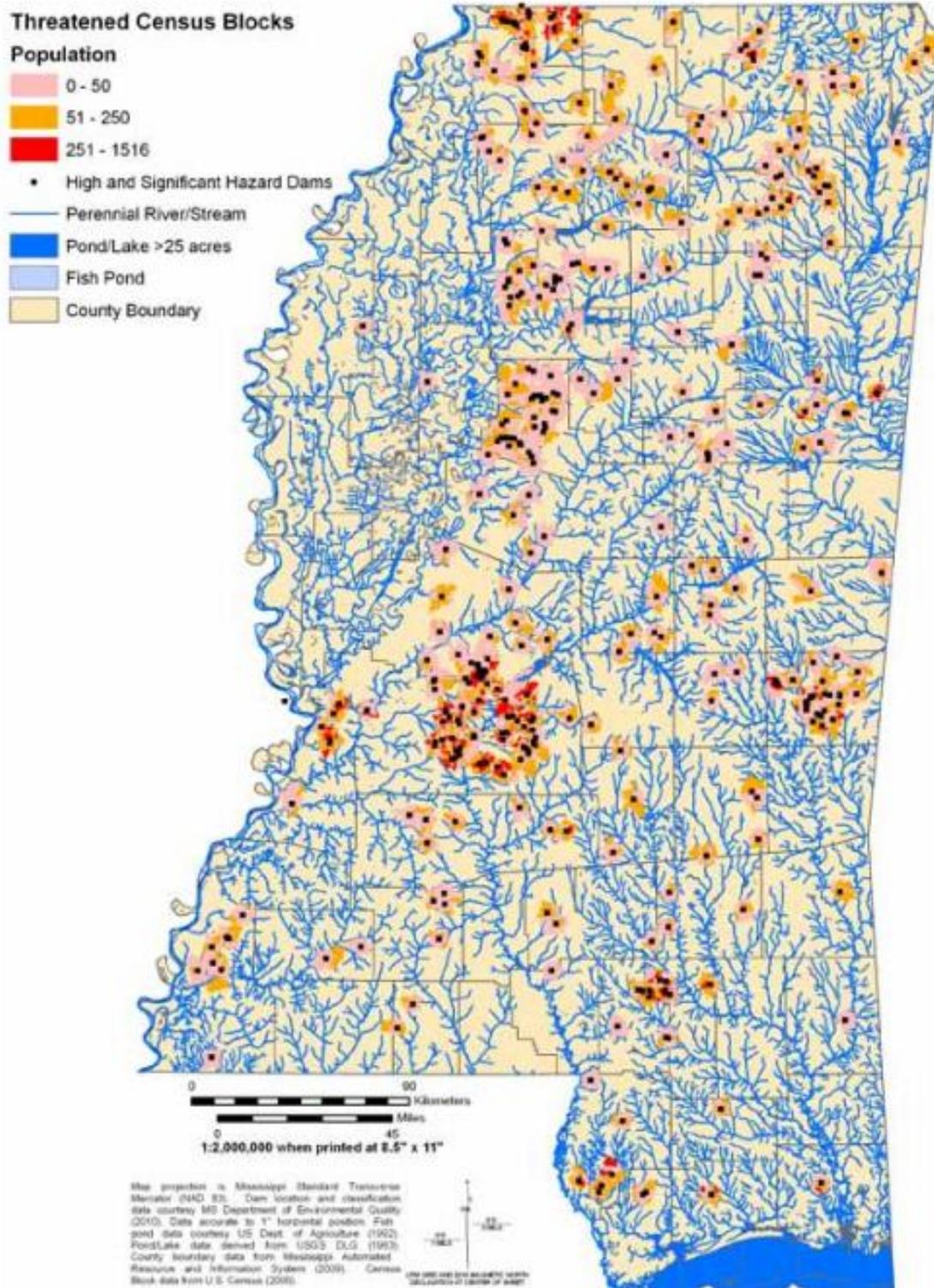
| <b>Dam Name</b>             | <b>Hazard Potential</b> | <b>Max Storage (ac/ft)</b> | <b>Dam Height (ft)</b> |
|-----------------------------|-------------------------|----------------------------|------------------------|
| <b>Lawrence County</b>      |                         |                            |                        |
| ROSS BARNETT RESERVOIR DAM* | High                    | 540,000                    | 64.0                   |
| <b>Lincoln County</b>       |                         |                            |                        |
| LAKE LINCOLN DAM            | High                    | 6,544                      | 39.5                   |
| BAHALA CREEK WS STR 2 DAM   | High                    | 1,250                      | 31.0                   |
| <b>Pike County</b>          |                         |                            |                        |
| ICGRR RESERVOIR MCCOMB DAM  | High                    | 936                        | 26.0                   |
| PERCY QUIN STATE PARK DAM   | High                    | 16,800                     | 34.0                   |
| C.V. GLENNIS LAKE DAM       | High                    | 94                         | 20.0                   |
| <b>Walthall County</b>      |                         |                            |                        |
| NONE                        | N/A                     | N/A                        | N/A                    |
| <b>Wilkinson County</b>     |                         |                            |                        |
| NONE                        | N/A                     | N/A                        | N/A                    |

\*Although not located within the region, inundation mapping indicates that a failure of this dam would potentially have impacts within Lawrence County.

Source: Mississippi Department of Environmental Quality

Additionally, the Mississippi State Hazard Mitigation Plan provides some additional statewide information regarding populations that are located within two miles of a high or significant class dam and are potentially threatened by a dam failure. These areas are identified in **Figure 5.4**.

**FIGURE 5.4: POPULATION LIVING WITHIN TWO MILES AND THREATENED BY A HIGH OR SIGNIFICANT HAZARD DAM FAILURE**



Source: Mississippi State Hazard Mitigation Plan

### 5.3.3 Historical Occurrences

According to the Mississippi State Hazard Mitigation Plan, there have been three dam failures reported in the MEMA District 7 Region, one in Adams County and two in Pike County. Although major damage was not reported with these events, several breach scenarios in the region could be catastrophic.

**Table 5.5** below provides a brief description of the three reported dam failures.

**TABLE 5.5: MEMA DISTRICT 7 REGION DAM FAILURES (1982-2012)**

| Date           | County | Structure Name     | Cause of Failure   |
|----------------|--------|--------------------|--|
| April 1983     | Adams  | Robins Lake        | Breached   |
| September 2002 | Pike   | Lake Dixie Springs | Overtopping  |
| August 2012    | Pike   | Percy Quinn        | Large slides developed with seepage. Did not lead to uncontrolled release of pool. |

*Source: Mississippi Department of Environmental Quality*

### 5.3.4 Probability of Future Occurrence

Given the current dam inventory and historic data, a dam breach is unlikely (less than 1 percent annual probability) in the future. As has been demonstrated in the past, regular monitoring is necessary to prevent these events. No further analysis will be completed in Section 6: *Vulnerability Assessment* as more sophisticated dam breach plans (typically completed by the U.S. Army Corp of Engineers) have been completed for dams of concern in the region.

## 5.4 EROSION

### 5.4.1 Background

Erosion is the gradual breakdown and movement of land due to both physical and chemical processes of water, wind, and general meteorological conditions. Natural, or geologic, erosion has occurred since the Earth's formation and continues at a very slow and uniform rate each year.

There are two types of soil erosion: wind erosion and water erosion. Wind erosion can cause significant soil loss. Winds blowing across sparsely vegetated or disturbed land can pick up soil particles and carry them through the air, thus displacing them. Water erosion, the hazard of topic here, can occur over land or in streams and channels. Water erosion that takes place over land may result from raindrops, shallow sheets of water flowing off the land, or shallow surface flow, which becomes concentrated in low spots. Stream channel erosion may occur as the volume and velocity of water flow increases enough to cause movement of the streambed and bank soils. Major storms, such hurricanes in coastal areas, may cause significant erosion by combining high winds with heavy surf and storm surge to significantly impact the shoreline, though MEMA District 7 is not a coastal region, so this type of erosion is not a threat.

An area's potential for erosion is determined by four factors: soil characteristics, vegetative cover, climate/rainfall, and topography. Soils composed of a large percentage of silt and fine sand are most susceptible to erosion. As the clay and organic content of these soils increases, the potential for erosion decreases. Well-drained and well-graded gravels and gravel-sand mixtures are the least likely to erode.

Coarse gravel soils are highly permeable and have a good capacity for absorption, which can prevent or delay the amount of surface runoff. Vegetative cover can be very helpful in controlling erosion by shielding the soil surface from falling rain, absorbing water from the soil, and slowing the velocity of runoff. Runoff is also affected by the topography of the area including size, shape, and slope. The greater the slope length and gradient, the more potential an area has for erosion. Climate can affect the amount of runoff, especially the frequency, intensity, and duration of rainfall and storms. When rainstorms are frequent, intense, or of long duration, erosion risks are high. Seasonal changes in temperature and rainfall amounts define the period of highest erosion risk of the year.

During the past 30 years, the importance of erosion control has gained the increased attention of the public. Implementation of erosion control measures consistent with sound agricultural and construction operations is needed to minimize the adverse effects associated with harmful chemical run-off due to wind or water events. The increase in government regulatory programs and public concern has resulted in a wide range of erosion control products, techniques, and analytical methodologies in the United States. The preferred method of erosion control in recent years has been the restoration of vegetation.

### **5.4.2 Location and Spatial Extent**

Erosion in the MEMA District 7 Region is typically caused by flash flooding events. Unlike coastal areas, areas of concern for erosion in the MEMA District 7 Region are primarily rivers/streams and reservoirs. Generally, vegetation also helps to prevent erosion in the area, but in recent years, erosion has become a growing threat to many of the participating counties and jurisdictions.

At this time, there is no regional or state-level data available on localized areas of erosion so it is a challenge to identify particularly prone areas on a wider geographic scale. However, a few areas of concern were reported by members of the hazard mitigation council and other local sources. Locations along the Mississippi River in Adams, Jefferson, and Wilkinson Counties are known to be especially at-risk, but there are locations in many counties within the region where erosion is prominent.

For example, in Adams County, in Natchez, there have been several instances where abrupt erosion events caused property damage and loss of life due to the silt-like loess soil in the area. Some notable areas that were identified are along Martin Luther King Jr. Road<sup>2</sup> and along the railroad tracks near the Natchez-Adams County Port.<sup>3</sup>

### **5.4.3 Historical Occurrences**

Several sources were vetted to identify areas of erosion in the MEMA District 7 Region. This includes searching local newspapers, interviewing local officials, and reviewing previous hazard mitigation plans. Although the locations identified above are representative of areas where erosion has taken place in the past, it is also important to note significant events that had large impacts. One major historical erosion occurrence was reported in Natchez in 1980 when a severe and sudden erosion event sent a slide of

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<sup>2</sup> Madden, Cain. *County watches erosion near MLK closely*. The Natchez Democrat. February 13, 2017. <http://www.natchezdemocrat.com/2017/02/13/county-watches-erosion-near-mlk-closely/>

<sup>3</sup> Hogan, Vershal. *Riverbank erosion threatens rail line*. The Natchez Democrat. May 1, 2014. <http://www.natchezdemocrat.com/2014/05/01/riverbank-erosion-threatens-rail-line/>

mud and debris into a bar causing more than \$100,000 in damage and two deaths. Retreat in some areas has been estimated at about 30 to 50 feet over the past 120 years.<sup>4</sup>

These incidents have caused major problems in MEMA District 7 as bridges have become damaged in many instances and made unsafe for emergency services vehicles to cross during and after storm events. This delays response times and critical life-safety support. In addition, the shutdown of roads has hurt local communities economically as trade and commerce are temporarily shut down as bridges are repaired. It has also caused disruption to daily activities for local school boards who must re-route buses around affected areas, causing additional fuel resources to be expended and increasing drive times for students.

#### **5.4.4 Probability of Future Occurrences**

Erosion remains a natural, dynamic, and continuous process for the MEMA District 7 Region, and it will continue to occur. The annual probability level assigned for erosion is likely (between 10 and 100 percent annually). Given the lack of large scale spatial data, no further analysis will be done in Section 6: *Vulnerability Assessment*.

### **5.5 FLOOD**

#### **5.5.1 Background**

Flooding is the most frequent and costly natural hazard in the United States and is a hazard that has caused more than 10,000 deaths since 1900. Nearly 90 percent of presidential disaster declarations result from natural events where flooding was a component.

Floods generally result from excessive precipitation and can be classified under two categories: general floods, precipitation over a given river basin for a long period of time along with possible storm-induced wave action, and flash floods, the product of heavy localized precipitation in a short time period over a given location. The severity of a flooding event is typically determined by a combination of several major factors, including stream and river basin topography and physiography, precipitation and weather patterns, recent soil moisture conditions, and the degree of vegetative clearing and impervious surface.

General floods are usually long-term events that may last for several days. The primary types of general flooding include riverine, coastal, and urban flooding. Riverine flooding is a function of excessive precipitation levels and water runoff volumes within the watershed of a stream or river. Coastal flooding is typically a result of storm surge, wind-driven waves, and heavy rainfall produced by hurricanes, tropical storms, and other large coastal storms. Urban flooding occurs where manmade development has obstructed the natural flow of water and decreased the ability of natural groundcover to absorb and retain surface water runoff.

Flash flooding is another type of flooding that can be associated with urban flooding. It is common in urbanized areas where much of the ground is covered by impervious surfaces. Most flash flooding occurs along mountain streams and is caused by slow-moving thunderstorms in a local area or by heavy

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<sup>4</sup> Treadwell, David. *Erosion Imperils Old Mississippi Mansions*. Los Angeles Times. June 9, 1985. [http://articles.latimes.com/1985-06-09/news/mn-9849\\_1\\_erosion-problems](http://articles.latimes.com/1985-06-09/news/mn-9849_1_erosion-problems)

rains associated with hurricanes and tropical storms. However, flash-flooding events may also occur from a dam or levee failure within minutes or hours of heavy amounts of rainfall, or from a sudden release of water held by retention basin or other stormwater control facility.

The periodic flooding of lands adjacent to rivers, streams, and shorelines (land known as floodplain) is a natural and inevitable occurrence that can be expected to take place based upon established recurrence intervals. Floodplains are designated by the frequency of the flood that is large enough to cover them. For example, the 10-year floodplain will be covered by the 100-year flood and the 100-year floodplain by the 1,000-year flood. Flood frequencies such as the 100-year flood are determined by plotting a graph of the size of all known floods for an area and determining how often floods of a particular size occur. Another way of expressing the flood frequency is the chance of occurrence in a given year, which is the percentage of the probability of flooding each year. For example, the 100-year flood has a 1-percent annual chance of occurring in any given year, and the 500-year flood has a 0.2-percent annual chance of occurring in any given year.

### 5.5.2 Location and Spatial Extent

There are areas in the MEMA District 7 Region that are susceptible to flood events. Special flood hazard areas in the region were mapped using Geographic Information System (GIS) and FEMA Digital Flood Insurance Rate Maps (DFIRM). This includes Zone A (1-percent annual chance floodplain), Zone AE (1-percent annual chance floodplain with elevations), and Zone X-500 (0.2-percent annual chance floodplain). According to GIS analysis, of the 4,835 square miles that make up the MEMA District 7 Region, there are approximately 767.19 square miles of land in zones A and AE (1-percent annual chance floodplain/100-year floodplain) and 2.99 square miles of land in zone X-500 (0.2 percent annual chance floodplain/500-year floodplain). The county totals are presented below in **Table 5.6**.

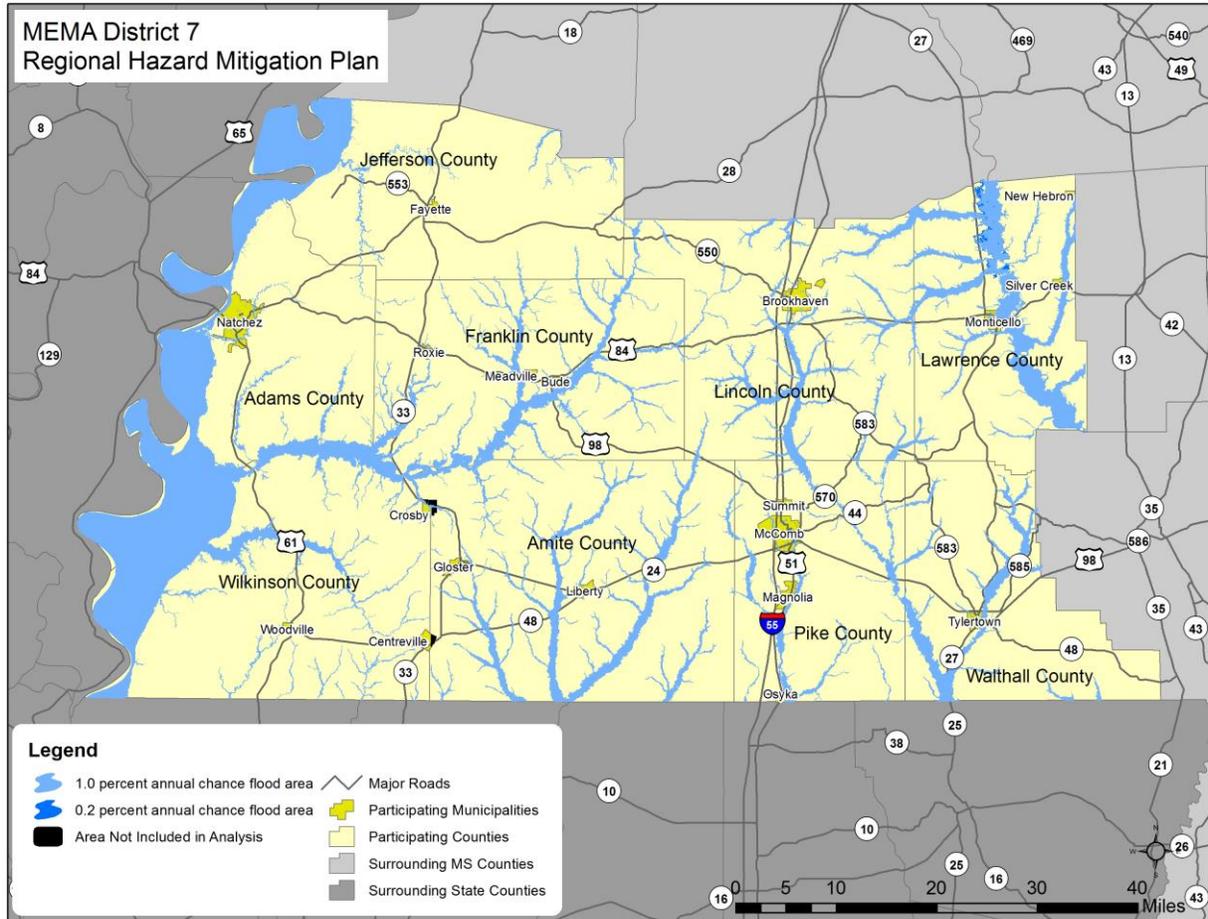
**TABLE 5.6: SUMMARY OF FLOODPLAIN AREAS IN THE MEMA DISTRICT 7 REGION**

| Location (DFIRM date)               | 1.0 percent ACF area<br>(square miles) | 0.2 percent ACF area<br>(square miles) |
|-------------------------------------|--|--|
| Adams County (2011)                 | 169.77                                 | 0.04                                   |
| Amite County (2010)                 | 85.85                                  | 0.00                                   |
| Franklin County (2010)              | 70.39                                  | 0.00                                   |
| Jefferson County (2010)             | 67.77                                  | <0.01                                  |
| Lawrence County (2010)              | 89.92                                  | 2.72                                   |
| Lincoln County (2010)               | 60.42                                  | 0.04                                   |
| Pike County (2010)                  | 33.52                                  | 0.19                                   |
| Walthall County (2010)              | 40.10                                  | 0.00                                   |
| Wilkinson County (2010)             | 149.45                                 | 0.00                                   |
| <b>MEMA DISTRICT 7 REGION TOTAL</b> | <b>767.19</b>                          | <b>2.99</b>                            |

These flood zone values account for approximately 15.9 percent of the total area in the MEMA District 7 Region (in the counties with available digital data). It is important to note that while FEMA digital flood data is recognized as best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Flooding and flood-related losses often do occur outside of delineated special flood hazard areas. **Figure 5.5** illustrates the location and extent of currently mapped

special flood hazard areas for the region based on best available FEMA Digital Flood Insurance Rate Map (DFIRM) data.

**FIGURE 5.5: SPECIAL FLOOD HAZARD AREAS IN MEMA DISTRICT 7 REGION**



Source: Federal Emergency Management Agency

Additional, more detailed county-level maps can be found in the annexes.

### 5.3.3 Historical Occurrences

Floods were at least partially responsible for nearly all 26 disaster declarations in the MEMA District 7 Region between 1971 and 2017.<sup>5</sup> Information from the National Climatic Data Center was used to ascertain additional historical flood events. The National Climatic Data Center reported a total of 177 events throughout the MEMA District 7 Region since 1997.<sup>6</sup> A summary of these events is presented in **Table 5.7**. These events accounted for \$30.8 million (2017 dollars) in property damage throughout the

<sup>5</sup> Not all of the participating counties were declared disaster areas for these events. A complete listing of historical disaster declarations, including the affected counties, can be found in Section 4: *Hazard Identification*.

<sup>6</sup> These flood events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported. As additional local data becomes available, this hazard profile will be amended.

region.<sup>7</sup> Specific information on flood events for each county, including date, type of flooding, and deaths and injuries, can be found in the county-specific annexes.

**TABLE 5.7: SUMMARY OF FLOOD OCCURRENCES IN THE MEMA DISTRICT 7 REGION**

| Location                | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-------------------------|-----------------------|-----------------|------------------------|----------------------------|
| <b>Adams County</b>     | <b>40</b>             | <b>0/0</b>      | <b>\$4,497,157</b>     | <b>\$224,858</b>           |
| Natchez                 | 14                    | 0/0             | \$564,463              | \$28,223                   |
| Unincorporated Area     | 26                    | 0/0             | \$3,932,694            | \$196,635                  |
| <b>Amite County</b>     | <b>6</b>              | <b>0/0</b>      | <b>\$702,486</b>       | <b>\$46,832</b>            |
| Gloster                 | 0                     | 0/0             | \$0                    | \$0                        |
| Liberty                 | 1                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area     | 5                     | 0/0             | \$702,486              | \$46,832                   |
| <b>Franklin County</b>  | <b>22</b>             | <b>0/0</b>      | <b>\$3,061,413</b>     | <b>\$247,438</b>           |
| Bude                    | 5                     | 0/0             | \$1,389,425            | \$154,381                  |
| Meadville               | 6                     | 0/0             | \$1,159,389            | \$61,020                   |
| Roxie                   | 0                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area     | 11                    | 0/0             | \$512,599              | \$32,037                   |
| <b>Jefferson County</b> | <b>17</b>             | <b>0/0</b>      | <b>\$4,540,977</b>     | <b>\$229,109</b>           |
| Fayette                 | 4                     | 0/0             | \$76,511               | \$5,885                    |
| Unincorporated Area     | 13                    | 0/0             | \$4,464,466            | \$223,223                  |
| <b>Lawrence County</b>  | <b>26</b>             | <b>0/0</b>      | <b>\$1,449,586</b>     | <b>\$125,607</b>           |
| Monticello              | 10                    | 0/0             | \$83,791               | \$4,190                    |
| New Hebron              | 1                     | 0/0             | \$51,233               | \$25,617                   |
| Silver Creek            | 1                     | 0/0             | \$51,233               | \$25,617                   |
| Unincorporated Area     | 14                    | 0/0             | \$1,263,329            | \$70,185                   |
| <b>Lincoln County</b>   | <b>36</b>             | <b>0/0</b>      | <b>\$7,291,517</b>     | <b>\$468,178</b>           |
| Brookhaven              | 14                    | 0/0             | \$1,395,306            | \$99,665                   |
| Unincorporated Area     | 22                    | 0/0             | \$5,896,211            | \$368,513                  |
| <b>Pike County</b>      | <b>14</b>             | <b>0/0</b>      | <b>\$1,037,130</b>     | <b>\$297,705</b>           |
| Magnolia                | 0                     | 0/0             | \$0                    | \$0                        |
| McComb                  | 5                     | 0/0             | \$30,527               | \$1,526                    |
| Osyka                   | 1                     | 0/0             | \$256,711              | \$256,711                  |
| Summit                  | 1                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area     | 7                     | 0/0             | \$749,892              | \$39,468                   |
| <b>Walthall County</b>  | <b>6</b>              | <b>0/0</b>      | <b>\$1,307,456</b>     | <b>\$68,773</b>            |
| Tylertown               | 1                     | 0/0             | \$15,264               | \$763                      |
| Unincorporated Area     | 5                     | 0/0             | \$1,292,192            | \$68,010                   |
| <b>Wilkinson County</b> | <b>10</b>             | <b>0/0</b>      | <b>\$6,936,871</b>     | <b>\$349,495</b>           |
| Centreville             | 0                     | 0/0             | \$0                    | \$0                        |
| Crosby                  | 0                     | 0/0             | \$0                    | \$0                        |
| Woodville               | 2                     | 0/0             | \$98,492               | \$7,576                    |
| Unincorporated Area     | 8                     | 0/0             | \$6,838,379            | \$341,919                  |

<sup>7</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| Location                              | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|---------------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| <b>MEMA DISTRICT 7 REGIONAL TOTAL</b> | <b>177</b>            | <b>0/0</b>      | <b>\$30,824,593</b>    | <b>\$2,057,997</b>         |

Source: National Climatic Data Center

### 5.5.4 Historical Summary of Insured Flood Losses

According to FEMA flood insurance policy records as of March 31, 2017, there have been 2,085 flood losses reported in the MEMA District 7 Region through the National Flood Insurance Program (NFIP) since 1978, totaling over \$29.4 million in claims payments. A summary of these figures for each MEMA District 7 county is provided in **Table 5.8**. It should be emphasized that these numbers include only those losses to structures that were insured through the NFIP policies, and for losses in which claims were sought and received. It is likely that many additional instances of flood loss in the MEMA District 7 Region were either uninsured, denied claims payment, or not reported.

**TABLE 5.8: SUMMARY OF INSURED FLOOD LOSSES IN MEMA DISTRICT 7 REGION**

| Location                | Number of Policies | Flood Losses | Claims Payments       |
|-------------------------|--------------------|--------------|-----------------------|
| <b>Adams County</b>     | <b>63</b>          | <b>120</b>   | <b>\$1,748,767.84</b> |
| Natchez                 | 33                 | 23           | \$381,250.37          |
| Unincorporated Area     | 30                 | 97           | \$1,367,517.47        |
| <b>Amite County</b>     | <b>18</b>          | <b>2</b>     | <b>\$3,416.26</b>     |
| Gloster                 | 0                  | 0            | \$0.00                |
| Liberty                 | 0                  | 2            | \$3,416.26            |
| Unincorporated Area     | 18                 | 0            | \$0.00                |
| <b>Franklin County</b>  | <b>10</b>          | <b>1</b>     | <b>\$6,854.25</b>     |
| Bude*                   | --                 | --           | --                    |
| Meadville*              | --                 | --           | --                    |
| Roxie                   | 1                  | 0            | \$0.00                |
| Unincorporated Area     | 9                  | 1            | \$6,854.25            |
| <b>Jefferson County</b> | <b>6</b>           | <b>84</b>    | <b>\$917,583.88</b>   |
| Fayette                 | 0                  | 0            | \$0.00                |
| Unincorporated Area     | 6                  | 84           | \$917,583.88          |
| <b>Lawrence County</b>  | <b>66</b>          | <b>26</b>    | <b>\$464,980.25</b>   |
| Monticello              | 17                 | 10           | \$136,890.98          |
| New Hebron              | 0                  | 1            | \$250.00              |
| Silver Creek            | 0                  | 0            | \$0.00                |
| Unincorporated Area     | 49                 | 15           | \$327,839.27          |
| <b>Lincoln County</b>   | <b>67</b>          | <b>12</b>    | <b>\$50,445.46</b>    |
| Brookhaven              | 67                 | 12           | \$50,445.46           |
| Unincorporated Area*    | --                 | --           | --                    |
| <b>Pike County</b>      | <b>126</b>         | <b>103</b>   | <b>\$3,537,834.58</b> |
| Magnolia                | 2                  | 7            | \$124,711.85          |
| McComb                  | 45                 | 29           | \$391,369.90          |
| Osyka                   | 1                  | 0            | \$0.00                |

| Location                              | Number of Policies | Flood Losses | Claims Payments        |
|---------------------------------------|--------------------|--------------|------------------------|
| Summit*                               | --                 | --           | --                     |
| Unincorporated Area                   | 78                 | 67           | \$3,021,752.83         |
| <b>Walthall County</b>                | <b>96</b>          | <b>149</b>   | <b>\$2,358,386.28</b>  |
| Tylertown                             | 17                 | 53           | \$803,871.61           |
| Unincorporated Area                   | 79                 | 96           | \$1,554,514.67         |
| <b>Wilkinson County</b>               | <b>89</b>          | <b>1,588</b> | <b>\$20,320,658.08</b> |
| Centreville                           | 0                  | 0            | \$0.00                 |
| Crosby                                | 0                  | 2            | \$15,459.05            |
| Woodville                             | 1                  | 0            | \$0.00                 |
| Unincorporated Area                   | 88                 | 1,586        | \$20,305,199.03        |
| <b>MEMA DISTRICT 7 REGIONAL TOTAL</b> | <b>541</b>         | <b>2,085</b> | <b>\$29,408,926.88</b> |

\*These communities do not participate in the NFIP. Therefore, no values are reported.

Source: National Flood Insurance Program

### 5.5.5 Repetitive Loss Properties

FEMA defines a repetitive loss property as any insurable building for which two or more claims of more than \$1,000 were paid by the NFIP within any rolling 10-year period, since 1978. A repetitive loss property may or may not be currently insured by the NFIP. Currently there are over 140,000 repetitive loss properties nationwide.

According to the Mississippi Emergency Management Agency, there are 180 non-mitigated repetitive loss properties located in the MEMA District 7 Region, which accounted for 474 losses and almost \$6.2 million in claims payments under the NFIP. The average claim amount for these properties is \$13,059. Of the 180 properties, 6 are multi-family, 168 are single family, and the remaining 6 are non-residential. Without mitigation, these properties will likely continue to experience flood losses. **Table 5.9** presents a summary of these figures for the MEMA District 7 Region. Detailed information on repetitive loss properties and NFIP claims and policies can be found in the county-specific annexes.

**TABLE 5.9: SUMMARY OF REPETITIVE LOSS PROPERTIES IN THE MEMA DISTRICT 7 REGION**

| Location               | Number of Properties | Number of Losses | Total Payments      |
|------------------------|----------------------|------------------|---------------------|
| <b>Adams County</b>    | <b>29</b>            | <b>72</b>        | <b>\$957,183.09</b> |
| Natchez                | 7                    | 18               | \$241,721.79        |
| Unincorporated Area    | 22                   | 54               | \$715,461.30        |
| <b>Amite County</b>    | <b>3</b>             | <b>8</b>         | <b>\$106,207.80</b> |
| Gloster                | 0                    | 0                | \$0.00              |
| Liberty                | 0                    | 0                | \$0.00              |
| Unincorporated Area    | 3                    | 8                | \$106,207.80        |
| <b>Franklin County</b> | <b>1</b>             | <b>3</b>         | <b>\$18,268.81</b>  |
| Bude*                  | --                   | --               | --                  |
| Meadville*             | --                   | --               | --                  |
| Roxie                  | 0                    | 0                | \$0.00              |
| Unincorporated Area    | 1                    | 3                | \$18,268.81         |

| Location                              | Number of Properties | Number of Losses | Total Payments        |
|---------------------------------------|----------------------|------------------|-----------------------|
| <b>Jefferson County</b>               | <b>12</b>            | <b>40</b>        | <b>\$459,064.65</b>   |
| Fayette                               | 0                    | 0                | \$0                   |
| Unincorporated Area                   | 12                   | 40               | \$459,064.65          |
| <b>Lawrence County</b>                | <b>4</b>             | <b>19</b>        | <b>\$378,751.10</b>   |
| Monticello                            | 0                    | 0                | \$0.00                |
| New Hebron                            | 0                    | 0                | \$0.00                |
| Silver Creek                          | 0                    | 0                | \$0.00                |
| Unincorporated Area                   | 4                    | 19               | \$378,751.10          |
| <b>Lincoln County</b>                 | <b>6</b>             | <b>15</b>        | <b>\$681,137.34</b>   |
| Brookhaven                            | 6                    | 15               | \$681,137.34          |
| Unincorporated Area*                  | --                   | --               | --                    |
| <b>Pike County</b>                    | <b>19</b>            | <b>61</b>        | <b>\$2,813,437.30</b> |
| Magnolia                              | 3                    | 7                | \$146,046.50          |
| McComb                                | 4                    | 16               | \$271,463.80          |
| Osyka                                 | 0                    | 0                | \$0.00                |
| Summit*                               | --                   | --               | --                    |
| Unincorporated Area                   | 12                   | 38               | \$2,395,927.00        |
| <b>Walthall County</b>                | <b>27</b>            | <b>62</b>        | <b>\$1,163,333.04</b> |
| Tylertown                             | 2                    | 4                | \$39,133.56           |
| Unincorporated Area                   | 25                   | 58               | \$1,124,199.48        |
| <b>Wilkinson County</b>               |                      |                  |                       |
| Centreville                           |                      |                  |                       |
| Crosby                                |                      |                  |                       |
| Woodville                             | 0                    | 0                | \$0.00                |
| Unincorporated Area                   |                      |                  |                       |
| <b>MEMA DISTRICT 7 REGIONAL TOTAL</b> |                      |                  |                       |

\*These communities do not participate in the NFIP. Therefore, no values are reported.

Source: National Flood Insurance Program

### 5.5.6 Probability of Future Occurrences

Flood events will remain a threat in the MEMA District 7 Region, and the probability of future occurrences will remain highly likely (100 percent annual probability). The probability of future flood events based on magnitude and according to best available data is illustrated in the figures above, which indicates those areas susceptible to the 1-percent annual chance flood (100-year floodplain).

It can be inferred from the floodplain location maps, previous occurrences, and repetitive loss properties that risk varies throughout the region. Flood is not the greatest hazard of concern but will continue to occur and cause damage. Therefore, mitigation actions may be warranted, particularly for repetitive loss properties.

## ***FIRE-RELATED HAZARDS***

### **5.6 DROUGHT**

#### **5.6.1 Background**

Drought is a normal part of virtually all climatic regions, including areas with high and low average rainfall. Drought is the consequence of a natural reduction in the amount of precipitation expected over an extended period of time, usually a season or more in length. High temperatures, high winds, and low humidity can exacerbate drought conditions. In addition, human actions and demands for water resources can hasten drought-related impacts. Droughts may also lead to more severe wildfires.

Droughts are typically classified into one of four types: 1) meteorological, 2) hydrologic, 3) agricultural, or 4) socioeconomic. **Table 5.10** presents definitions for these types of drought.

**TABLE 5.10 DROUGHT CLASSIFICATION DEFINITIONS**

|                               |   |
|-------------------------------|---|
| <b>Meteorological Drought</b> | The degree of dryness or departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales. |
| <b>Hydrologic Drought</b>     | The effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.  |
| <b>Agricultural Drought</b>   | Soil moisture deficiencies relative to water demands of plant life, usually crops.  |
| <b>Socioeconomic Drought</b>  | The effect of demands for water exceeding the supply as a result of a weather-related supply shortfall.   |

*Source: Multi-Hazard Identification and Risk Assessment: A Cornerstone of the National Mitigation Strategy, FEMA*

Droughts are slow-onset hazards, but over time can have very damaging affects to crops, municipal water supplies, recreational uses, and wildlife. If drought conditions extend over a number of years, the direct and indirect economic impact can be significant.

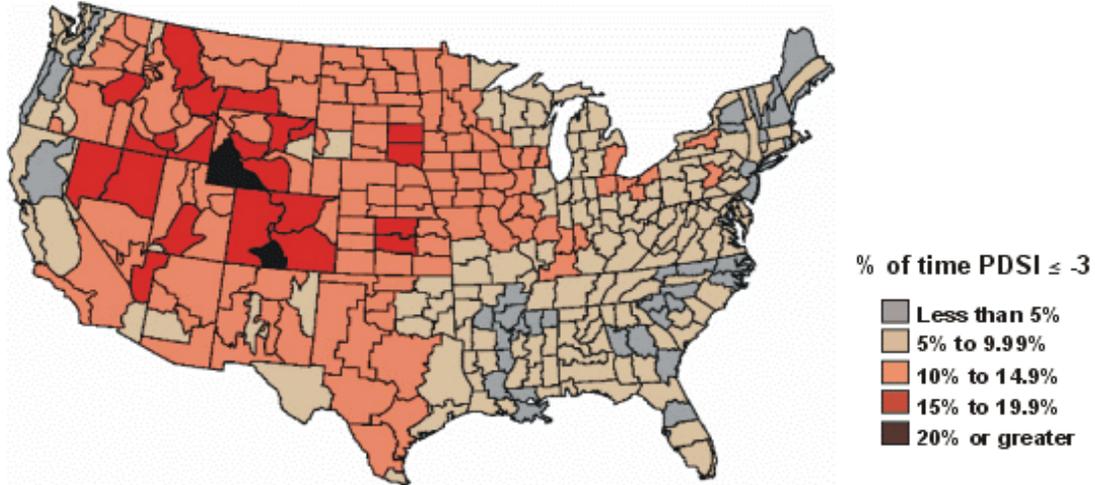
The Palmer Drought Severity Index (PDSI) is based on observed drought conditions and range from -0.5 (incipient dry spell) to -4.0 (extreme drought). Evident in **Figure 5.6**, the Palmer Drought Severity Index Summary Map for the United States, drought affects most areas of the United States, but is less severe in the Eastern and Southeastern United States.

FIGURE 5.6: PALMER DROUGHT SEVERITY INDEX SUMMARY MAP FOR THE UNITED STATES

# Palmer Drought Severity Index

1895–1995

Percent of time in severe and extreme drought



Source: National Drought Mitigation Center

The U.S. Drought Monitor also records information on historical drought occurrence. The U.S. Drought Monitor categorizes drought on a D0-D4 scale as **Table 5.11** presents definitions for these classifications.

**TABLE 5.11 U.S. DROUGHT MONITOR**

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

Source: United States Drought Monitor, <http://droughtmonitor.unl.edu/classify.htm>

## 5.6.2 Location and Spatial Extent

Drought typically covers a large area and cannot be confined to any geographic or political boundaries. Furthermore, it is assumed that the MEMA District 7 Region would be uniformly exposed to drought, making the spatial extent potentially widespread. It is also notable that drought conditions typically do not cause significant damage directly to the built environment, but may exacerbate wildfire conditions.

## 5.6.3 Historical Occurrences

Data from the U.S. Drought Monitor and National Climatic Data Center (NCDC) were used to ascertain historical drought events in the MEMA District 7 Region. The U.S. Drought Monitor reports data at the

county level on a weekly basis throughout the county. It classifies drought conditions on a scale of D0 to D4, as described in **Table 5.11** above.

According to the U.S. Drought Monitor, on average, the counties in the MEMA District 7 Region had drought levels of Severe or worse in at least 7 of the last 17 years (January 2000-December 2016) (**Table 5.12**). The most severe drought classification reported for each year, according to U.S. Drought Monitor classifications, is listed in the county-specific annexes. It should be noted that the U.S. Drought Monitor also estimates what percentage of the county is in each classification of drought severity. For example, the most severe classification reported may be exceptional, but a majority of the county may actually be in a less severe condition.

**TABLE 5.12: SUMMARY OF DROUGHT OCCURRENCES IN THE MEMA DISTRICT 7 REGION**

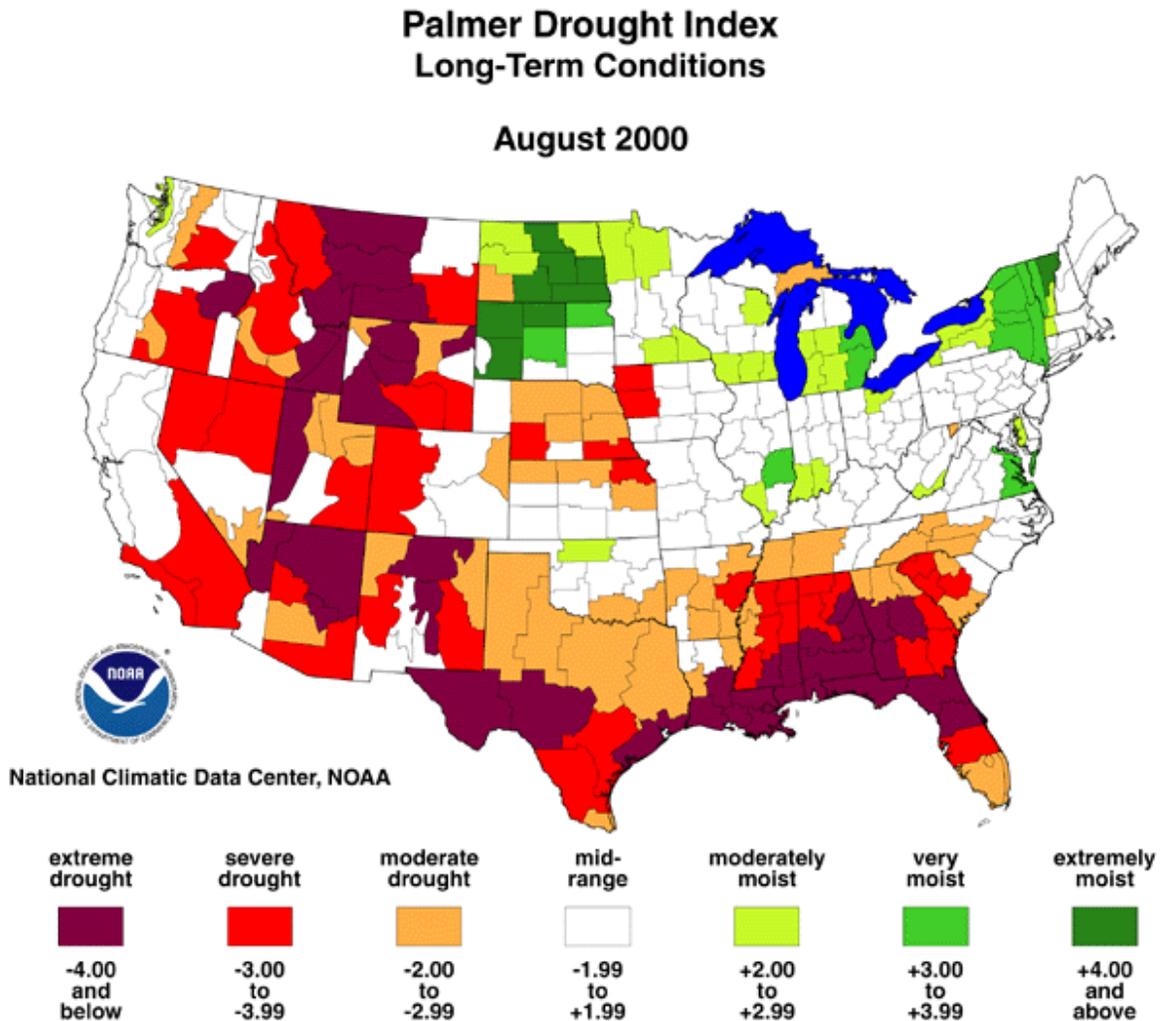
| Location         | Number Years with at least Severe Drought Occurrences | Number of years with Exceptional Drought Occurrences |
|------------------|---|--|
| Adams County     | 8   | 1  |
| Amite County     | 7   | 1  |
| Franklin County  | 8   | 1  |
| Jefferson County | 8   | 1  |
| Lawrence County  | 7   | 1  |
| Lincoln County   | 7   | 1  |
| Pike County      | 7   | 1  |
| Walthall County  | 7   | 1  |
| Wilkinson County | 7   | 2  |

Source: United States Drought Monitor

Some additional anecdotal information was provided from the National Climatic Data Center on droughts in the MEMA District 7 Region.

**Summer 2000 Drought** – As shown in **Figure 5.7** below, drought conditions were pronounced throughout much of the south and western areas of the nation.

FIGURE 5.7: PALMER DROUGHT INDEX FOR AUGUST 2000



**Summer to Fall 2006** – During a four and a half month period, from June to the middle of October, abnormally dry conditions prevailed across most of the Jackson, MS County Warning Area (CWA). Widespread drought conditions were reported across the area during this time period. The U.S. Drought Monitor classified the drought as extreme (D3) over Southeast Mississippi. Drought conditions in the region peaked in intensity during early August over this area.

**Summer 2007** – During the month of June, the drought peaked across the region. It held firm across the same areas since May with no expansion. What did expand was the severity as by the end of June, most of Central and East-Central Mississippi was now in extreme drought (D3) with some locations across Northeast Mississippi now experiencing exceptional drought (D4). The month of June did not offer much rain as most of the forecast area saw less than 40% of the normal rainfall.

**Summer to Fall 2010** – Very dry conditions continued across central Mississippi during most of October. There were some rains that came late in the month which provided some temporary relief. Rainfall amounts ranged from a half to two inches with locally higher amounts. Most locations were 1 to 3

inches below normal for the month. The dry stretch resulted in severe (D2) drought conditions to expand during the month with even the portions of extreme (D3) drought conditions expanding as well. Crops were put under stress under the warm and dry conditions.

**Fall 2015** – The very dry conditions continued across Central Mississippi in October. The extended dry stretch resulted in an area of Severe (D2) drought developing across the area by October 6th. The drought intensified and Extreme (D3) drought conditions developed by October 13th. Approximately 25 to 50 percent of normal rainfall occurred across this area from August into mid-October. Crops were put under more stress from the dry and hot conditions.

**Fall to Winter 2016** – Dry conditions continued into November, which created continued stress on crops. The drought continued to get worse across the state through the month before some relief came in the form of showers and thunderstorms near the end of November.

### 5.6.4 Probability of Future Occurrences

According to the Palmer Drought Severity Index (**Figure 5.6**), MEMA District 7 has a low to moderate risk for drought hazard (5%-10% of the time in drought). However, local areas may experience much more severe and/or frequent drought events than what is represented on the Palmer Drought Severity Index map.

Based on historical occurrence information, it is assumed that all of the MEMA District 7 Region has a probability level of possible (between 1 and 10 percent annual probability) for future drought events. However, the extent (or magnitude) of drought and the amount of geographic area covered by drought, varies with each year. Historic information indicates that there is a much lower probability for extreme, long-lasting drought conditions.

## 5.7 LIGHTNING

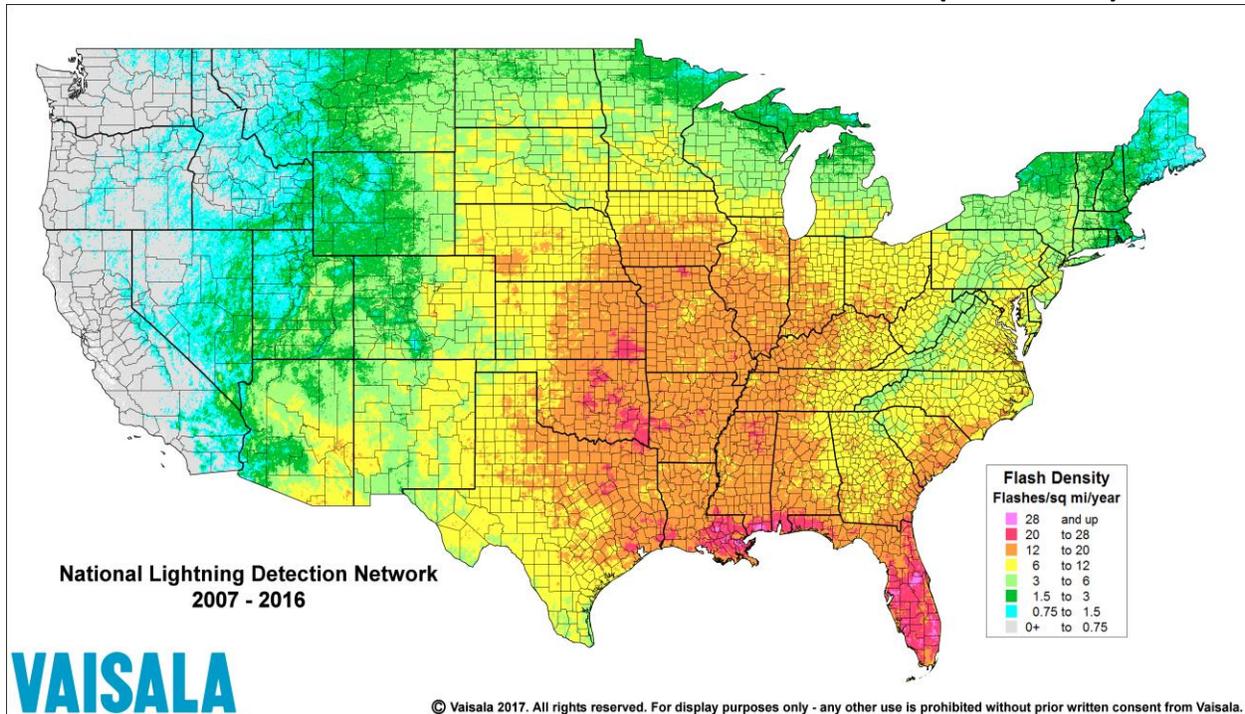
### 5.7.1 Background

Lightning is a discharge of electrical energy resulting from the buildup of positive and negative charges within a thunderstorm, creating a “bolt” when the buildup of charges becomes strong enough. This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Lightning rapidly heats the sky as it flashes but the surrounding air cools following the bolt. This rapid heating and cooling of the surrounding air causes the thunder which often accompanies lightning strikes. While most often affiliated with severe thunderstorms, lightning may also strike outside of heavy rain and might occur as far as 10 miles away from any rainfall.

Lightning strikes occur in very small, localized areas. For example, they may strike a building, electrical transformer, or even a person. According to FEMA, lightning injures an average of 300 people and kills 80 people each year in the United States. Direct lightning strikes also have the ability to cause significant damage to buildings, critical facilities, and infrastructure largely by igniting a fire. Lightning is also responsible for igniting wildfires that can result in widespread damages to property.

Figure 5.8 shows the Vaisala's U.S. National Lightning Detection Network which indicates the average flash density per square mile per year.

**FIGURE 5.8: LIGHTNING FLASH DENSITY IN THE UNITED STATES (2007-2016)**



Source: Vaisala United States National Lightning Detection Network

## 5.7.2 Location and Spatial Extent

Lightning occurs randomly, therefore it is impossible to predict where and with what frequency it will strike. It is assumed that all of the MEMA District 7 Region is uniformly exposed to lightning.

## 5.7.3 Historical Occurrences

According to the National Climatic Data Center, there have been a total of 26 recorded lightning events in the MEMA District 7 Region since 1997.<sup>8</sup> These events resulted in nearly \$800,000 (2017 dollars) in damages, as listed in summary **Table 5.13**.<sup>9</sup> Furthermore, lightning has caused two fatalities and three reported injuries in the MEMA District 7 Region. Detailed information on historical lightning events can be found in the county-specific annexes.

<sup>8</sup> These lightning events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is certain that additional lightning events have occurred in the MEMA District 7 Region. As additional local data becomes available, this hazard profile will be amended.

<sup>9</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**SECTION 5: HAZARD PROFILES**

It is certain that more than 26 lightning strikes have impacted the region. Many of the reported events are those that caused damage, and it should be expected that damages are likely much higher for this hazard than what is reported.

**TABLE 5.13: SUMMARY OF LIGHTNING OCCURRENCES IN THE MEMA DISTRICT 7 REGION**

| Location                              | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|---------------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| <b>Adams County</b>                   | <b>2</b>              | <b>0/0</b>      | <b>\$180,896</b>       | <b>\$18,282</b>            |
| Natchez                               | 1                     | 0/0             | \$176,410              | \$17,641                   |
| Unincorporated Area                   | 1                     | 0/0             | \$4,486                | \$641                      |
| <b>Amite County</b>                   | <b>3</b>              | <b>0/0</b>      | <b>\$17,687</b>        | <b>\$1,202</b>             |
| Gloster                               | 1                     | 0/0             | \$7,441                | \$413                      |
| Liberty                               | 2                     | 0/0             | \$10,246               | \$788                      |
| Unincorporated Area                   | 0                     | 0/0             | \$0                    | \$0                        |
| <b>Franklin County</b>                | <b>3</b>              | <b>0/0</b>      | <b>\$94,744</b>        | <b>\$16,186</b>            |
| Bude                                  | 1                     | 0/0             | \$34,190               | \$2,279                    |
| Meadville                             | 1                     | 0/0             | \$8,215                | \$822                      |
| Roxie                                 | 0                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area                   | 1                     | 0/0             | \$52,339               | \$13,085                   |
| <b>Jefferson County</b>               | <b>1</b>              | <b>0/0</b>      | <b>\$10,247</b>        | <b>\$5,124</b>             |
| Fayette                               | 1                     | 0/0             | \$10,247               | \$5,124                    |
| Unincorporated Area                   | 0                     | 0/0             | \$0                    | \$0                        |
| <b>Lawrence County</b>                | <b>3</b>              | <b>0/0</b>      | <b>\$185,010</b>       | <b>\$25,249</b>            |
| Monticello                            | 1                     | 0/0             | \$20,606               | \$10,303                   |
| New Hebron                            | 0                     | 0/0             | \$0                    | \$0                        |
| Silver Creek                          | 0                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area                   | 2                     | 0/0             | \$164,404              | \$14,946                   |
| <b>Lincoln County</b>                 | <b>8</b>              | <b>0/1</b>      | <b>\$295,301</b>       | <b>\$21,898</b>            |
| Brookhaven                            | 1                     | 0/0             | \$152,637              | \$7,632                    |
| Unincorporated Area                   | 7                     | 0/1             | \$142,664              | \$14,266                   |
| <b>Pike County</b>                    | <b>5</b>              | <b>1/0</b>      | <b>\$9,839</b>         | <b>\$492</b>               |
| Magnolia                              | 0                     | 0/0             | \$0                    | \$0                        |
| McComb                                | 3                     | 1/0             | \$0                    | \$0                        |
| Osyka                                 | 0                     | 0/0             | \$0                    | \$0                        |
| Summit                                | 2                     | 0/0             | \$9,839                | \$492                      |
| Unincorporated Area                   | 0                     | 0/0             | \$0                    | \$0                        |
| <b>Walthall County</b>                | <b>0</b>              | <b>0/0</b>      | <b>\$0</b>             | <b>\$0</b>                 |
| Tylertown                             | 0                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area                   | 0                     | 0/0             | \$0                    | \$0                        |
| <b>Wilkinson County</b>               | <b>1</b>              | <b>1/2</b>      | <b>\$0</b>             | <b>\$0</b>                 |
| Centreville                           | 1                     | 1/2             | \$0                    | \$0                        |
| Crosby                                | 0                     | 0/0             | \$0                    | \$0                        |
| Woodville                             | 0                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area                   | 0                     | 0/0             | \$0                    | \$0                        |
| <b>MEMA DISTRICT 7 REGIONAL TOTAL</b> | <b>26</b>             | <b>2/3</b>      | <b>\$793,724</b>       | <b>\$88,432</b>            |

Source: National Climatic Data Center

## 5.7.4 Probability of Future Occurrences

Although there was not a high number of historical lightning events reported throughout the MEMA District 7 Region via NCDC data, it is a regular occurrence accompanied by thunderstorms. In fact, lightning events will assuredly happen on an annual basis, though all events will not cause damage. According to Vaisala's U.S. National Lightning Detection Network (NLDN), the MEMA District 7 Region is located in an area of the country that experienced an average of 12 to 28 lightning flashes per square mile per year between 2007 and 2016. Therefore, the probability of future events is highly likely (100 percent annual probability). It can be expected that future lightning events will continue to threaten life and cause minor property damages throughout the region.

## 5.8 WILDFIRE

### 5.8.1 Background

A wildfire is any outdoor fire (i.e. grassland, forest, brush land) that is not under control, supervised, or prescribed.<sup>10</sup> Wildfires are part of the natural management of forest ecosystems, but may also be caused by human factors.

Nationally, over 80 percent of forest fires are started by negligent human behavior such as smoking in wooded areas or improperly extinguishing campfires. The second most common cause for wildfire is lightning. In Mississippi, a majority of fires are caused by debris burning.

There are three classes of wildland fires: surface fire, ground fire, and crown fire. A surface fire is the most common of these three classes and burns along the floor of a forest, moving slowly and killing or damaging trees. A ground fire (muck fire) is usually started by lightning or human carelessness and burns on or below the forest floor. Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees. Wildfires are usually signaled by dense smoke that fills the area for miles around.

Wildfire probability depends on local weather conditions, outdoor activities such as camping, debris burning, construction, and the degree of public cooperation with fire prevention measures. Drought conditions and other natural hazards (such as tornadoes, hurricanes, etc.) increase the probability of wildfires by producing fuel in both urban and rural settings.

Many individual homes and cabins, subdivisions, resorts, recreational areas, organizational camps, businesses, and industries are located within high wildfire hazard areas. Furthermore, the increasing demand for outdoor recreation places more people in wildlands during holidays, weekends, and vacation periods. Unfortunately, wildland residents and visitors are rarely educated or prepared for wildfire events that can sweep through the brush and timber and destroy property within minutes.

Wildfires can result in severe economic losses as well. Businesses that depend on timber, such as paper mills and lumber companies, experience losses that are often passed along to consumers through higher prices and sometimes jobs are lost. The high cost of responding to and recovering from wildfires can

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<sup>10</sup> Prescription burning, or "controlled burn," undertaken by land management agencies is the process of igniting fires under selected conditions, in accordance with strict parameters.

deplete state resources and increase insurance rates. The economic impact of wildfires can also be felt in the tourism industry if roads and tourist attractions are closed due to health and safety concerns.

State and local governments can impose fire safety regulations on home sites and developments to help curb wildfire. Land treatment measures such as fire access roads, water storage, helipads, safety zones, buffers, firebreaks, fuel breaks, and fuel management can be designed as part of an overall fire defense system to aid in fire control. Fuel management, prescribed burning, and cooperative land management planning can also be encouraged to reduce fire hazards.

## **5.8.2 Location and Spatial Extent**

The entire region is at risk to a wildfire occurrence. However, several factors such as drought conditions or high levels of fuel on the forest floor, may make a wildfire more likely. Furthermore, areas in the wildland-urban interface are particularly susceptible to fire hazard as populations abut formerly undeveloped areas. The Wildfire Ignition Density data shown in the figure below give an indication of historic location.

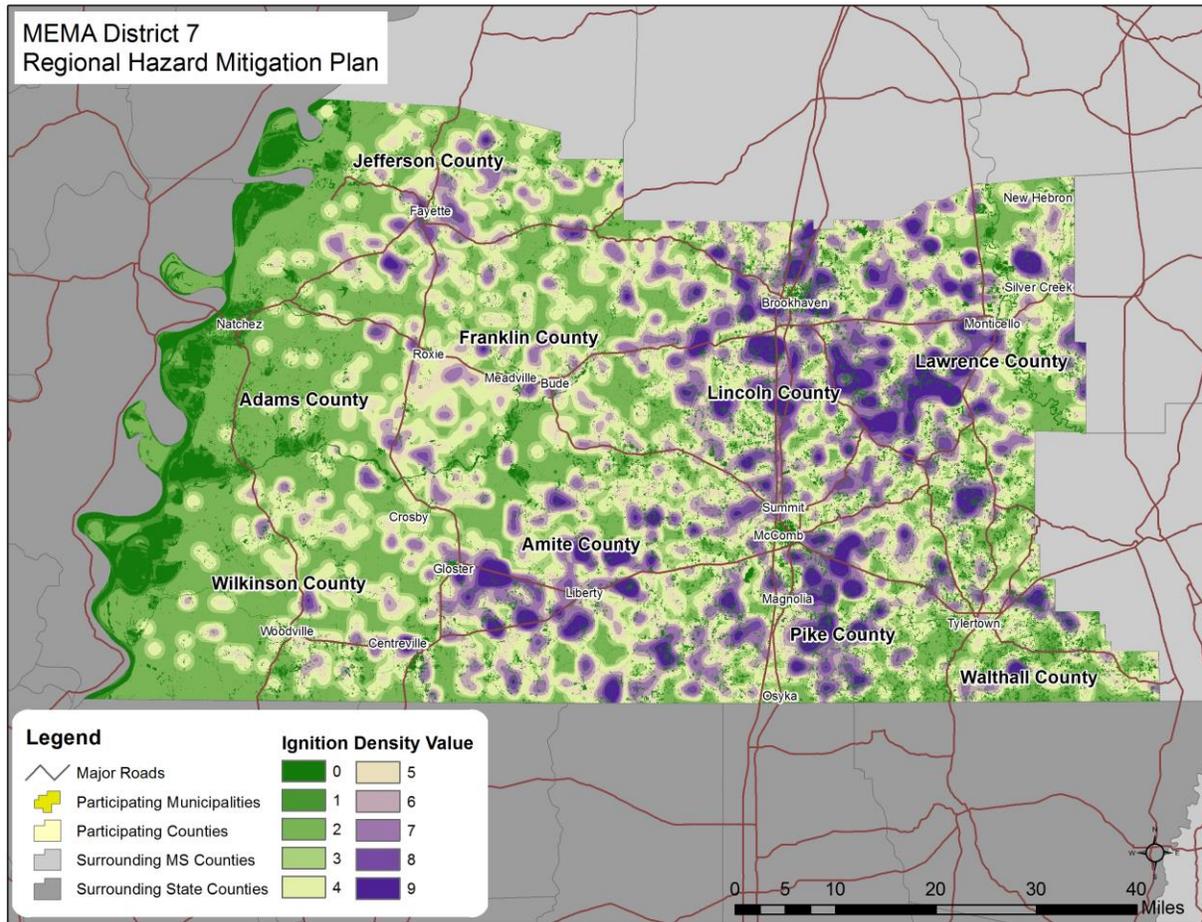
## **5.8.3 Historical Occurrences**

**Figure 5.9** shows the Wildfire Ignition Density in the MEMA District 7 Region based on data from the Southern Wildfire Risk Assessment. This data is based on historical fire ignitions and the likelihood of a wildfire igniting in an area. Occurrence is derived by modeling historic wildfire ignition locations to create an average ignition rate map. This is measured in the number of fires per year per 1,000 acres.<sup>11</sup>

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<sup>11</sup> Southern Wildfire Risk Assessment, 2014.

**FIGURE 5.9: WILDFIRE IGNITION DENSITY IN THE MEMA DISTRICT 7 REGION**



Source: Southern Wildfire Risk Assessment

Based on data from the Mississippi Forestry Commission from 2007 to 2016, the MEMA District 7 Region experienced an average of 229.5 wildfires annually which burned a combined 2,928.9 acres per year. The data indicate that most of these fires were small to moderate in size, averaging about 12.8 acres per fire. **Table 5.14** provides a summary table for wildfire occurrences in the MEMA District 7 Region. The number of reported wildfire occurrences in the participating counties between the years 2007 and 2016 is listed in the county-specific annexes.

**TABLE 5.14: SUMMARY TABLE OF ANNUAL WILDFIRE OCCURRENCES (2007-2016)\***

|   | Adams County | Amite County | Franklin County | Jefferson County | Lawrence County |
|---|--------------|--------------|-----------------|------------------|-----------------|
| Average Number of Fires per year        | 2.2          | 52.3         | 14.5            | 13.2             | 26.9            |
| Average Number of Acres Burned per year | 51.2         | 668.2        | 116.1           | 164.4            | 310.8           |
| Average Number of Acres Burned per fire | 23.3         | 12.8         | 8.0             | 12.5             | 11.6            |

\*These values reflect averages over a 10-year period.

Source: Mississippi Forestry Commission

**TABLE 5.15 (CONT.): SUMMARY TABLE OF ANNUAL WILDFIRE OCCURRENCES (2007-2016)\***

|   | Lincoln County | Pike County | Walthall County | Wilkinson County | MEMA D7 Region Total |
|---|----------------|-------------|-----------------|------------------|----------------------|
| Average Number of Fires per year        | 50.3           | 26.6        | 30.4            | 13.1             | 229.5                |
| Average Number of Acres Burned per year | 719.6          | 262.6       | 499.3           | 136.7            | 2,928.9              |
| Average Number of Acres Burned per fire | 14.3           | 9.9         | 16.4            | 10.4             | 12.8                 |

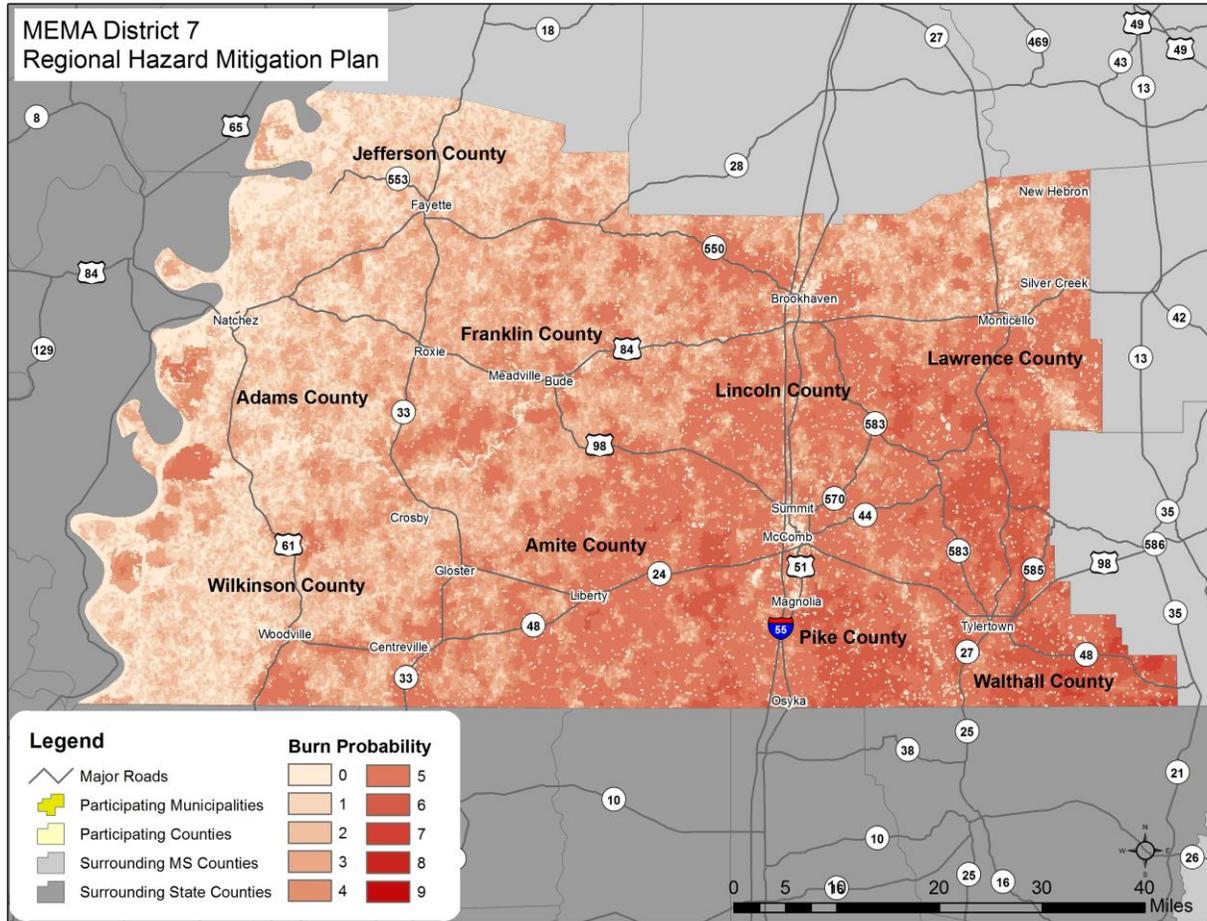
\*These values reflect averages over a 10-year period.

Source: Mississippi Forestry Commission

### 5.8.4 Probability of Future Occurrences

Wildfire events will be an ongoing occurrence in the MEMA District 7 Region. **Figure 5.10** shows that there is some probability a wildfire will occur throughout the region. However, the likelihood of wildfires increases during drought cycles and abnormally dry conditions. Fires are likely to stay small in size but could increase due to local climate and ground conditions. Dry, windy conditions with an accumulation of forest floor fuel (potentially due to ice storms or lack of fire) could create conditions for a large fire that spreads quickly. It should also be noted that some areas do vary somewhat in risk. For example, highly developed areas are less susceptible unless they are located near the wildland-urban boundary. The risk will also vary due to assets. Areas in the wildland-urban interface will have much more property at risk, resulting in increased vulnerability and need to mitigate compared to rural, mainly forested areas. The probability assigned to the MEMA District 7 Region for future wildfire events is highly likely (100 percent annual probability).

**FIGURE 5.10: BURN PROBABILITY IN THE MEMA DISTRICT 7 REGION**



Source: Southern Wildfire Risk Assessment

## GEOLOGIC HAZARDS

### 5.9 EARTHQUAKE

#### 5.9.1 Background

An earthquake is movement or trembling of the ground produced by sudden displacement of rock in the Earth's crust. Earthquakes result from crustal strain, volcanism, landslides, or the collapse of caverns. Earthquakes can affect hundreds of thousands of square miles, cause damage to property measured in the tens of billions of dollars, result in loss of life and injury to hundreds of thousands of persons, and disrupt the social and economic functioning of the affected area.

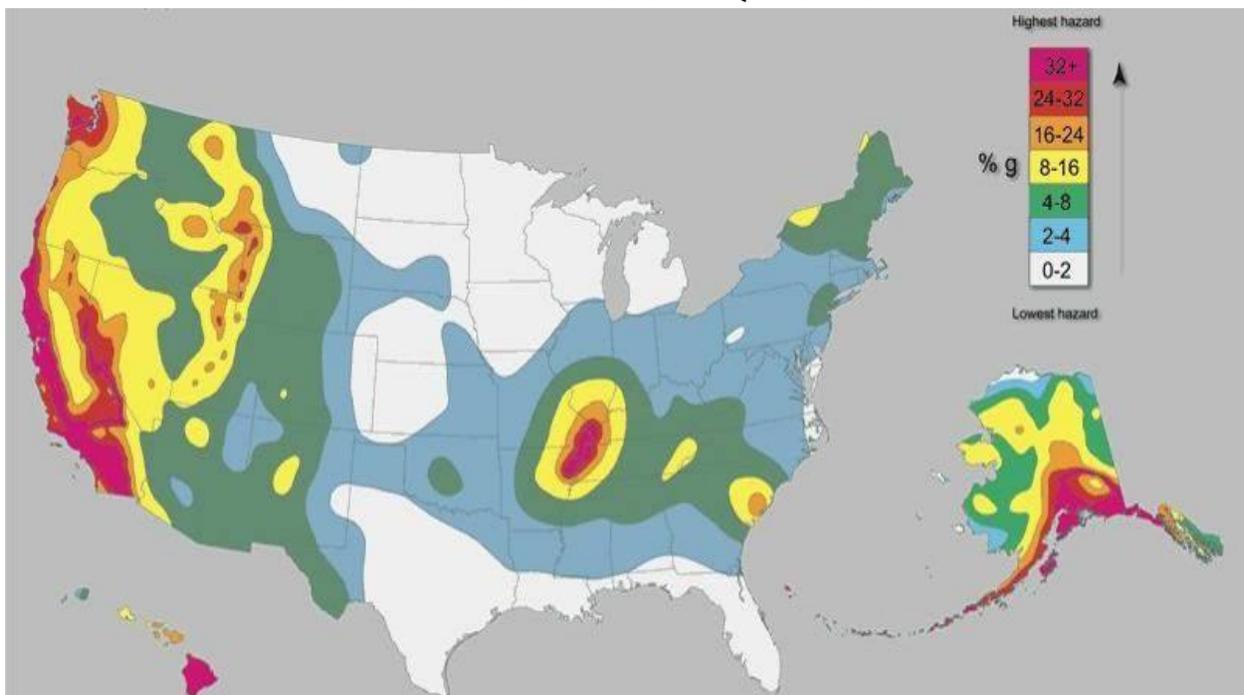
Most property damage and earthquake-related deaths are caused by the failure and collapse of structures due to ground shaking. The level of damage depends upon the amplitude and duration of the shaking, which are directly related to the earthquake size, distance from the fault, site, and regional geology. Other damaging earthquake effects include landslides, the down-slope movement of soil and rock (mountain regions and along hillsides), and liquefaction, in which ground soil loses the ability to

resist shear and flows much like quick sand. In the case of liquefaction, anything relying on the substrata for support can shift, tilt, rupture, or collapse.

Most earthquakes are caused by the release of stresses accumulated as a result of the rupture of rocks along opposing fault planes in the Earth's outer crust. These fault planes are typically found along borders of the Earth's 10 tectonic plates. The areas of greatest tectonic instability occur at the perimeters of the slowly moving plates, as these locations are subjected to the greatest strains from plates traveling in opposite directions and at different speeds. Deformation along plate boundaries causes strain in the rock and the consequent buildup of stored energy. When the built-up stress exceeds the rocks' strength a rupture occurs. The rock on both sides of the fracture is snapped, releasing the stored energy and producing seismic waves, generating an earthquake.

The greatest earthquake threat in the United States is along tectonic plate boundaries and seismic fault lines located in the central and western states; however, the Eastern United State does face moderate risk to less frequent, less intense earthquake events. **Figure 5.11** shows relative seismic risk for the United States.

**FIGURE 5.11: UNITED STATES EARTHQUAKE HAZARD MAP**



Source: United States Geological Survey

Earthquakes are measured in terms of their magnitude and intensity. Magnitude is measured using the Richter Scale, an open-ended logarithmic scale that describes the energy release of an earthquake through a measure of shock wave amplitude (**Table 5.15**). Each unit increase in magnitude on the Richter Scale corresponds to a 10-fold increase in wave amplitude, or a 32-fold increase in energy. Intensity is most commonly measured using the Modified Mercalli Intensity (MMI) Scale based on direct and indirect measurements of seismic effects. The scale levels are typically described using roman numerals, ranging from “I” corresponding to imperceptible (instrumental) events to “XII” for

catastrophic (total destruction). A detailed description of the Modified Mercalli Intensity Scale of earthquake intensity and its correspondence to the Richter Scale is given in **Table 5.16**.

**TABLE 5.15: RICHTER SCALE**

| RICHTER MAGNITUDES | EARTHQUAKE EFFECTS   |
|--------------------|--|
| < 3.5              | Generally not felt, but recorded.  |
| 3.5 - 5.4          | Often felt, but rarely causes damage.  |
| 5.4 - 6.0          | At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions. |
| 6.1 - 6.9          | Can be destructive in areas up to about 100 kilometers across where people live.   |
| 7.0 - 7.9          | Major earthquake. Can cause serious damage over larger areas.  |
| 8 or >             | Great earthquake. Can cause serious damage in areas several hundred kilometers across.                                       |

Source: Federal Emergency Management Agency

**TABLE 5.16: MODIFIED MERCALLI INTENSITY SCALE FOR EARTHQUAKES**

| SCALE | INTENSITY       | DESCRIPTION OF EFFECTS   | CORRESPONDING RICHTER SCALE MAGNITUDE |
|-------|-----------------|--|---------------------------------------|
| I     | INSTRUMENTAL    | Detected only on seismographs.   |                                       |
| II    | FEEBLE          | Some people feel it.   | < 4.2                                 |
| III   | SLIGHT          | Felt by people resting; like a truck rumbling by.  |                                       |
| IV    | MODERATE        | Felt by people walking.  |                                       |
| V     | SLIGHTLY STRONG | Sleepers awake; church bells ring.   | < 4.8                                 |
| VI    | STRONG          | Trees sway; suspended objects swing, objects fall off shelves.   | < 5.4                                 |
| VII   | VERY STRONG     | Mild alarm; walls crack; plaster falls.  | < 6.1                                 |
| VIII  | DESTRUCTIVE     | Moving cars uncontrollable; masonry fractures, poorly constructed buildings damaged.                                   |                                       |
| IX    | RUINOUS         | Some houses collapse; ground cracks; pipes break open.   | < 6.9                                 |
| X     | DISASTROUS      | Ground cracks profusely; many buildings destroyed; liquefaction and landslides widespread.                             | < 7.3                                 |
| XI    | VERY DISASTROUS | Most buildings and bridges collapse; roads, railways, pipes and cables destroyed; general triggering of other hazards. | < 8.1                                 |
| XII   | CATASTROPHIC    | Total destruction; trees fall; ground rises and falls in waves.  | > 8.1                                 |

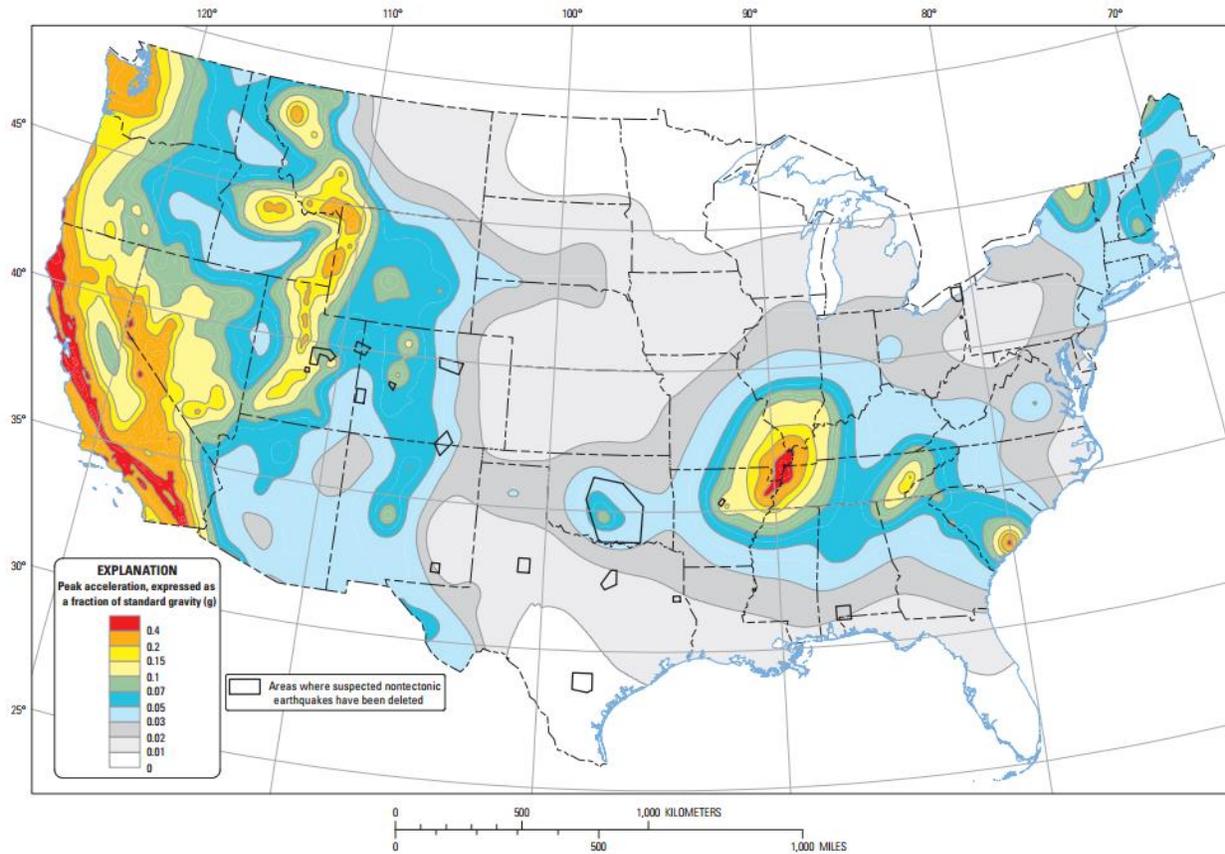
Source: Federal Emergency Management Agency

### 5.9.2 Location and Spatial Extent

**Figure 5.12** shows the intensity level associated with the MEMA District 7 Region, based on the national USGS map of peak acceleration with 10 percent probability of exceedance in 50 years. It is the

probability that ground motion will reach a certain level during an earthquake. The data show peak horizontal ground acceleration (the fastest measured change in speed, for a particle at ground level that is moving horizontally due to an earthquake) with a 10 percent probability of exceedance in 50 years. The map was compiled by the U.S. Geological Survey (USGS) Geologic Hazards Team, which conducts global investigations of earthquake, geomagnetic, and landslide hazards. According to this map, all of the MEMA District 7 Region lies within an approximate zone of level “0.01” to “0.03” ground acceleration. This indicates that the region as a whole exists within an area of low seismic risk.

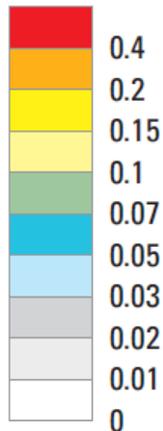
**FIGURE 5.12: PEAK ACCELERATION WITH 10 PERCENT PROBABILITY OF EXCEEDANCE IN 50 YEARS**



**Ten-percent probability of exceedance in 50 years map of peak ground acceleration**

**EXPLANATION**

Peak acceleration, expressed as a fraction of standard gravity (g)



Areas where suspected nontectonic earthquakes have been deleted

Source: United States Geological Survey, 2014

The primary source of potential damage to the MEMA District 7 Region from an earthquake is the New Madrid Seismic Zone (NMSZ). Historically, a series of earthquakes in 1811 and 1812 demonstrated that this fault zone can produce high magnitude seismic events, sometimes on the scale of a 7.5-8.0 on the Richter scale. The biggest challenge with earthquakes that occur in this area of seismic activity is predicting the recurrence of earthquakes emanating from this zone. Although the magnitude of earthquakes from the NMSZ can be large, they occur very irregularly and fairly infrequently. This makes it extremely difficult to project when they will occur.

It should also be noted that the State of Mississippi Hazard Mitigation Plan identifies certain areas of concern for liquefaction and lists the counties and corresponding zones within those counties that have the highest liquefaction potential. There are no MEMA District 7 counties identified in zones of high risk.

### 5.9.3 Historical Occurrences

At least four earthquakes are known to have occurred within the MEMA District 7 Region since 1811. The strongest of these measured a VI on the Modified Mercalli Intensity (MMI) scale. **Table 5.17** provides a summary of earthquake events reported by the National Centers for Environmental Information (formerly National Geophysical Data Center) between 1638 and 1985, and **Figure 5.13** presents a map showing earthquakes whose epicenters have occurred near the region between 1985 and 2015 (no earthquakes occurred within the region's boundaries during this period). A detailed occurrence of each event including the date, distance from the epicenter, magnitude, and Modified Mercalli Intensity (if known) can be found in the county-specific annexes.<sup>12</sup>

**TABLE 5.17: SUMMARY OF SEISMIC ACTIVITY IN THE MEMA DISTRICT 7 REGION**

| Location                | Number of Occurrences | Greatest MMI Reported | Greatest Richter Scale Reported |
|-------------------------|-----------------------|-----------------------|---------------------------------|
| <b>Adams County</b>     | <b>2</b>              | <b>VI</b>             | <b>7.2</b>                      |
| Natchez                 | 2                     | VI                    | 7.2                             |
| Unincorporated Area     | 0                     | --                    | --                              |
| <b>Amite County</b>     | <b>0</b>              | <b>--</b>             | <b>--</b>                       |
| Gloster                 | 0                     | --                    | --                              |
| Liberty                 | 0                     | --                    | --                              |
| Unincorporated Area     | 0                     | --                    | --                              |
| <b>Franklin County</b>  | <b>0</b>              | <b>--</b>             | <b>--</b>                       |
| Bude                    | 0                     | --                    | --                              |
| Meadville               | 0                     | --                    | --                              |
| Roxie                   | 0                     | --                    | --                              |
| Unincorporated Area     | 0                     | --                    | --                              |
| <b>Jefferson County</b> | <b>0</b>              | <b>--</b>             | <b>--</b>                       |
| Fayette                 | 0                     | --                    | --                              |
| Unincorporated Area     | 0                     | --                    | --                              |
| <b>Lawrence County</b>  | <b>0</b>              | <b>--</b>             | <b>--</b>                       |
| Monticello              | 0                     | --                    | --                              |
| New Hebron              | 0                     | --                    | --                              |

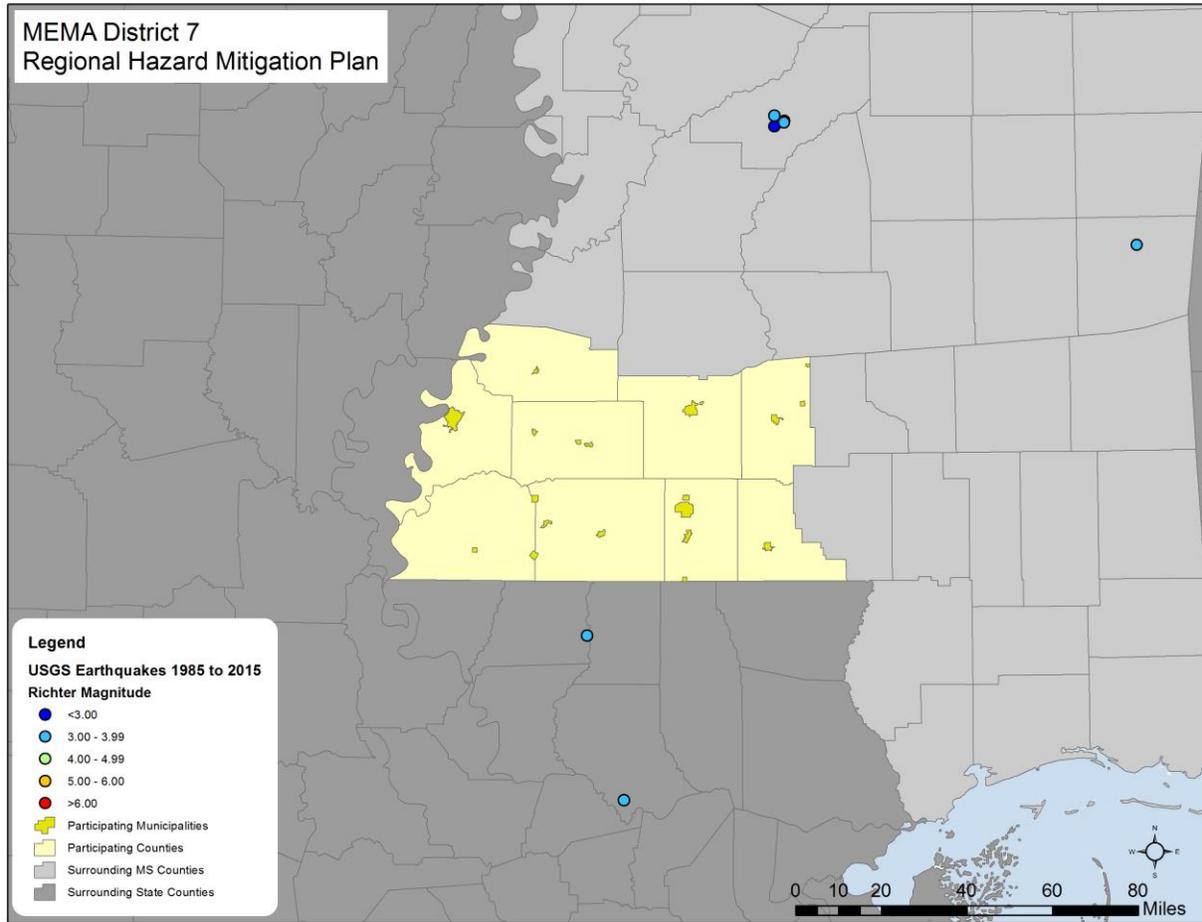
<sup>12</sup> Due to reporting mechanisms, not all earthquakes events were recorded during this time. Furthermore, some are missing data, such as the epicenter location, due to a lack of widely used technology. In these instances, a value of "unknown" is reported.

**SECTION 5: HAZARD PROFILES**

| <b>Location</b>                               | <b>Number of Occurrences</b> | <b>Greatest MMI Reported</b> | <b>Greatest Richter Scale Reported</b> |
|---|------------------------------|------------------------------|--|
| Silver Creek                                  | 0                            | --                           | --                                     |
| Unincorporated Area                           | 0                            | --                           | --                                     |
| <b>Lincoln County</b>                         | <b>1</b>                     | <b>II</b>                    | --                                     |
| Brookhaven                                    | 1                            | II                           | Not Available                          |
| Unincorporated Area                           | 0                            | --                           | --                                     |
| <b>Pike County</b>                            | <b>0</b>                     | <b>--</b>                    | <b>--</b>                              |
| Magnolia                                      | 0                            | --                           | --                                     |
| McComb  | 0                            | --                           | --                                     |
| Osyka   | 0                            | --                           | --                                     |
| Summit  | 0                            | --                           | --                                     |
| Unincorporated Area                           | 0                            | --                           | --                                     |
| <b>Walthall County</b>                        | <b>1</b>                     | <b>III</b>                   | --                                     |
| Tylertown                                     | 1                            | III                          | Not Available                          |
| Unincorporated Area                           | 0                            | --                           | --                                     |
| <b>Wilkinson County</b>                       | <b>0</b>                     | <b>--</b>                    | <b>--</b>                              |
| Centreville                                   | 0                            | --                           | --                                     |
| Crosby  | 0                            | --                           | --                                     |
| Woodville                                     | 0                            | --                           | --                                     |
| Unincorporated Area                           | 0                            | --                           | --                                     |
| <b>MEMA DISTRICT 7 REGIONAL TOTAL/LARGEST</b> | <b>4</b>                     | <b>VI</b>                    | <b>7.2</b>                             |

Source: National Centers for Environmental Information

**FIGURE 5.13: HISTORIC EARTHQUAKES WITH EPICENTERS NEAR THE MEMA DISTRICT 7 REGION (1985-2015)**



Source: United States Geological Survey

In addition to those earthquakes specifically affecting the MEMA District 7 Region, a list of earthquakes that have affected Mississippi is presented below in **Table 5.18**.

**TABLE 5.18: EARTHQUAKES WHICH HAVE AFFECTED MISSISSIPPI**

| Date      | Origin                            | Richter Scale (Magnitude) | MMI (Intensity) | MMI in Mississippi | MEMA District 7 Counties Affected          |
|-----------|-----------------------------------|---------------------------|-----------------|--------------------|--|
| 1811-1812 | New Madrid Seismic Zone           | 7.8-8.1                   | XI              | Not available      | Affected counties as far as the Gulf Coast |
| 3/29/1972 | New Madrid Seismic Zone           | Not available             | IV              | I, II, III, IV     | --   |
| 4/29/2003 | 8 miles ENE of Ft. Payne, AL      | 4.6                       | V               | I, II, III, IV     | --   |
| 11/7/2004 | 25 miles SW of Tuscaloosa, AL     | 4.0                       | V               | I, II, III, IV     | --   |
| 2/10/2005 | 22 miles WSW of Blytheville, AR   | 4.1                       | V               | I, II, III         | --   |
| 5/1/2005  | 15 miles WSW of Blytheville, AR   | 4.1                       | IV              | I, II, III         | --   |
| 6/2/2005  | 10 miles NNW of Dyersburg, TN     | 4.0                       | III             | I                  | --   |
| 9/10/2006 | 253 miles SSW of Apalachicola, FL | 6.0                       | VI              | I, II, III, IV     | Walthall                                   |

Source: State of Mississippi Standard Mitigation Plan (2013 Update)

## 5.9.4 Probability of Future Occurrences

The probability of significant, damaging earthquake events affecting the MEMA District 7 Region is unlikely. However, it is certainly possible that future earthquakes resulting in light or moderate perceived shaking and damages will affect the region much more frequently. The annual probability level for the region is estimated to be less than 1 percent (unlikely).

## *WIND-RELATED HAZARDS*

### 5.10 EXTREME HEAT

#### 5.10.1 Background

Extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and that last for an extended period of time. A heat wave may occur when temperatures hover 10 degrees or more above the average high temperature for the region and last for a prolonged number of days or several weeks. Humid conditions may also add to the discomfort of high temperatures.

While extreme heat does not typically affect buildings and infrastructure directly, the impact to the population can have grave effects. Health risks from extreme heat include heat cramps, heat fainting, heat exhaustion and heat stroke. According to the National Weather Service (which compiles data from the National Climatic Data Center), heat is the leading weather-related killer in the United States. During the ten-year period between 2000 and 2009 heat events killed 162 people - more people than lightning, tornado, flood, cold, winter storm, wind and hurricane hazards. However, most deaths are attributed to prolonged heat waves in large cities that rarely experience hot weather. The elderly and the ill are most at-risk, along with those who exercise outdoors in hot, humid weather.

The National Weather Service devised the Heat Index as a mechanism to better inform the public of heat dangers. The Heat Index Chart, shown in **Figure 5.14**, uses air temperature and humidity to determine the heat index or apparent temperature. **Table 5.19** shows the dangers associated with different heat index temperatures. Some populations, such as the elderly and young, are more susceptible to heat danger than other segments of the population.

**FIGURE 5.14: HEAT INDEX CHART**

|                    |     | Relative Humidity (in percent) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
|--------------------|-----|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
|                    |     | 0                              | 5   | 10  | 15  | 20  | 25  | 30  | 35  | 40  | 45  | 50  | 55  | 60  | 65  | 70  | 75  | 80  | 85  | 90  | 95  | 100 |    |
| Air Temp<br>(in F) | 140 | 125                            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
|                    | 135 | 120                            | 128 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
|                    | 130 | 117                            | 122 | 131 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
|                    | 125 | 111                            | 116 | 123 | 131 | 141 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
|                    | 120 | 107                            | 111 | 116 | 123 | 130 | 139 | 148 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
|                    | 115 | 103                            | 107 | 111 | 115 | 120 | 127 | 135 | 143 | 151 |     |     |     |     |     |     |     |     |     |     |     |     |    |
|                    | 110 | 99                             | 102 | 105 | 108 | 112 | 117 | 123 | 130 | 137 | 143 | 150 |     |     |     |     |     |     |     |     |     |     |    |
|                    | 105 | 95                             | 97  | 100 | 102 | 105 | 109 | 113 | 118 | 123 | 129 | 135 | 142 | 149 |     |     |     |     |     |     |     |     |    |
|                    | 100 | 91                             | 93  | 95  | 97  | 99  | 101 | 104 | 107 | 110 | 115 | 120 | 126 | 132 | 138 | 144 |     |     |     |     |     |     |    |
|                    | 95  | 87                             | 88  | 90  | 91  | 93  | 94  | 96  | 98  | 101 | 104 | 107 | 110 | 114 | 119 | 124 | 130 | 136 |     |     |     |     |    |
|                    | 90  | 83                             | 84  | 85  | 86  | 87  | 88  | 90  | 91  | 93  | 95  | 96  | 98  | 100 | 102 | 106 | 109 | 113 | 117 | 122 |     |     |    |
|                    | 85  | 78                             | 79  | 80  | 81  | 82  | 83  | 84  | 85  | 86  | 87  | 88  | 89  | 90  | 91  | 93  | 95  | 97  | 99  | 102 | 105 | 108 |    |
|                    | 80  | 73                             | 74  | 75  | 76  | 77  | 77  | 78  | 79  | 79  | 80  | 81  | 81  | 82  | 83  | 85  | 86  | 86  | 87  | 88  | 89  | 91  |    |
|                    | 75  | 69                             | 69  | 70  | 71  | 72  | 72  | 73  | 73  | 74  | 74  | 75  | 75  | 76  | 76  | 77  | 77  | 78  | 78  | 79  | 79  | 80  |    |
|                    | 70  | 64                             | 64  | 65  | 65  | 66  | 66  | 67  | 67  | 68  | 68  | 69  | 69  | 70  | 70  | 70  | 70  | 71  | 71  | 71  | 71  | 71  | 72 |

Source: National Oceanic and Atmospheric Administration

**TABLE 5.19: HEAT DISORDERS ASSOCIATED WITH HEAT INDEX TEMPERATURE**

| Heat Index Temperature (Fahrenheit) | Description of Risks   |
|-------------------------------------|--|
| 80°- 90°                            | Fatigue possible with prolonged exposure and/or physical activity  |
| 90°- 105°                           | Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and/or physical activity                        |
| 105°- 130°                          | Sunstroke, heat cramps, and heat exhaustion likely, and heatstroke possible with prolonged exposure and/or physical activity |
| 130° or higher                      | Heatstroke or sunstroke is highly likely with continued exposure   |

Source: National Weather Service, National Oceanic and Atmospheric Administration

### 5.10.2 Location and Spatial Extent

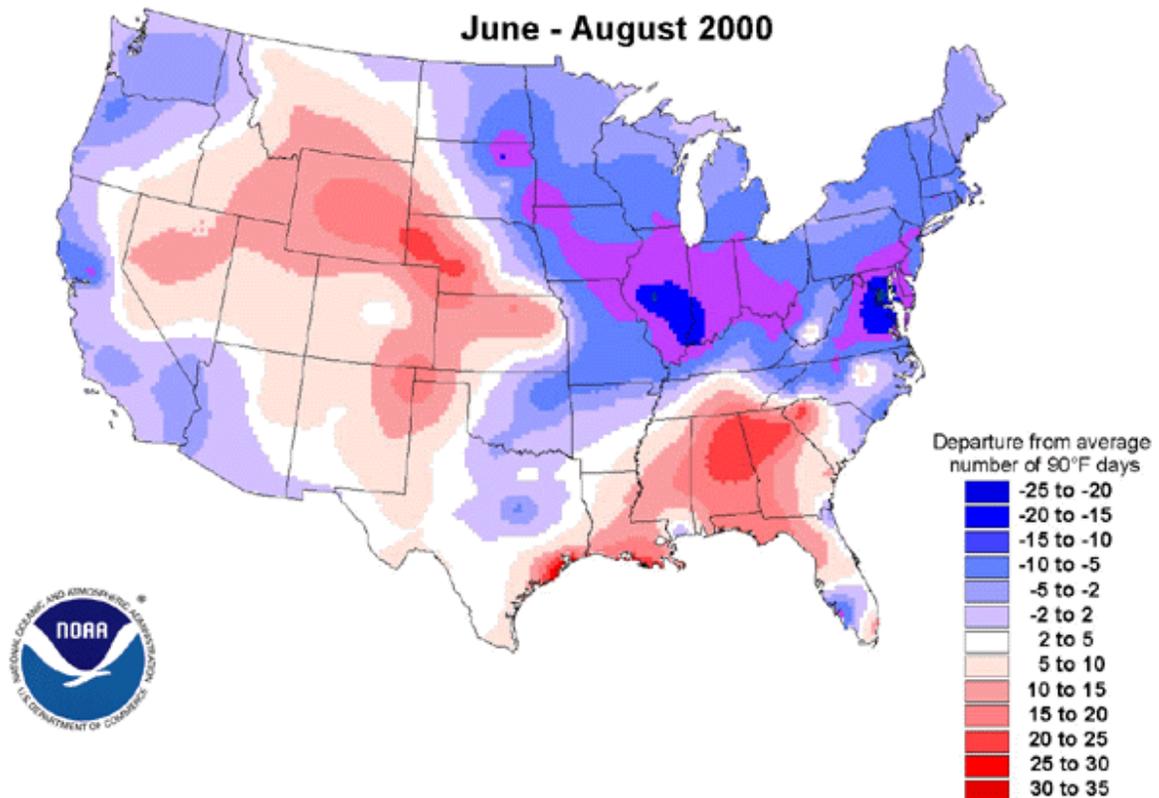
Heat waves typically impact a large area and cannot be confined to any geographic or political boundaries. Therefore, the entire region is considered to be equally susceptible to extreme heat.

### 5.10.3 Historical Occurrences

The National Climatic Data Center was used to determine historical heat wave occurrences in the region.

**Summer of 2000 Heat Wave** – Hot temperatures persisted from July to September across the South and Plains. Known as the Summer of 2000 Heat Wave, high temperatures commonly peaked over 100 degrees. As shown in **Figure 5.15** below, there were 10-15 more days over 90 degrees than the average recorded between 1961 and 1990.

**FIGURE 5.15: DEPARTURE FROM AVERAGE NUMBER OF 90 DEGREE DAYS**  
**Departure from 1961-90 average number of days**  
**with maximum temperature greater than or equal to 90°F**



Source: <http://www.ncdc.noaa.gov/sotc/drought/2000/16#Heat>

**August 2005** – A "HOT" stretch of weather occurred during the middle to later part of August 2005. This "Heat Wave" covered a large portion of the south and lasted for a period of about 10 days. Each of these days had high temperatures consistently between 95 and 100 degrees, with 1 or 2 of these days actually reaching 100 degrees or more. Additionally, overnight lows remained warm with lower and middle 70s recorded. This is the first time since August 2000 where 100 degree temperatures were reached in this area as well as having such an extended period of "HOT" weather.

**July 2006** – A small "heat wave" gripped the region during the middle of July with high temperature ranging from the upper 90s to around 100 degrees for five days with overnight lows only reaching the middle 70s. The hottest temperatures during this period occurred from the Mississippi Delta, across northern Mississippi and then down to the Jackson Metro and toward Meridian. This area peaked between 100 and 102 degrees for at least two days during the hot five day stretch.

**August 2007** – During the first half of August, a heat wave took hold of the region and brought some of the warmest temperatures since the summer of 2000. This heat wave began around August 5th and lasted until the 16th. Between August 10th and 15th, the entire area reached 100 degrees or higher.

Twenty-three record highs were also set during this time. As the temperature soared each day, high relative humidities resulted in heat index values between 105 and 112 degrees.

**August 2010** – A four day stretch of extreme temperatures occurred across the region to start off the month of August. High pressure was firmly entrenched across the southeast and allowed temperatures to soar into the triple digits across much of the region. Across the NWS Jackson, MS forecast area, 19 record highs were set between August 1st and 4th. On August 2nd, the 2nd warmest average temperature was recorded. The low was 78 and the high 105, this resulted in an average temperature of 91.5 degrees. Additionally, relatively high humidity levels made conditions even more oppressive, with heat index readings surpassing 110 degrees in many areas. This extreme heat resulted in 3 fatalities across the forecast area.

### 5.10.4 Probability of Future Occurrences

Based on historical occurrence information, it is assumed that all of the MEMA District 7 Region has a probability level of likely (between 10 and 100 percent annual probability) for future heat wave events.

## 5.11 HAILSTORM

### 5.11.1 Background

Hailstorms are a potentially damaging outgrowth of severe thunderstorms. Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to the rapid rising of warm air into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until they develop to a sufficient weight and fall as precipitation. Hail typically takes the form of spheres or irregularly-shaped masses greater than 0.75 inches in diameter. The size of hailstones is a direct function of the size and severity of the storm. High velocity updraft winds are required to keep hail in suspension in thunderclouds. The strength of the updraft is a function of the intensity of heating at the Earth's surface. Higher temperature gradients relative to elevation above the surface result in increased suspension time and hailstone size. **Table 5.20** shows the TORRO Hailstorm Intensity Scale which is a way of measuring hail severity.

**TABLE 5.20: TORRO HAILSTORM INTENSITY SCALE**

|           | Intensity Category   | Typical Hail Diameter (mm)* | Probable Kinetic Energy, J-m <sup>2</sup> | mm to inch conversion (inches) | Typical Damage Impacts  |
|-----------|----------------------|-----------------------------|---|--------------------------------|---|
| <b>H0</b> | Hard Hail            | 5                           | 0-20                                      | 0 - 0.2                        | No damage   |
| <b>H1</b> | Potentially Damaging | 5-15                        | >20                                       | 0.2 - 0.6                      | Slight general damage to plants, crops  |
| <b>H2</b> | Significant          | 10-20                       | >100                                      | 0.4 - 0.8                      | Significant damage to fruit, crops, vegetation  |
| <b>H3</b> | Severe               | 20-30                       | >300                                      | 0.8 - 1.2                      | Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored |
| <b>H4</b> | Severe               | 25-40                       | >500                                      | 1.0 - 1.6                      | Widespread glass damage, vehicle bodywork damage  |

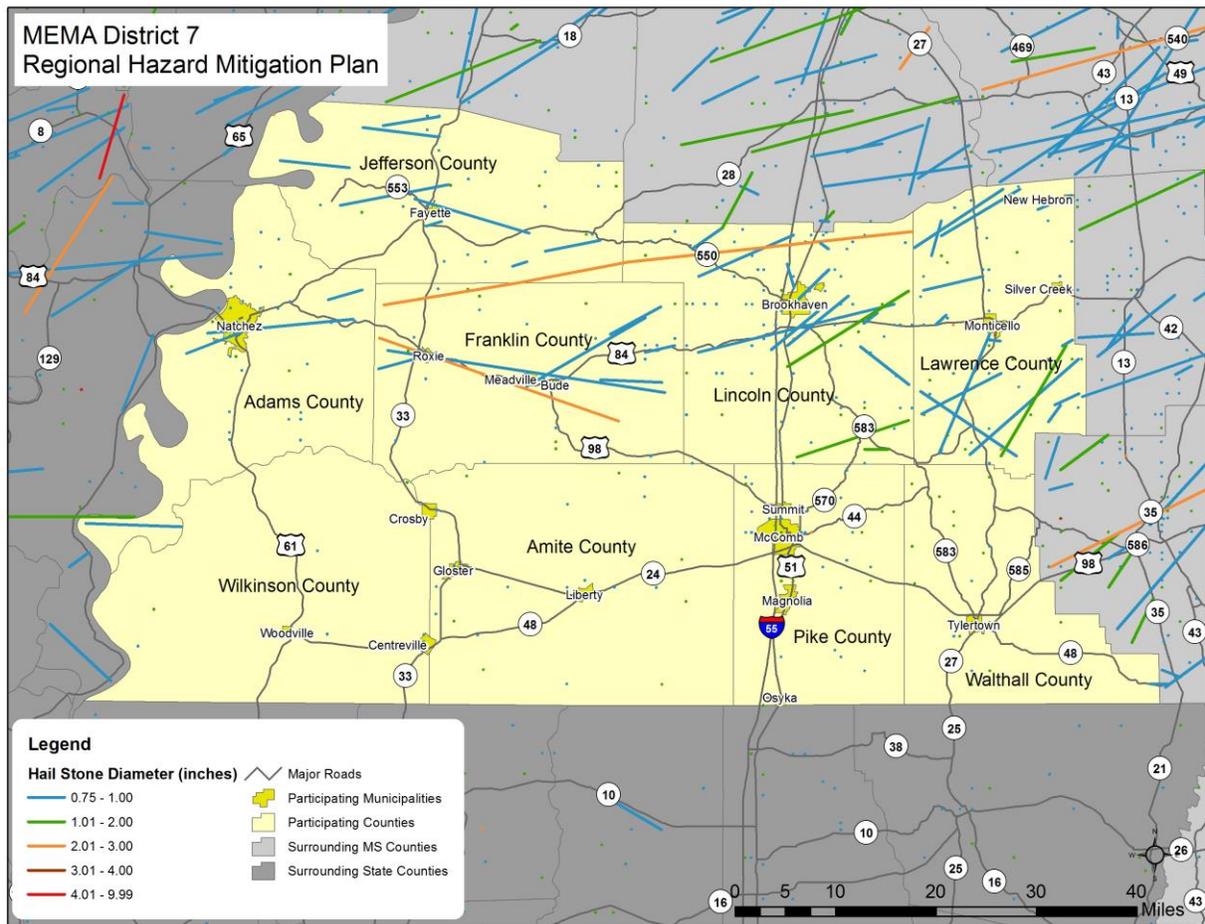
|            | Intensity Category | Typical Hail Diameter (mm)* | Probable Kinetic Energy, J-m <sup>2</sup> | mm to inch conversion (inches) | Typical Damage Impacts   |
|------------|--------------------|-----------------------------|---|--------------------------------|--|
| <b>H5</b>  | Destructive        | 30-50                       | >800                                      | 1.2 - 2.0                      | Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries              |
| <b>H6</b>  | Destructive        | 40-60                       |   | 1.6 - 2.4                      | Bodywork of grounded aircraft dented, brick walls pitted   |
| <b>H7</b>  | Destructive        | 50-75                       |   | 2.0 - 3.0                      | Severe roof damage, risk of serious injuries   |
| <b>H8</b>  | Destructive        | 60-90                       |   | 1.6 - 3.5                      | (Severest recorded in the British Isles)<br>Severe damage to aircraft bodywork                   |
| <b>H9</b>  | Super Hailstorms   | 75-100                      |   | 3.0 - 3.9                      | Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open |
| <b>H10</b> | Super Hailstorms   | >100                        |   |                                | Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open |

Source: <http://www.torro.org.uk/site/hscale.php>

### 5.11.2 Location and Spatial Extent

Hailstorms frequently accompany thunderstorms, so their locations and spatial extents coincide. It is assumed that the MEMA District 7 Region is uniformly exposed to severe thunderstorms; therefore, all areas of the region are equally exposed to hail which may be produced by such storms. With that in mind, **Figure 5.16** shows the location of hail events that have impacted the region between 1955 and 2015.

FIGURE 5.16: HAILSTORM TRACKS IN MEMA DISTRICT 7 REGION



Source: National Weather Service Storm Prediction Center

### 5.11.3 Historical Occurrences

According to the National Climatic Data Center, 599 recorded hailstorm events have affected the MEMA District 7 Region since 1961.<sup>13</sup> **Table 5.21** is a summary of the hail events in the MEMA District 7 Region. Detailed information about each event that occurred in the region is provided in the county-specific annexes. In all, hail occurrences resulted in almost \$5.5 million (2017 dollars) in property damages.<sup>14</sup> Hail ranged in diameter from 0.75 inches to 2.75 inches. It should be noted that hail is notorious for causing substantial damage to cars, roofs, and other areas of the built environment that may not be reported to the National Climatic Data Center. Therefore, it is likely that damages are greater than the reported value. Additionally, a single storm event may have affected multiple counties.

<sup>13</sup> These hail events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017. It is likely that additional hail events have affected the MEMA District 7 Region. As additional local data becomes available, this hazard profile will be amended.

<sup>14</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE 5.21: SUMMARY OF HAIL OCCURRENCES IN THE MEMA DISTRICT 7 REGION**

| Location                              | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|---------------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| <b>Adams County</b>                   | <b>62</b>             | <b>0/0</b>      | <b>\$291,935</b>       | <b>\$9,363</b>             |
| Natchez                               | 17                    | 0/0             | \$174,314              | \$7,263                    |
| Unincorporated Area                   | 45                    | 0/0             | \$117,621              | \$2,100                    |
| <b>Amite County</b>                   | <b>31</b>             | <b>0/0</b>      | <b>\$0</b>             | <b>\$0</b>                 |
| Gloster                               | 5                     | 0/0             | \$0                    | \$0                        |
| Liberty                               | 9                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area                   | 17                    | 0/0             | \$0                    | \$0                        |
| <b>Franklin County</b>                | <b>65</b>             | <b>0/0</b>      | <b>\$602,308</b>       | <b>\$23,521</b>            |
| Bude                                  | 13                    | 0/0             | \$61,460               | \$2,561                    |
| Meadville                             | 14                    | 0/0             | \$21,050               | \$915                      |
| Roxie                                 | 8                     | 0/0             | \$242,586              | \$14,270                   |
| Unincorporated Area                   | 30                    | 0/0             | \$277,212              | \$5,775                    |
| <b>Jefferson County</b>               | <b>59</b>             | <b>0/0</b>      | <b>\$208,577</b>       | <b>\$4,381</b>             |
| Fayette                               | 16                    | 0/0             | \$1,333                | \$63                       |
| Unincorporated Area                   | 43                    | 0/0             | \$207,244              | \$4,318                    |
| <b>Lawrence County</b>                | <b>96</b>             | <b>0/0</b>      | <b>\$445,300</b>       | <b>\$13,278</b>            |
| Monticello                            | 22                    | 0/0             | \$149,838              | \$6,811                    |
| New Hebron                            | 4                     | 0/0             | \$0                    | \$0                        |
| Silver Creek                          | 4                     | 0/0             | \$6,201                | \$564                      |
| Unincorporated Area                   | 66                    | 0/0             | \$289,261              | \$5,903                    |
| <b>Lincoln County</b>                 | <b>148</b>            | <b>0/0</b>      | <b>\$2,974,098</b>     | <b>\$109,718</b>           |
| Brookhaven                            | 55                    | 0/0             | \$1,957,251            | \$88,966                   |
| Unincorporated Area                   | 93                    | 0/0             | \$1,016,847            | \$20,752                   |
| <b>Pike County</b>                    | <b>83</b>             | <b>0/0</b>      | <b>\$85,141</b>        | <b>\$3,548</b>             |
| Magnolia                              | 7                     | 0/0             | \$85,141               | \$3,548                    |
| McComb                                | 21                    | 0/0             | \$0                    | \$0                        |
| Osyka                                 | 4                     | 0/0             | \$0                    | \$0                        |
| Summit                                | 11                    | 0/0             | \$0                    | \$0                        |
| Unincorporated Area                   | 40                    | 0/0             | \$0                    | \$0                        |
| <b>Walthall County</b>                | <b>40</b>             | <b>0/0</b>      | <b>\$32,302</b>        | <b>\$1,346</b>             |
| Tylertown                             | 18                    | 0/0             | \$32,302               | \$1,346                    |
| Unincorporated Area                   | 22                    | 0/0             | \$0                    | \$0                        |
| <b>Wilkinson County</b>               | <b>15</b>             | <b>0/0</b>      | <b>\$851,407</b>       | <b>\$35,475</b>            |
| Centreville                           | 4                     | 0/0             | \$0                    | \$0                        |
| Crosby                                | 1                     | 0/0             | \$0                    | \$0                        |
| Woodville                             | 3                     | 0/0             | \$851,407              | \$35,475                   |
| Unincorporated Area                   | 7                     | 0/0             | \$0                    | \$0                        |
| <b>MEMA DISTRICT 7 REGIONAL TOTAL</b> | <b>599</b>            | <b>0/0</b>      | <b>\$5,491,068</b>     | <b>\$200,630</b>           |

Source: National Climatic Data Center

### 5.11.4 Probability of Future Occurrences

Based on historical occurrence information, it is assumed that the probability of future hail occurrences is highly likely (100 percent annual probability). Since hail is an atmospheric hazard, it is assumed that the entire MEMA District 7 Region has equal exposure to this hazard. It can be expected that future hail events will continue to cause minor damage to property and vehicles throughout the region.

## 5.12 HURRICANE AND TROPICAL STORM

### 5.12.1 Background

Hurricanes and tropical storms are classified as cyclones and defined as any closed circulation developing around a low-pressure center in which the winds rotate counter-clockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and whose diameter averages 10 to 30 miles across. A tropical cyclone refers to any such circulation that develops over tropical waters. Tropical cyclones act as a “safety-valve,” limiting the continued build-up of heat and energy in tropical regions by maintaining the atmospheric heat and moisture balance between the tropics and the pole-ward latitudes. The primary damaging forces associated with these storms are high-level sustained winds, heavy precipitation, and tornadoes.

The key energy source for a tropical cyclone is the release of latent heat from the condensation of warm water. Their formation requires a low-pressure disturbance, warm sea surface temperature, rotational force from the spinning of the earth, and the absence of wind shear in the lowest 50,000 feet of the atmosphere. The majority of hurricanes and tropical storms form in the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico during the official Atlantic hurricane season, which encompasses the months of June through November. The peak of the Atlantic hurricane season is in early to mid-September and the average number of storms that reach hurricane intensity per year in the Atlantic basin is about six.

As an incipient hurricane develops, barometric pressure (measured in millibars or inches) at its center falls and winds increase. If the atmospheric and oceanic conditions are favorable, it can intensify into a tropical depression. When maximum sustained winds reach or exceed 39 miles per hour, the system is designated a tropical storm, given a name, and is closely monitored by the National Hurricane Center in Miami, Florida. When sustained winds reach or exceed 74 miles per hour the storm is deemed a hurricane. Hurricane intensity is further classified by the Saffir-Simpson Scale (**Table 5.22**), which rates hurricane intensity on a scale of 1 to 5, with 5 being the most intense.

**TABLE 5.22: SAFFIR-SIMPSON SCALE**

| Category | Maximum Sustained Wind Speed (MPH) |
|----------|------------------------------------|
| 1        | 74–95                              |
| 2        | 96–110                             |
| 3        | 111–129                            |
| 4        | 130–156                            |
| 5        | 157 +                              |

Source: National Hurricane Center

The Saffir-Simpson Scale categorizes hurricane intensity linearly based upon maximum sustained winds, barometric pressure and storm surge potential, which are combined to estimate potential damage. Categories 3, 4, and 5 are classified as “major” hurricanes and, while hurricanes within this range comprise only 20 percent of total tropical cyclone landfalls, they account for over 70 percent of the damage in the United States. **Table 5.23** describes the damage that could be expected for each category of hurricane. Damage during hurricanes may also result from spawned tornadoes, storm surge, and inland flooding associated with heavy rainfall that usually accompanies these storms.

**TABLE 5.23: HURRICANE DAMAGE CLASSIFICATIONS**

| Storm Category | Damage Level | Description of Damages  | Photo Example   |
|----------------|--------------|---|---|
| 1              | MINIMAL      | No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal flooding and minor pier damage.  |    |
| 2              | MODERATE     | Some roofing material, door, and window damage. Considerable damage to vegetation, mobile homes, etc. Flooding damages piers and small craft in unprotected moorings may break their moorings.  |    |
| 3              | EXTENSIVE    | Some structural damage to small residences and utility buildings, with a minor amount of curtainwall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures, with larger structures damaged by floating debris. Terrain may be flooded well inland.          |    |
| 4              | EXTREME      | More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Terrain may be flooded well inland.  |   |
| 5              | CATASTROPHIC | Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Flooding causes major damage to lower floors of all structures near the shoreline. Massive evacuation of residential areas may be required. |  |

Source: National Hurricane Center; Federal Emergency Management Agency

### 5.12.2 Location and Spatial Extent

Hurricanes and tropical storms threaten the entire Atlantic and Gulf seaboard of the United States. While coastal areas are most directly exposed to the brunt of landfalling storms, their impact is often felt hundreds of miles inland and they can affect the MEMA District 7 Region. All areas in the MEMA District 7 Region are equally susceptible to hurricane and tropical storms.

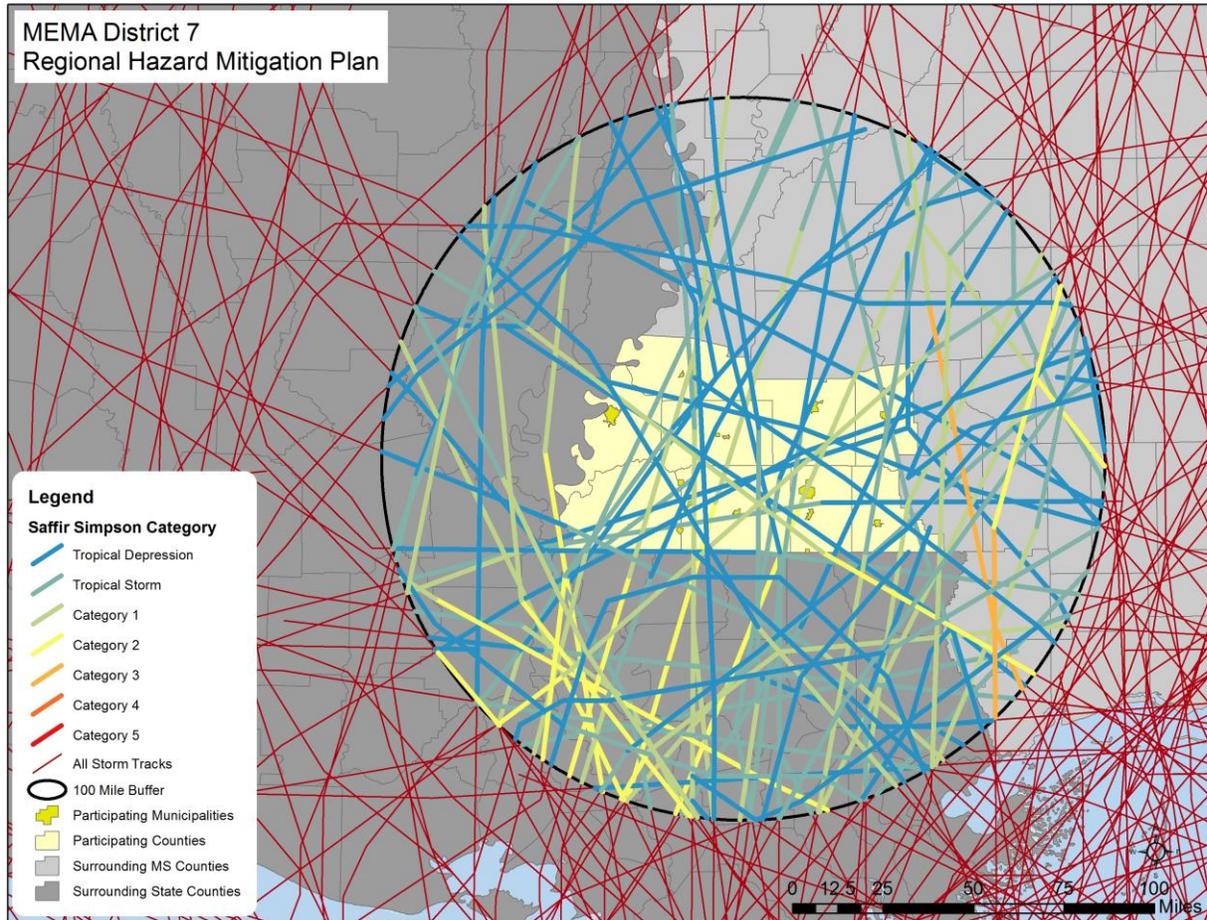
### 5.12.3 Historical Occurrences

According to the National Hurricane Center’s historical storm track records, 86 hurricane or tropical storm/depression tracks have passed within 100 miles of the MEMA District 7 Region since 1854.<sup>15</sup> This includes: 35 hurricanes, 21 tropical storms, and 30 tropical depressions.

<sup>15</sup> These storm track statistics include tropical depressions, tropical storms, and hurricanes. Lesser events may still cause significant local impact in terms of rainfall and high winds.

A total of 61 tracks passed directly through the region as shown in **Figure 5.17**. **Table 5.24** provides the date of occurrence, name (if applicable), maximum wind speed (as recorded within 100 miles of the MEMA District 7 Region) and category of the storm based on the Saffir-Simpson Scale for each event.

**FIGURE 5.17: HISTORICAL HURRICANE STORM TRACKS WITHIN 100 MILES OF THE MEMA DISTRICT 7 REGION**



Source: National Oceanic and Atmospheric Administration, National Hurricane Center

**TABLE 5.24: HISTORICAL STORM TRACKS WITHIN 100 MILES OF THE MEMA DISTRICT 7 REGION (1850–2016)**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/21/1854          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/5/1855           | NOT NAMED  | Not Available              | Tropical Depression |
| 8/11/1856          | UNNAMED    | 85.03                      | Category 2          |
| 10/2/1860          | UNNAMED    | 89.03                      | Category 2          |
| 8/18/1861          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/16/1862          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/30/1863          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/5/1869           | UNNAMED    | 58.6                       | Tropical Storm      |

**SECTION 5: HAZARD PROFILES**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 7/12/1872          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/18/1875          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/1/1879           | UNNAMED    | 89.03                      | Category 2          |
| 10/7/1879          | UNNAMED    | 58.6                       | Tropical Storm      |
| 10/7/1879          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/3/1881           | NOT NAMED  | Not Available              | Tropical Depression |
| 6/15/1886          | UNNAMED    | 69.67                      | Category 1          |
| 8/20/1888          | UNNAMED    | 81.90                      | Category 1          |
| 8/27/1890          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/7/1893           | UNNAMED    | 78.78                      | Category 1          |
| 8/8/1894           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/20/1898          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/29/1905          | UNNAMED    | 42.69                      | Tropical Storm      |
| 10/9/1905          | UNNAMED    | 42.69                      | Tropical Storm      |
| 8/2/1908           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/21/1909          | UNNAMED    | 92.89                      | Category 2          |
| 8/12/1911          | UNNAMED    | 50.35                      | Tropical Storm      |
| 6/13/1912          | UNNAMED    | 64.34                      | Category 1          |
| 7/17/1912          | UNNAMED    | 0.87                       | Tropical Depression |
| 9/18/1914          | UNNAMED    | 32.60                      | Tropical Depression |
| 9/29/1915          | UNNAMED    | 95.53                      | Category 2          |
| 7/6/1916           | UNNAMED    | 85.03                      | Category 2          |
| 9/22/1920          | UNNAMED    | 87.29                      | Category 2          |
| 10/16/1923         | UNNAMED    | 78.78                      | Category 1          |
| 8/26/1926          | UNNAMED    | 78.78                      | Category 1          |
| 9/21/1926          | UNNAMED    | 58.60                      | Tropical Storm      |
| 7/15/1931          | UNNAMED    | 50.35                      | Tropical Storm      |
| 9/19/1932          | UNNAMED    | 64.34                      | Category 1          |
| 10/16/1932         | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/26/1933          | UNNAMED    | 17.56                      | Tropical Depression |
| 6/16/1934          | UNNAMED    | 87.29                      | Category 2          |
| 7/27/1936          | UNNAMED    | 42.69                      | Tropical Storm      |
| 8/23/1936          | UNNAMED    | 4.99                       | Tropical Depression |
| 10/3/1937          | UNNAMED    | 32.6                       | Tropical Depression |
| 9/24/1940          | UNNAMED    | 32.6                       | Tropical Depression |
| 9/6/1945           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/8/1947           | UNNAMED    | 32.6                       | Tropical Depression |
| 9/19/1947          | UNNAMED    | 91.63                      | Category 2          |
| 9/4/1948           | UNNAMED    | 69.67                      | Category 1          |
| 9/4/1949           | UNNAMED    | 58.6                       | Tropical Storm      |
| 8/1/1955           | BRENDA     | 64.34                      | Category 1          |
| 8/27/1955          | UNNAMED    | 50.35                      | Tropical Storm      |
| 6/13/1956          | UNNAMED    | 58.60                      | Tropical Storm      |
| 9/18/1957          | ESTHER     | 64.34                      | Category 1          |
| 5/31/1959          | ARLENE     | 64.34                      | Category 1          |
| 10/4/1964          | HILDA      | 91.63                      | Category 2          |

**SECTION 5: HAZARD PROFILES**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/10/1965          | BETSY      | 89.03                      | Category 2          |
| 8/18/1969          | CAMILLE    | 99.88                      | Category 3          |
| 8/9/1971           | UNNAMED    | 4.99                       | Tropical Depression |
| 9/1/1971           | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1971           | FERN       | 4.99                       | Tropical Depression |
| 9/16/1971          | EDITH      | 87.29                      | Category 2          |
| 7/29/1975          | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1977           | BABE       | 58.60                      | Tropical Storm      |
| 7/11/1979          | BOB        | 73.83                      | Category 1          |
| 7/20/1980          | UNNAMED    | 0.87                       | Tropical Depression |
| 8/15/1985          | DANNY      | 78.78                      | Category 1          |
| 9/2/1985           | ELENA      | 92.89                      | Category 2          |
| 10/29/1985         | JUAN       | 73.83                      | Category 1          |
| 8/11/1987          | UNNAMED    | 4.99                       | Tropical Depression |
| 8/9/1988           | BERYL      | 50.35                      | Tropical Storm      |
| 9/10/1988          | FLORENCE   | 69.67                      | Category 1          |
| 8/26/1992          | ANDREW     | 85.03                      | Category 2          |
| 9/20/1998          | HERMINE    | 32.60                      | Tropical Depression |
| 6/11/2001          | ALLISON    | 42.69                      | Tropical Storm      |
| 8/5/2002           | BERTHA     | 32.60                      | Tropical Depression |
| 9/26/2002          | ISIDORE    | 64.34                      | Category 1          |
| 10/3/2002          | LILI       | 69.67                      | Category 1          |
| 6/30/2003          | BILL       | 58.60                      | Tropical Storm      |
| 10/10/2004         | MATTHEW    | 17.56                      | Tropical Depression |
| 8/29/2005          | KATRINA    | 94.63                      | Category 3          |
| 9/13/2007          | HUMBERTO   | 32.60                      | Tropical Depression |
| 8/24/2008          | FAY        | 17.56                      | Tropical Depression |
| 9/1/2008           | GUSTAV     | 87.29                      | Category 2          |
| 7/25/2010          | BONNIE     | 0.87                       | Tropical Depression |
| 8/17/2010          | FIVE       | 4.99                       | Tropical Depression |
| 9/4/2011           | LEE        | 32.60                      | Tropical Depression |
| 8/29/2012          | ISAAC      | 69.67                      | Category 1          |

Source: National Hurricane Center

Federal records indicate that eight disaster declarations were made in 1965 (Hurricane Betsy), 1969 (Hurricane Camille), 1998 (Hurricane Geroges), 2002 (Tropical Storm Isidore), 2004 (Hurricane Ivan), 2005 (Hurricane Katrina), 2008 (Hurricane Gustav), and 2012 (Hurricane Isaac) in the MEMA District 7 Region.<sup>16</sup> Hurricane and tropical storm events can cause substantial damage in the area due to high winds and flooding.

<sup>16</sup> Not all of the participating counties were declared disaster areas for all of these storms. A complete listing of historical disaster declarations, including the affected counties, can be found in Section 4: *Hazard Identification*.

The National Climatic Data Center also reported seven hurricane or tropical storm events in the MEMA District 7 Region since 2002.<sup>17</sup> These storms are listed in **Table 5.25** and are representative of some of the storms with the greatest impact on the region over that time period.

**TABLE 5.25: HISTORICAL HURRICANE/TROPICAL STORM OCCURRENCES IN THE MEMA DISTRICT 7 REGION**

| Date of Occurrence | Storm Name             | Deaths/Injuries | Property Damage (2017) <sup>18</sup> |
|--------------------|------------------------|-----------------|--------------------------------------|
| 9/26/2002          | Tropical Storm Isidore | 0/0             | \$0                                  |
| 10/3/2002          | Hurricane Lili         | 0/0             | \$9,009,489                          |
| 8/29/2005          | Hurricane Katrina      | 0/2             | \$1,317,117,819                      |
| 9/24/2005          | Hurricane Rita         | 0/0             | \$196,800                            |
| 8/24/2008          | Tropical Storm Fay     | 0/0             | \$0                                  |
| 9/1/2008           | Hurricane Gustav       | 0/0             | \$17,815,427                         |
| 9/2/2011           | Tropical Storm Lee     | 0/0             | \$16,166                             |
| 8/29/2012          | Hurricane Isaac        | 0/1             | \$3,131,127                          |

Source: National Climatic Data Center

Flooding and high winds from hurricanes and tropical storms can cause damage throughout the region. Narratives are available from NCDC for the major storms that have impacted the region as found below:

#### **Hurricane Katrina – August 29, 2005**

The damage from Hurricane Katrina was devastating and widespread. Damage occurred across all of the Jackson forecast area which includes 9 parishes in Northeast Louisiana, 2 counties in Southeast Arkansas and about 2/3 of Central and Southern Mississippi. As widespread as the damage was, the more concentrated and most significant damage occurred across Southeast and East-Central Mississippi. For other areas, especially those west of Natchez to Yazoo City to Grenada line, damage to trees and power lines was significant and scattered across the landscape. As you move toward Central Mississippi and along Interstate 55 the damage and impacts increase. This portion of the state sustained widespread damage to trees and power lines.

#### **Hurricane Gustav – September 1, 2008**

As the center of Gustav crossed much of southern Louisiana, tropical storm force winds extended into southern Mississippi and portions of east central Louisiana. Sustained winds were between 35 and 45 mph with higher gusts between 70 and 100 mph occurred. Tree and power line damage was extensive across these areas which resulted in widespread power outages, some of which lasted for 3 to 5 days. As Gustav slowed across central Louisiana, the outer rainbands continued to rotate across much of southern and central Mississippi. This kept those portions of Mississippi in the region which was favorable for tornadoes. Over 3 days, 26 tornadoes were confirmed, all of which were in the EF0 to EF1 range.

<sup>17</sup> These hurricane events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported.

<sup>18</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**Hurricane Isaac – August 29, 2012**

Isaac moved very slowly to the north and northwest over the course of August 29th, which made for prolonged impacts. Forward motion of about 5 mph lead to tremendous flooding issues for both Louisiana and portions of Mississippi south of I-20. Around noon on August 29th, Isaac was downgraded to a Tropical Storm, but this was not much relief to the many residents who were being inundated with rain and wind. The worst of the wind was felt generally along and south of an axis from Marion County to Adams County. Numerous trees were down in Adams County, leaving many without power for several days. Eighty percent of the roads were blocked in Franklin County due to downed trees.

**5.12.4 Probability of Future Occurrences**

Given the inland location of the region, the MEMA District 7 Region will not be susceptible to many of the sub-hazards that are often associated with hurricanes and tropical storms such as storm surge. Although the probability of experiencing major impacts is somewhat less than coastal areas because of this, hurricanes and tropical storms remain a real threat to the MEMA District 7 Region due to induced events like flooding and high wind. Based on historical evidence, the probability level of future occurrence is likely (between 10 and 100 percent annual probability). Given the regional nature of the hazard, all areas in the region are equally exposed to this hazard. However, when the region is impacted, the damage could be significant, threatening lives and property throughout the planning area.

**5.12.5 Hurricane Evacuations**

As discussed above, the MEMA District 7 Region has been directly impacted by a number of hurricane and tropical storm events historically. However, it should be noted that the region is also susceptible to indirect effects from hurricanes and tropical storms, particularly in the form of evacuations from coastal counties. The counties within MEMA District 7 are located far enough inland that they are often the primary recipients of evacuees from counties that will be (or have been) impacted by major storm events.

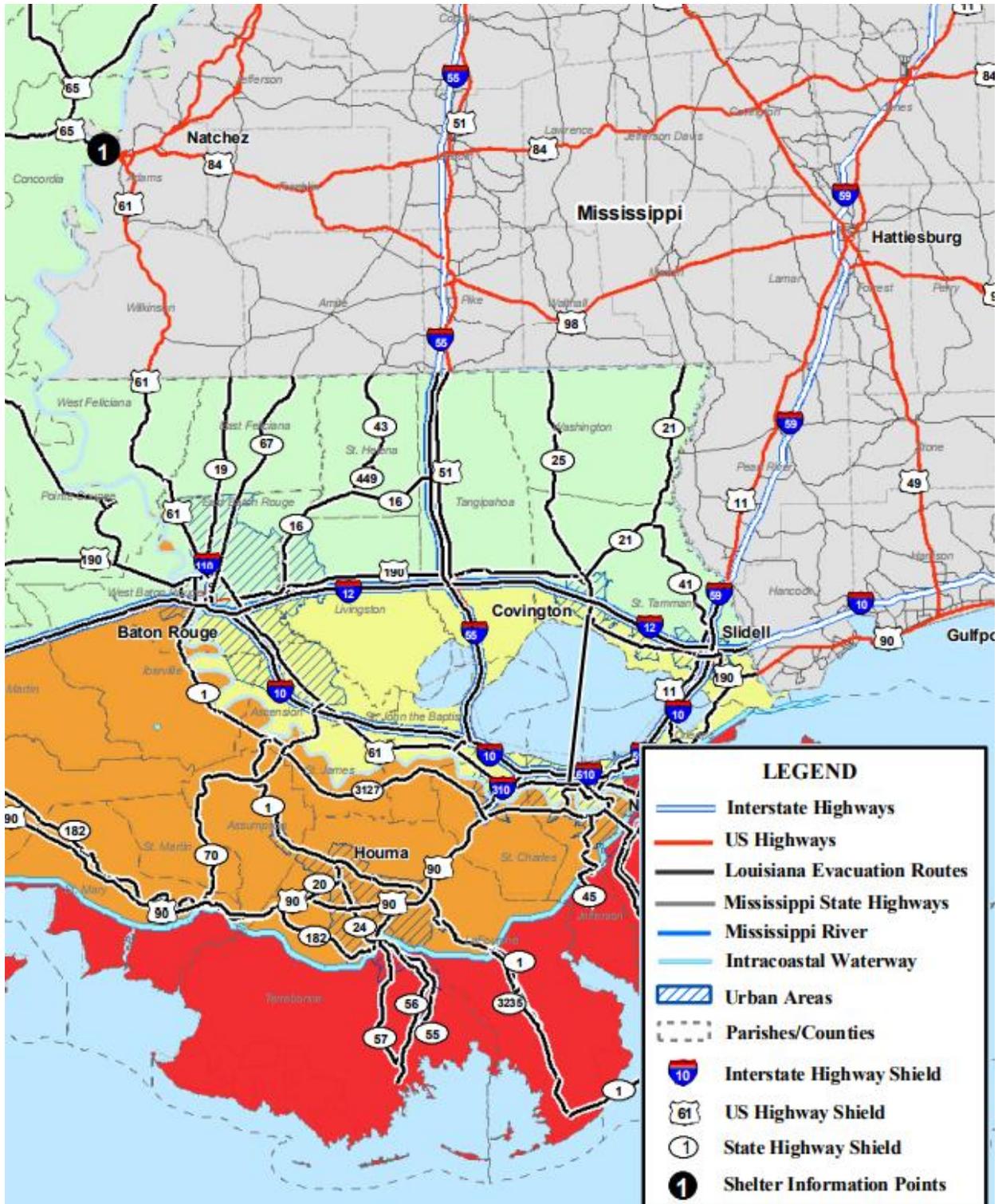
For example, during Hurricane Katrina in 2005, thousands of evacuees made their way to counties in southwest Mississippi to take temporary refuge from the storm. Due to the severe and devastating effects of the storm, temporary sheltering within these counties was extended much longer than originally anticipated and in some cases, the evacuees ended up staying for weeks or months. This additional population caused a major strain on resources within these relatively rural counties, as local communities with limited resources had an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people.

Caring for all of these evacuees was especially challenging for counties in the MEMA District 7 Region because most had been impacted themselves by the storm and were attempting to help their own citizens recover from the storm. Undoubtedly, recovering from a major disaster while simultaneously attempting to help evacuees from surrounding counties poses a number of difficulties for emergency management personnel and other local officials.

Based on Hurricane Katrina and other major hurricane events that have impacted the Gulf Coast in the past, it is likely that many of the MEMA District 7 counties will be receiver counties when it comes to evacuees. Many of these evacuees will likely come from locations in Louisiana, including New Orleans. Indeed, the State of Louisiana evacuation plan indicates that one of the primary evacuation routes from

the City of New Orleans will direct evacuees north along Interstate 55, sending people through Pike County and Lincoln County (Figure 5.18). Depending on the severity of the event, officials in Louisiana may even change Interstate 55 over to a contraflow traffic pattern to enable quicker evacuations.

**FIGURE 5.18: STATE OF LOUISIANA EVACUATION ROUTES**



*Source: State of Louisiana Evacuation Plan*

As a result of the influx of evacuees during storm events, it is critical for local officials in MEMA District 7 to prepare for evacuations during hurricanes and other tropical storms, even if the counties themselves may not be directly impacted by the storm. As in past storms, it is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future storm events.

## **5.13 SEVERE THUNDERSTORM/HIGH WIND**

### **5.13.1 Background**

Thunderstorms can produce a variety of accompanying hazards including wind (discussed here), hail, and lightning. Although thunderstorms generally affect a small area, they are very dangerous and may cause substantial property damage.

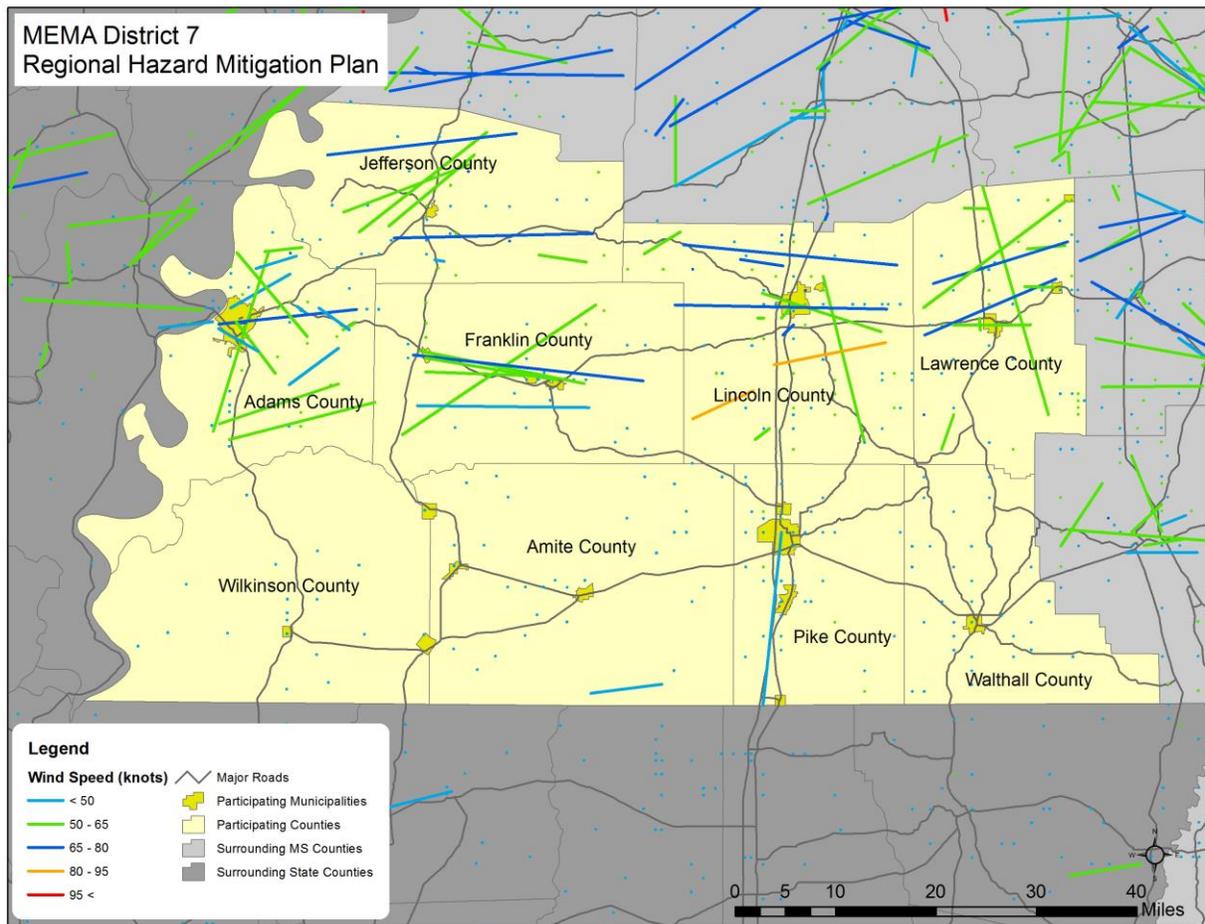
Three conditions need to occur for a thunderstorm to form. First, it needs moisture to form clouds and rain. Second, it needs unstable air, such as warm air that can rise rapidly (this often referred to as the “engine” of the storm). Third, thunderstorms need lift, which comes in the form of cold or warm fronts, sea breezes, mountains, or the sun’s heat. When these conditions occur simultaneously, air masses of varying temperatures meet, and a thunderstorm is formed. These storm events can occur singularly, in lines, or in clusters. Furthermore, they can move through an area very quickly or linger for several hours.

According to the National Weather Service, more than 100,000 thunderstorms occur each year, though only about 10 percent of these storms are classified as “severe.” A severe thunderstorm occurs when the storm produces at least one of these three elements: 1) hail of three-quarters of an inch, 2) a tornado, or 3) winds of at least 58 miles per hour.

Downbursts are also possible with thunderstorm events. Such events are an excessive burst of wind in excess of 125 miles per hour. They are often confused with tornadoes. Downbursts are caused by down drafts from the base of a convective thunderstorm cloud. It occurs when rain-cooled air within the cloud becomes heavier than its surroundings. Thus, air rushes towards the ground in a destructive yet isolated manner. There are two types of downbursts. Downbursts less than 2.5 miles wide, duration less than 5 minutes, and winds up to 168 miles per hour are called “microbursts.” Larger events greater than 2.5 miles at the surface and longer than 5 minutes with winds up to 130 miles per hour are referred to as “macrobursts.”

### **5.13.2 Location and Spatial Extent**

A thunderstorm event is an atmospheric hazard, and thus has no geographic boundaries. It is typically a widespread event that can occur in all regions of the United States. However, thunderstorms are most common in the central and southern states because atmospheric conditions in those regions are favorable for generating these powerful storms. It is assumed that the MEMA District 7 Region has uniform exposure to an event and the spatial extent of an impact could be large. With that in mind, **Figure 5.19** shows the location of wind events that have impacted the region between 1955 and 2015.

**FIGURE 5.19: SEVERE THUNDERSTORM TRACKS IN MEMA DISTRICT 7 REGION**

Source: National Weather Service Storm Prediction Center

### 5.13.3 Historical Occurrences

Severe storms were at least partially responsible for 13 disaster declarations in the MEMA District 7 Region.<sup>19</sup> According to NCDC, there have been 1,209 reported thunderstorm and high wind events since 1957 in the MEMA District 7 Region.<sup>20</sup> These events caused over \$68.6 million (2017 dollars) in damages.<sup>21</sup> There were also reports of 3 fatalities and 25 injuries. **Table 5.26** summarizes this information. Detailed thunderstorm and high wind event reports including date, magnitude, and associated damages for each event are presented in the county-specific annexes.

<sup>19</sup> Not all of the participating counties were declared disaster areas for these storms. A complete listing of historical disaster declarations, including the affected counties, can be found in Section 4: *Hazard Identification*.

<sup>20</sup> These thunderstorm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017 and these high wind events are only inclusive of those reported by NCDC from 1996 through February 2017. It is likely that additional thunderstorm and high wind events have occurred in the MEMA District 7 Region. As additional local data becomes available, this hazard profile will be amended.

<sup>21</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE 5.26: SUMMARY OF SEVERE THUNDERSTORM/HIGH WIND OCCURRENCES IN THE MEMA DISTRICT 7 REGION**

| Location                              | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|---------------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| <b>Adams County</b>                   | <b>199</b>            | <b>0/8</b>      | <b>\$50,809,603</b>    | <b>\$2,077,786</b>         |
| Natchez                               | 75                    | 0/1             | \$49,238,385           | \$2,051,599                |
| Unincorporated Area                   | 124                   | 0/7             | \$1,571,218            | \$26,187                   |
| <b>Amite County</b>                   | <b>80</b>             | <b>0/1</b>      | <b>\$1,515,155</b>     | <b>\$55,520</b>            |
| Gloster                               | 9                     | 0/0             | \$859,154              | \$35,798                   |
| Liberty                               | 34                    | 0/0             | \$229,761              | \$9,573                    |
| Unincorporated Area                   | 37                    | 0/1             | \$426,240              | \$10,149                   |
| <b>Franklin County</b>                | <b>106</b>            | <b>0/0</b>      | <b>\$2,501,583</b>     | <b>\$97,500</b>            |
| Bude                                  | 12                    | 0/0             | \$104,115              | \$5,784                    |
| Meadville                             | 24                    | 0/0             | \$206,139              | \$8,963                    |
| Roxie                                 | 19                    | 0/0             | \$1,494,301            | \$67,923                   |
| Unincorporated Area                   | 51                    | 0/0             | \$697,028              | \$14,830                   |
| <b>Jefferson County</b>               | <b>109</b>            | <b>0/5</b>      | <b>\$1,738,695</b>     | <b>\$70,547</b>            |
| Fayette                               | 33                    | 0/0             | \$965,357              | \$43,880                   |
| Unincorporated Area                   | 76                    | 0/5             | \$773,338              | \$26,667                   |
| <b>Lawrence County</b>                | <b>189</b>            | <b>0/0</b>      | <b>\$2,204,578</b>     | <b>\$67,885</b>            |
| Monticello                            | 46                    | 0/0             | \$780,627              | \$33,940                   |
| New Hebron                            | 20                    | 0/0             | \$144,208              | \$10,301                   |
| Silver Creek                          | 8                     | 0/0             | \$46,302               | \$3,087                    |
| Unincorporated Area                   | 115                   | 0/0             | \$1,233,441            | \$20,557                   |
| <b>Lincoln County</b>                 | <b>208</b>            | <b>0/5</b>      | <b>\$7,629,662</b>     | <b>\$207,393</b>           |
| Brookhaven                            | 78                    | 0/2             | \$2,209,887            | \$92,079                   |
| Unincorporated Area                   | 130                   | 0/3             | \$5,419,775            | \$115,314                  |
| <b>Pike County</b>                    | <b>175</b>            | <b>1/6</b>      | <b>\$1,377,063</b>     | <b>\$51,568</b>            |
| Magnolia                              | 15                    | 0/0             | \$123,968              | \$5,903                    |
| McComb                                | 48                    | 0/4             | \$618,560              | \$25,773                   |
| Osyka                                 | 10                    | 0/0             | \$206,100              | \$9,814                    |
| Summit                                | 23                    | 0/0             | \$90,443               | \$3,932                    |
| Unincorporated Area                   | 79                    | 1/2             | \$337,992              | \$6,145                    |
| <b>Walthall County</b>                | <b>96</b>             | <b>2/0</b>      | <b>\$622,835</b>       | <b>\$17,705</b>            |
| Tylertown                             | 33                    | 2/0             | \$266,586              | \$11,108                   |
| Unincorporated Area                   | 63                    | 0/0             | \$356,249              | \$6,597                    |
| <b>Wilkinson County</b>               | <b>47</b>             | <b>0/0</b>      | <b>\$213,525</b>       | <b>\$7,379</b>             |
| Centreville                           | 5                     | 0/0             | \$15,697               | \$923                      |
| Crosby                                | 4                     | 0/0             | \$15,658               | \$712                      |
| Woodville                             | 14                    | 0/0             | \$64,979               | \$2,954                    |
| Unincorporated Area                   | 24                    | 0/0             | \$117,191              | \$2,790                    |
| <b>MEMA DISTRICT 7 REGIONAL TOTAL</b> | <b>1,209</b>          | <b>3/25</b>     | <b>\$68,612,699</b>    | <b>\$2,653,283</b>         |

Source: National Climatic Data Center

### 5.13.4 Probability of Future Occurrences

Given the high number of previous events, it is certain that thunderstorm events, including straight-line wind events, will occur in the future. This results in a probability level of highly likely (100 percent annual probability) for the entire planning area.

## 5.14 TORNADO

### 5.14.1 Background

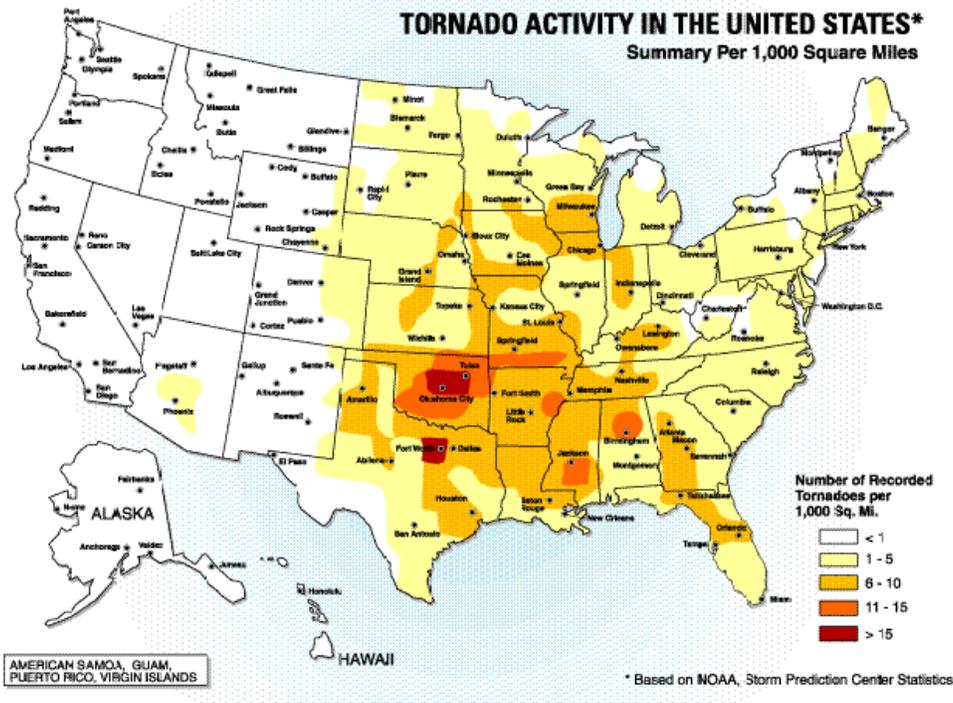
A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud extending to the ground. Tornadoes are most often generated by thunderstorm activity (but sometimes result from hurricanes and other tropical storms) when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The damage caused by a tornado is a result of the high wind velocity and wind-blown debris, also accompanied by lightning or large hail. According to the National Weather Service, tornado wind speeds normally range from 40 miles per hour to more than 300 miles per hour. The most violent tornadoes have rotating winds of 250 miles per hour or more and are capable of causing extreme destruction and turning normally harmless objects into deadly missiles.

Each year, an average of over 800 tornadoes is reported nationwide, resulting in an average of 80 deaths and 1,500 injuries.<sup>22</sup> According to the NOAA Storm Prediction Center (SPC), the highest concentration of tornadoes in the United States has been in Oklahoma, Texas, Kansas, and Florida respectively. Although the Great Plains region of the Central United States does favor the development of the largest and most dangerous tornadoes (earning the designation of “tornado alley”), Florida experiences the greatest number of tornadoes per square mile of all U.S. states (SPC, 2002). **Figure 5.20** shows tornado activity in the United States based on the number of recorded tornadoes per 1,000 square miles.

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<sup>22</sup> NOAA, 2009.

FIGURE 5.20: TORNADO ACTIVITY IN THE UNITED STATES



Source: Federal Emergency Management Agency

Tornadoes are more likely to occur during the months of March through May and are most likely to form in the late afternoon and early evening. Most tornadoes are a few dozen yards wide and touch down briefly, but even small short-lived tornadoes can inflict tremendous damage. Highly destructive tornadoes may carve out a path over a mile wide and several miles long.

The destruction caused by tornadoes ranges from light to inconceivable depending on the intensity, size, and duration of the storm. Typically, tornadoes cause the greatest damage to structures of light construction, including residential dwellings (particularly mobile homes). Tornadoic magnitude is reported according to the Fujita and Enhanced Fujita Scales. Tornado magnitudes prior to 2005 were determined using the traditional version of the Fujita Scale (**Table 5.27**). Tornado magnitudes that were determined in 2005 and later were determined using the Enhanced Fujita Scale (**Table 5.28**).

**TABLE 5.27: THE FUJITA SCALE (EFFECTIVE PRIOR TO 2005)**

| F-SCALE NUMBER | INTENSITY             | WIND SPEED  | TYPE OF DAMAGE DONE   |
|----------------|-----------------------|-------------|---|
| F0             | GALE TORNADO          | 40–72 MPH   | Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages to sign boards.   |
| F1             | MODERATE TORNADO      | 73–112 MPH  | The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.   |
| F2             | SIGNIFICANT TORNADO   | 113–157 MPH | Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.   |
| F3             | SEVERE TORNADO        | 158–206 MPH | Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.   |
| F4             | DEVASTATING TORNADO   | 207–260 MPH | Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.  |
| F5             | INCREDIBLE TORNADO    | 261–318 MPH | Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel re-enforced concrete structures badly damaged.  |
| F6             | INCONCEIVABLE TORNADO | 319–379 MPH | These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds. Missiles, such as cars and refrigerators would do serious secondary damage that could not be directly identified as F6 damage. If this level is ever achieved, evidence for it might only be found in some manner of ground swirl pattern, for it may never be identifiable through engineering studies. |

Source: National Weather Service

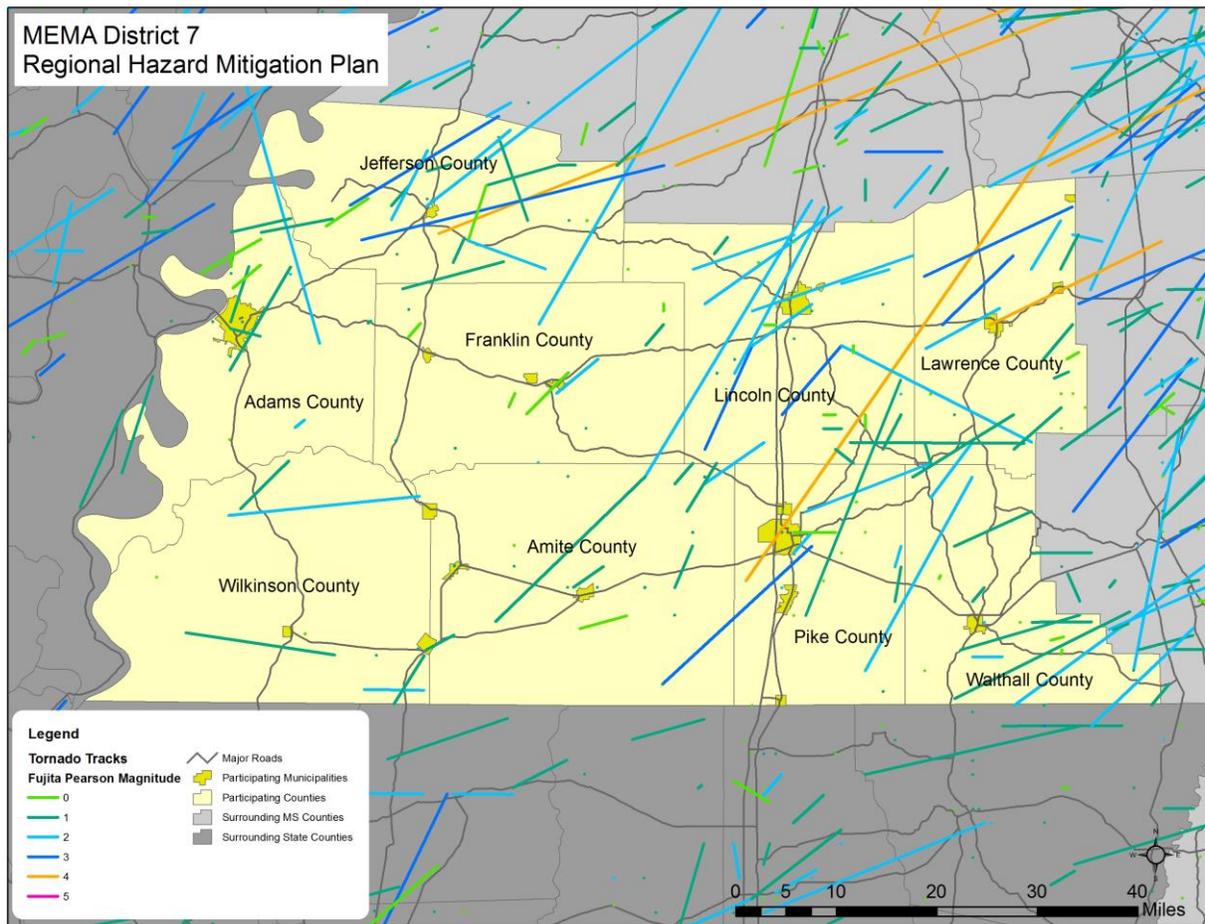
**TABLE 5.28 THE ENHANCED FUJITA SCALE (EFFECTIVE 2005 AND LATER)**

| EF-SCALE NUMBER | INTENSITY PHRASE | 3 SECOND GUST (MPH) | TYPE OF DAMAGE DONE  |
|-----------------|------------------|---------------------|--|
| EF0             | GALE             | 65–85               | Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages to sign boards.  |
| EF1             | MODERATE         | 86–110              | The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.                                |
| EF2             | SIGNIFICANT      | 111–135             | Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.  |
| EF3             | SEVERE           | 136–165             | Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.  |
| EF4             | DEVASTATING      | 166–200             | Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.   |
| EF5             | INCREDIBLE       | Over 200            | Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel re-enforced concrete structures badly damaged. |

Source: National Weather Service

### 5.14.2 Location and Spatial Extent

Tornadoes occur throughout the state of Mississippi, and thus in the MEMA District 7 Region. Tornadoes typically impact a relatively small area, but damage may be extensive. Event locations are completely random and it is generally not possible to predict specific areas that are more susceptible to tornado strikes over time. Therefore, it is assumed that the MEMA District 7 Region is uniformly exposed to this hazard. With that in mind, **Figure 5.21** shows tornado track data for many of the major tornado events that have impacted the region between 1950 and 2015. While no definitive pattern emerges from this data, some areas that have been impacted in the past may be potentially more susceptible in the future.

**FIGURE 5.21: HISTORICAL TORNADO TRACKS IN THE MEMA DISTRICT 7 REGION**

Source: National Weather Service Storm Prediction Center

### 5.14.3 Historical Occurrences

Tornadoes were at least partially responsible for 12 disaster declarations in the MEMA District 7 Region.<sup>23</sup> According to the National Climatic Data Center, there have been a total of 214 recorded tornado events in the MEMA District 7 Region since 1950 (**Table 5.29**), resulting in more than \$752.5 million (2017 dollars) in property damages.<sup>24 25</sup> In addition, 14 fatalities and 379 injuries were reported. The magnitude of these tornadoes ranges from F0 to F4 in intensity. Detailed information on historical tornado events can be found in the county-specific annexes.

<sup>23</sup> Not all of the participating counties were declared disaster areas for these storms. A complete listing of historical disaster declarations, including the affected counties, can be found in Section 4: *Hazard Identification*.

<sup>24</sup> These tornado events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1950 through February 2017. It is likely that additional tornadoes have occurred in the MEMA District 7 Region. As additional local data becomes available, this hazard profile will be amended.

<sup>25</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE 5.29: SUMMARY OF TORNADO OCCURRENCES IN THE MEMA DISTRICT 7 REGION**

| Location                              | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|---------------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| <b>Adams County</b>                   | <b>16</b>             | <b>0/44</b>     | <b>\$10,354,285</b>    | <b>\$363,924</b>           |
| Natchez                               | 3                     | 0/0             | \$3,060,792            | \$255,066                  |
| Unincorporated Area                   | 13                    | 0/44            | \$7,293,493            | \$108,858                  |
| <b>Amite County</b>                   | <b>25</b>             | <b>0/6</b>      | <b>\$4,091,022</b>     | <b>\$86,862</b>            |
| Gloster                               | 1                     | 0/0             | \$0                    | \$0                        |
| Liberty                               | 3                     | 0/0             | \$189,018              | \$17,183                   |
| Unincorporated Area                   | 21                    | 0/6             | \$3,902,004            | \$69,679                   |
| <b>Franklin County</b>                | <b>12</b>             | <b>0/7</b>      | <b>\$8,500,157</b>     | <b>\$195,723</b>           |
| Bude                                  | 0                     | 0/0             | \$0                    | \$0                        |
| Meadville                             | 2                     | 0/0             | \$111,766              | \$9,314                    |
| Roxie                                 | 1                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area                   | 9                     | 0/7             | \$8,388,391            | \$186,409                  |
| <b>Jefferson County</b>               | <b>22</b>             | <b>0/1</b>      | <b>\$5,393,838</b>     | <b>\$116,771</b>           |
| Fayette                               | 7                     | 0/0             | \$892,587              | \$49,588                   |
| Unincorporated Area                   | 15                    | 0/1             | \$4,501,251            | \$67,183                   |
| <b>Lawrence County</b>                | <b>26</b>             | <b>4/52</b>     | <b>\$554,531,166</b>   | <b>\$11,325,217</b>        |
| Monticello                            | 1                     | 0/0             | \$83,627               | \$3,636                    |
| New Hebron                            | 0                     | 0/0             | \$0                    | \$0                        |
| Silver Creek                          | 1                     | 0/0             | \$100,524              | \$8,377                    |
| Unincorporated Area                   | 24                    | 4/52            | \$554,347,015          | \$11,313,204               |
| <b>Lincoln County</b>                 | <b>48</b>             | <b>5/27</b>     | <b>\$28,163,384</b>    | <b>\$455,546</b>           |
| Brookhaven                            | 8                     | 0/0             | \$44,246               | \$2,011                    |
| Unincorporated Area                   | 40                    | 5/27            | \$28,119,138           | \$453,534                  |
| <b>Pike County</b>                    | <b>27</b>             | <b>4/213</b>    | <b>\$131,930,097</b>   | <b>\$2,400,146</b>         |
| Magnolia                              | 2                     | 0/0             | \$28,549               | \$1,679                    |
| McComb                                | 5                     | 0/0             | \$0                    | \$0                        |
| Osyka                                 | 2                     | 0/0             | \$7,441                | \$392                      |
| Summit                                | 1                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area                   | 17                    | 4/213           | \$131,894,107          | \$2,398,075                |
| <b>Walthall County</b>                | <b>28</b>             | <b>1/14</b>     | <b>\$7,343,997</b>     | <b>\$124,441</b>           |
| Tylertown                             | 7                     | 1/0             | \$70,889               | \$3,222                    |
| Unincorporated Area                   | 21                    | 0/14            | \$7,273,108            | \$121,218                  |
| <b>Wilkinson County</b>               | <b>10</b>             | <b>0/15</b>     | <b>\$2,192,177</b>     | <b>\$63,893</b>            |
| Centreville                           | 1                     | 0/0             | \$106,500              | \$21,300                   |
| Crosby                                | 0                     | 0/0             | \$0                    | \$0                        |
| Woodville                             | 1                     | 0/0             | \$724                  | \$43                       |
| Unincorporated Area                   | 8                     | 0/15            | \$2,084,953            | \$42,550                   |
| <b>MEMA DISTRICT 7 REGIONAL TOTAL</b> | <b>214</b>            | <b>14/379</b>   | <b>\$752,500,123</b>   | <b>\$15,132,522</b>        |

Source: National Climatic Data Center

## 5.14.4 Probability of Future Occurrences

According to historical information, tornado events pose a significant threat to the MEMA District 7 Region. The probability of future tornado occurrences affecting MEMA District 7 Region is likely (between 10 and 100 percent annual probability).

## 5.15 WINTER STORM AND FREEZE

### 5.15.1 Background

A winter storm can range from a moderate snow over a period of a few hours to blizzard conditions with blinding wind-driven snow that lasts for several days. Events may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Some winter storms might be large enough to affect several states, while others might affect only localized areas. Occasionally, heavy snow might also cause significant property damages, such as roof collapses on older buildings.

All winter storm events have the potential to present dangerous conditions to the affected area. Larger snowfalls pose a greater risk, reducing visibility due to blowing snow and making driving conditions treacherous. A heavy snow event is defined by the National Weather Service as an accumulation of 4 or more inches in 12 hours or less. A blizzard is the most severe form of winter storm. It combines low temperatures, heavy snow, and winds of 35 miles per hour or more, which reduces visibility to a quarter mile or less for at least 3 hours. Winter storms are often accompanied by sleet, freezing rain, or an ice storm. Such freeze events are particularly hazardous as they create treacherous surfaces.

Ice storms are defined as storms with significant amounts of freezing rain and are a result of cold air damming (CAD). CAD is a shallow, surface-based layer of relatively cold, stably-stratified air entrenched against the eastern slopes of the Appalachian Mountains. With warmer air above, falling precipitation in the form of snow melts, then becomes either super-cooled (liquid below the melting point of water) or re-freezes. In the former case, super-cooled droplets can freeze on impact (freezing rain), while in the latter case, the re-frozen water particles are ice pellets (or sleet). Sleet is defined as partially frozen raindrops or refrozen snowflakes that form into small ice pellets before reaching the ground. They typically bounce when they hit the ground and do not stick to the surface. However, it does accumulate like snow, posing similar problems and has the potential to accumulate into a layer of ice on surfaces. Freezing rain, conversely, usually sticks to the ground, creating a sheet of ice on the roadways and other surfaces. All of the winter storm elements – snow, low temperatures, sleet, ice, etc. – have the potential to cause significant hazard to a community. Even small accumulations can down power lines and trees limbs and create hazardous driving conditions. Furthermore, communication and power may be disrupted for days.

### 5.15.2 Location and Spatial Extent

Nearly the entire continental United States is susceptible to winter storm and freeze events. Some ice and winter storms may be large enough to affect several states, while others might affect limited, localized areas. The degree of exposure typically depends on the normal expected severity of local winter weather. The MEMA District 7 Region is not accustomed to severe winter weather conditions and seldom receives severe winter weather, even during the winter months. Events tend to be mild in nature; however, this creates a situation where even relatively small accumulations of snow, ice, or

other wintery precipitation can lead to losses and damage due to the fact that these events are not commonplace. Given the atmospheric nature of the hazard, the entire region has uniform exposure to a winter storm.

### 5.15.3 Historical Occurrences

According to the National Climatic Data Center, there have been a total of 81 recorded winter storm events in the MEMA District 7 Region since 1996 (**Table 5.30**).<sup>26</sup> These events resulted in more than \$6.6 million (2017 dollars) in damages.<sup>27</sup> Detailed information on the recorded winter storm events can be found in the county-specific annexes.

**TABLE 5.30: SUMMARY OF WINTER STORM EVENTS IN THE MEMA DISTRICT 7 REGION**

| Location                            | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-------------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Adams County                        | 10                    | 0/0             | \$1,446,154            | \$68,864                   |
| Amite County                        | 13                    | 0/0             | \$0                    | \$0                        |
| Franklin County                     | 8                     | 0/0             | \$940,603              | \$44,791                   |
| Jefferson County                    | 9                     | 0/0             | \$947,462              | \$45,117                   |
| Lawrence County                     | 8                     | 0/0             | \$1,323,156            | \$147,017                  |
| Lincoln County                      | 9                     | 0/0             | \$2,039,234            | \$97,106                   |
| Pike County                         | 8                     | 0/0             | \$0                    | \$0                        |
| Walthall County                     | 7                     | 0/0             | \$0                    | \$0                        |
| Wilkinson County                    | 9                     | 0/0             | \$0                    | \$0                        |
| <b>MEMA DISTRICT 7 REGION TOTAL</b> | <b>81</b>             | <b>0/0</b>      | <b>\$6,696,609</b>     | <b>\$402,896</b>           |

Source: National Climatic Data Center

There have been several severe winter weather events in the MEMA District 7 Region. The text below describes two of the major events and associated impacts on the region. Similar impacts can be expected with severe winter weather.

#### February 2010

Heavy snow affected a large portion of the region, especially locations across central and southern Mississippi, on Thursday night and Friday, February 11th and 12th. The heavy snow was a result of a low pressure system that tracked eastward across the northern Gulf of Mexico, and a vigorous upper level disturbance that moved across the region while a cold air mass was in place. Light precipitation overspread the region late Thursday afternoon into the evening before becoming heavy Thursday night into early Friday morning. The snow tapered off from west to east during the midday hours Friday.

<sup>26</sup> These ice and winter storm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional winter storm conditions have affected the MEMA District 7 Region.

<sup>27</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

### **February 2011**

An ice storm developed across the area on February 3rd into the early morning hours of the 4th. While this icing event was not devastating, the impact to travel was a major issue across the region. Thousands of accidents occurred from slick roads. As a result of the accidents, three fatalities occurred along with a handful of injuries. Overall, most areas received 0.25 to 0.5 inches of ice accumulation from freezing rain. Additionally, some areas had a mix of precipitation with sleet accumulating. Some snow did occur, but those were just across select areas and the accumulation was mainly one inch or less.

Winter storms throughout the planning area have several negative externalities including hypothermia, cost of snow and debris cleanup, business and government service interruption, traffic accidents, and power outages. Furthermore, citizens may resort to using inappropriate heating devices that could to fire or an accumulation of toxic fumes.

## **5.15.4 Probability of Future Occurrences**

Winter storm events will continue to occur in the MEMA District 7 Region. Based on historical information, the probability is likely (between 10 and 100 percent annual probability).

## **5.16 RADIOLOGICAL EVENT**

### **5.16.1 Background**

A nuclear and radiation accident is defined by the International Atomic Energy Agency as “an event that has led to significant consequences to people, the environment or the facility. Often, this type of incident results from damage to the reactor core of a nuclear power plant which can release radioactivity into the environment. The degree of exposure from nuclear accidents has varied historically from serious to catastrophic.

By some estimates, over 50 percent of nuclear accidents that have ever occurred were in the United States.<sup>28</sup> However, it is also important to note that generally, nuclear accidents are a rare occurrence. Many incidents are extremely well known due to their large-scale impact and serious effects on people and the environment, but incidents are generally not common

One of the most notorious accidents in the United States was the Three Mile Island accident which occurred in 1979 and released small amounts of radioactive gases and iodine into the environment. Although no deaths have been directly attributed to the accident, it invoked a strong public reaction and demonstrated the potential dangers associated with nuclear power generation.

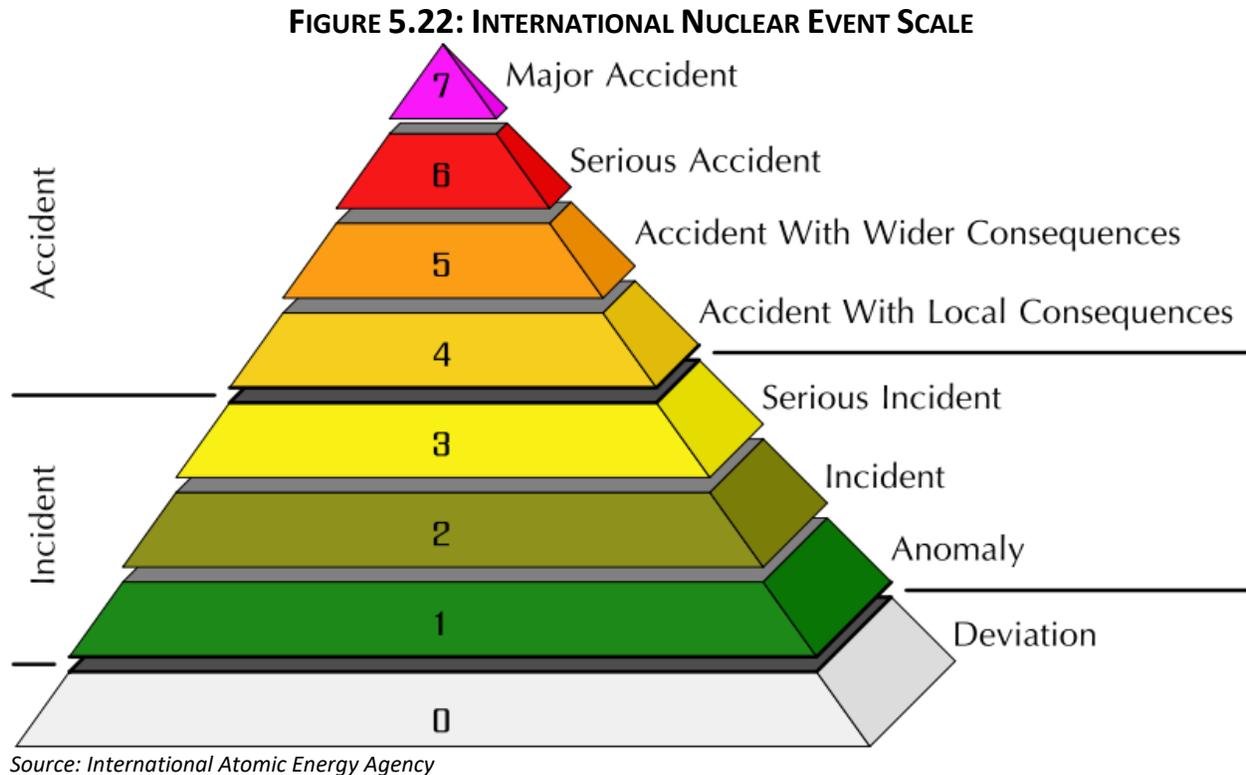
The Grand Gulf Nuclear Station and River Bend Nuclear Station, which are both located within a 50-mile radius of the region. The Grand Gulf Station is a 4,408 megawatt power plant that began commercial operation in 1984, while the River Bend Station is a 3,901 megawatt power plant that began operation in 1985. Both are boiling water reactors and operate with a very high level of security.

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<sup>28</sup> Benjamin K. Sovacool. A Critical Evaluation of Nuclear Power and Renewable Electricity in Asia *Journal of Contemporary Asia*, Vol. 40, No. 3, August 2010, pp. 393–400.

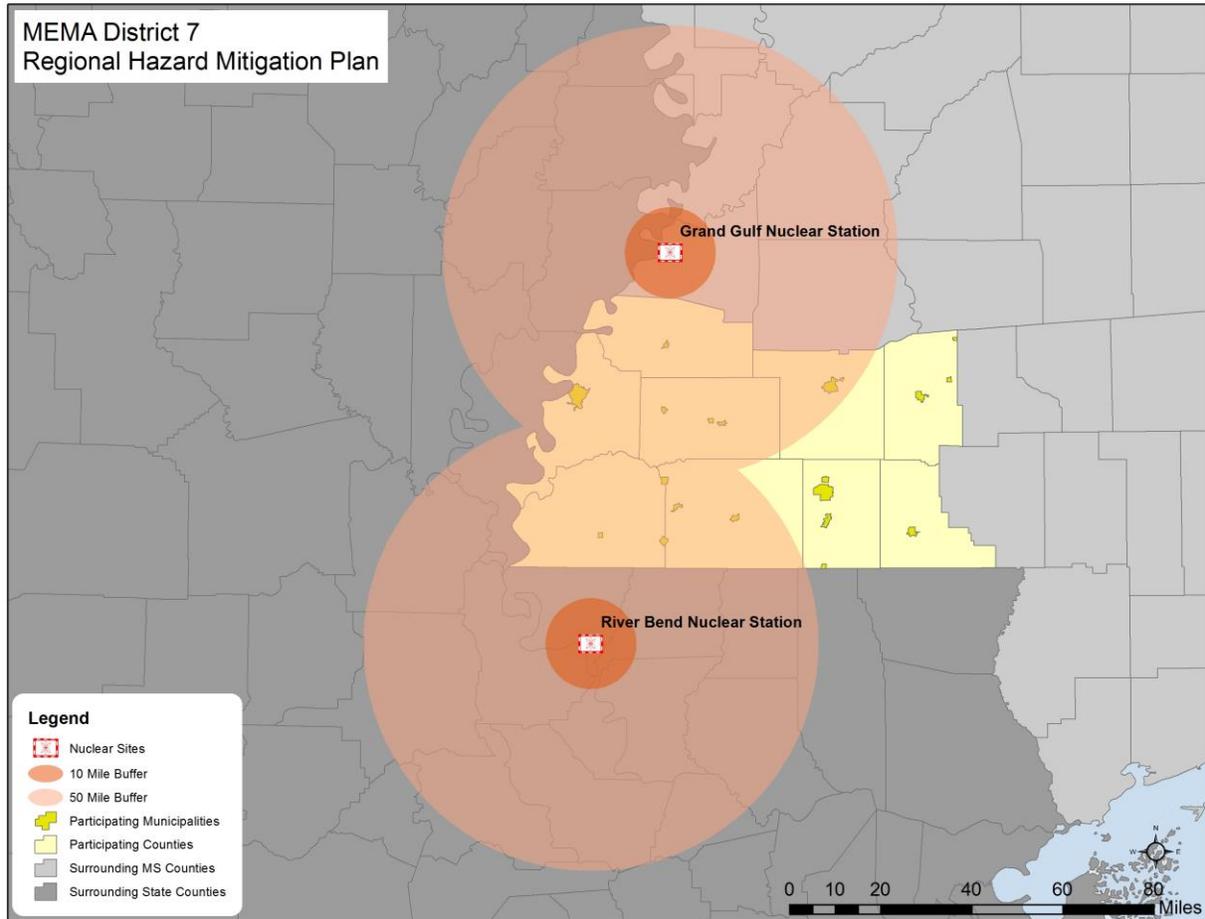
### 5.16.2 Location and Spatial Extent

The western and central portions of the region are at highest risk to a nuclear incident. Areas in this part of the region are susceptible due to their relative proximity to the aforementioned power plants. The International Atomic Energy Association has developed a scale called the International Nuclear and Radiological Event Scale (INES) which provides a quantitative means of assessing the extent of a nuclear event. This scale, like the MMI used for earthquakes, is logarithmic which means that each increasing level on the scale represents an event 10 times more severe than the previous level (**Figure 5.22**).



The Nuclear Regulatory Commission defines two emergency planning zones around nuclear plants. Areas located within 10 miles of the station are considered to be within the zone of highest risk to a nuclear incident and this radius is the designated evacuation radius recommended by the Nuclear Regulatory Commission. Within the 10-mile zone, the primary concern is exposure to and inhalation of radioactive contamination. The very northern part of Jefferson County is located on the edge of the 10-mile radius of the Grand Gulf Nuclear Station, although no part of the county is actually located within this zone. The most concerning effects in the secondary 50-mile zone are related to ingestion of food and liquids that may have been contaminated. All of Jefferson, Adams, and Wilkinson Counties are located within this 50-mile radius. Large parts of Franklin, Lincoln, and Amite County are also located within this zone. The 50-mile zone is still considered to be at risk from a nuclear incident, though the impacts may be less severe than in the 10-mile zone (**Figure 5.23**).

**FIGURE 5.23: NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN THE MEMA DISTRICT 7 REGION**



Source: International Atomic Energy Agency

### 5.16.3 Historical Occurrences

Although there have been no major nuclear events at either the Grand Gulf or River Bend Nuclear Stations, there is some possibility that one could occur as there have been incidents in the past in the United States at other facilities and at facilities around the world. Additionally, a list of minor events/notifications was acquired from reports collected by the Nuclear Regulatory Commission (NRC). The NRC classifies events using the scale found in **Table 5.31**. A list of events at Grand Gulf Nuclear Station can be found in **Table 5.32** and a list of events at River Bend Nuclear Station can be found in **Table 5.33**. It is noteworthy that all of the events were minor in magnitude and many were insignificant enough that they did not register on the classification scale.

**TABLE 5.31: NUCLEAR REGULATORY COMMISSION EMERGENCY CLASSIFICATION SCALE FOR EVENTS OCCURRING AT NUCLEAR POWER PLANTS**

| Classification                       | Description   |
|--------------------------------------|---|
| Notification of Unusual Event (NOUE) | Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. [Note: This term is sometimes shortened to Unusual Event (UE). The terms Notification of Unusual Event, NOUE and Unusual Event are used interchangeably.]  |
| Alert                                | Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) protective action guides (PAGs)  |
| Site Area Emergency                  | Site Area Emergency (SAE) – Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile action that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary. |
| General Emergency                    | Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile action that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.  |

Source: Nuclear Regulatory Commission

**TABLE 5.32: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT GRAND GULF NUCLEAR STATION**

| Date      | Retrieved From*                  | Classification | Plant             | Description  |
|-----------|----------------------------------|----------------|-------------------|--|
| 8/29/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST         |
| 10/1/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF NUCLEAR STATION SECURITY OFFICER LOCKOUT                  |
| 9/29/2016 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF EXTENDED PLANT SHUTDOWN TO ADDRESS OPERATIONS PERFORMANCE |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lsearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

**TABLE 5.33: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT RIVER BEND NUCLEAR STATION**

| Date       | Retrieved From*                  | Classification                               | Plant             | Description   |
|------------|----------------------------------|--|-------------------|---|
| 11/26/1985 | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | ECCS Initiation: Improper restoration of a level transmitter causes HPSC injection    |
| 11/27/1985 | Licensee Event Report            | Alert  | River Bend Unit 1 | Failure to Perform Surveillance Tests   |
| 3/5/1992   | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | REACTOR SCRAM CAUSED BY A GENERATOR TRIP DUE TO HIGH WINDS CAUSING TRANSFORMER DAMAGE |
| 9/15/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE IVAN  |
| 10/4/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | Shutdown Greater than 72 Hours  |
| 9/23/2005  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | NRC ENTERS MONITORING MODE DUE TO HURRICANE RITA                                      |
| 5/23/2007  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REACTOR SHUTDOWN DUE TO UNEXPECTED CHANGE IN RECIRCULATION FLOW                       |
| 9/2/2008   | Preliminary Notification Reports | Notification of Unusual Event/Not Applicable | River Bend Unit 1 | NRC RESPONSE TO HURRICANE GUSTAV  |
| 5/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | AUGMENTED INSPECTION TEAM ONSITE AT RIVER BEND STATION                                |
| 8/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST                          |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lsearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

### 5.16.4 Probability of Future Occurrences

A nuclear event is a very rare occurrence in the United States due to the intense regulation of the industry. There have been minor incidents in the past, but it is considered unlikely (less than 1 percent annual probability).

### 5.16.5 Radiological Evacuations

Similar to the hurricane evacuations discussed above, in many ways the MEMA District 7 Region would potentially be impacted to a greater degree by evacuations caused by a radiological event than by the event itself. Since the region is not directly located within the 10-mile evacuation area but neighboring counties are located within this zone, it is highly likely that populations from those neighboring counties will be evacuated to the counties within the MEMA District 7 Region.

Due to the severe and long-term effects of a major radiological event, temporary sheltering will be an initial concern, but the greater challenge may be in the long-term. As has happened with historical radiological accidents in other locations, the danger in the impacted area will likely extend for a very long period after the event and evacuees may be unable to return to their homes for months or years. This additional influx of population will cause a major strain on resources within these relatively rural counties in the short-term, as local communities with limited resources will have an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people. In the long-term, there may be challenges for local officials as existing infrastructure will likely be inadequate to handle larger populations.

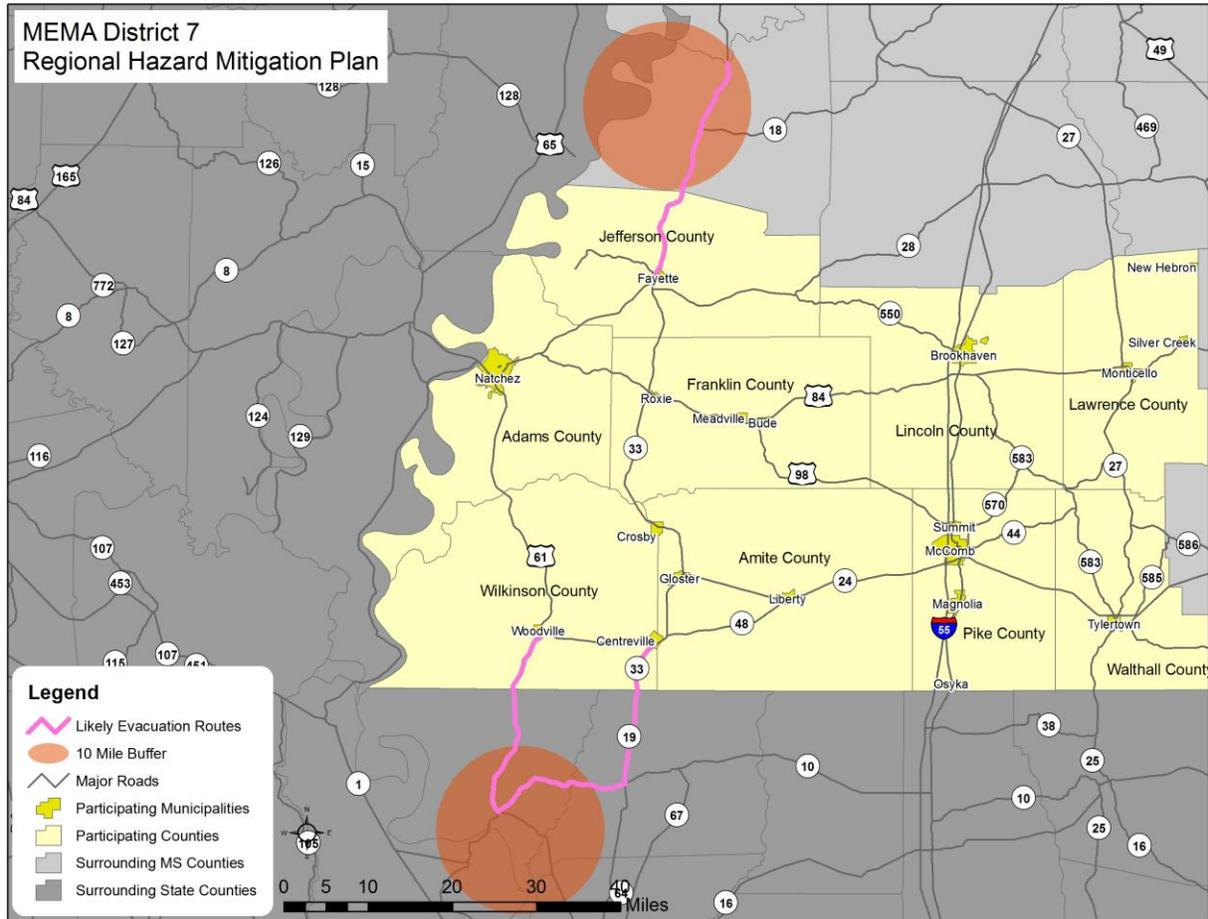
Although there have not been any major radiological events in the region historically, hurricane evacuations (discussed above) provide a similar scenario in terms of what the region might expect. However, one additional concern that officials will need to consider in a radiological event is that evacuees may be contaminated by radioactivity. According to the Centers for Disease Control, radioactive contamination can occur when radioactive materials are released into the environment and become deposited into the air, water, surfaces, soil, plants, buildings, people or animals. This contamination can then be spread when people touch other people, surfaces, or objects. Therefore, when people evacuate a contaminated zone, they pose a potential risk of spreading the contamination to others if they are not properly treated. Local officials in MEMA District 7 may need to be prepared to set up decontamination centers along major evacuation routes to ensure that the contamination is not spread. It is also important for citizens to understand the steps they can take to reduce the risk of spreading contamination such as evacuating quickly after an event and following decontamination instructions as directed by local officials.<sup>29</sup>

Based on the locations of the 10-mile evacuation areas near the region, many of these evacuees will likely come from Claiborne County to the north and West Feliciana and East Feliciana Parishes to the south. The main roads for these evacuees will probably be U.S. Highway 61 and Mississippi State Highway 33 since these are the primary and most direct roads into and out of the aforementioned evacuation counties and into MEMA District 7 (**Figure 5.24**). Depending on the severity of the event, officials may even change these roads over to a contraflow traffic pattern to enable quicker evacuations.

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<sup>29</sup> Centers for Disease Control and Prevention. *Emergency Preparedness and Response: Contamination vs. Exposure*. Retrieved on September 1, 2017 from <https://emergency.cdc.gov/radiation/contamination.asp>

**FIGURE 5.24: LIKELY EVACUATION ROUTES FOR A RADIOLOGICAL EVENT IN THE MEMA DISTRICT 7 REGION**



Source: International Atomic Energy Agency

As a result of the potential for an influx of evacuees during a radiological event, it is critical for local officials in MEMA District 7 to prepare for evacuations. It is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future events.

## 5.17 CONCLUSIONS ON HAZARD RISK

The hazard profiles presented in this section were developed using best available data and result in what may be considered principally a qualitative assessment as recommended by FEMA in its “How-to” guidance document titled *Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA Publication 386-2). It relies heavily on historical and anecdotal data, stakeholder input, and professional and experienced judgment regarding observed and/or anticipated hazard impacts. It also carefully considers the findings in other relevant plans, studies, and technical reports.

### 5.17.1 Hazard Extent

**Table 5.34** describes the extent of each natural hazard identified for the MEMA District 7 Region. The extent of a hazard is defined as its severity or magnitude, as it relates to the planning area.

**TABLE 5.34: EXTENT OF MEMA DISTRICT 7 REGION HAZARDS**

| Flood-related Hazards            |  |                                   |                            |                         |                        |                                 |                                 |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                     |  |  |  |  |  |  |  |                                  |           |       |        |    |    |    |    |                          |            |       |       |    |    |    |    |
|----------------------------------|--|-----------------------------------|----------------------------|-------------------------|------------------------|---------------------------------|---------------------------------|---------------------------|------|-----------------------------------|----------------------------|------------------|--|--|--|-------------------------|------------------------|---------------------------------|---------------------------------|---------------------|--|--|--|--|--|--|--|----------------------------------|-----------|-------|--------|----|----|----|----|--------------------------|------------|-------|-------|----|----|----|----|
| Dam and Levee Failure            | <p>Dam Failure extent is defined using the Mississippi Department of Environmental Quality classifications which include Low, Significant, and High. Twelve dams are classified as high-hazard in the MEMA District 7 Region.</p> <ul style="list-style-type: none"> <li>• Adams County: 6 high hazard dams</li> <li>• Amite County: 0 high hazard dams</li> <li>• Franklin County: 1 high hazard dam</li> <li>• Jefferson County: 0 high hazard dams</li> <li>• Lawrence County: 0 high hazard dams</li> <li>• Lincoln County: 2 high hazard dams</li> <li>• Pike County: 3 high hazard dams</li> <li>• Walthall County: 0 high hazard dams</li> <li>• Wilkinson County: 0 high hazard dams</li> </ul>  |                                   |                            |                         |                        |                                 |                                 |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                     |  |  |  |  |  |  |  |                                  |           |       |        |    |    |    |    |                          |            |       |       |    |    |    |    |
| Erosion                          | <p>The extent of erosion can be defined by the measurable rate of erosion that occurs. There are no official erosion rate records in the MEMA District 7 Region but local estimates are around 0.25 to 0.50 feet per year. Some areas of erosion have been identified by local coordinators.</p>   |                                   |                            |                         |                        |                                 |                                 |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                     |  |  |  |  |  |  |  |                                  |           |       |        |    |    |    |    |                          |            |       |       |    |    |    |    |
| Flood                            | <p>Flood extent can be measured by the amount of land and property in the floodplain as well as flood height and velocity. The amount of land in the floodplain accounts for 15.9 percent of the total land area in the MEMA District 7 Region.</p> <p>Flood depth and velocity are recorded via United States Geological Survey stream gages throughout the region. While a gage does not exist for each participating jurisdiction, there is one at or near many areas. The greatest peak discharge recorded for the region was on the Homochitto River at Rosetta in Franklin County. Water reached a discharge of 150,000 cubic feet per second (recorded on March 31, 1949). The highest stream gage height was on Tanyard Creek at Liberty in Amite County with a height that was recorded at 94.31 feet (recorded on April 13, 1955). Additional peak discharge readings, historic crest heights, and the corresponding flood categories (where available) are in the table below.</p> <table border="1"> <thead> <tr> <th rowspan="2">Location/<br/>Jurisdiction</th> <th rowspan="2">Date</th> <th rowspan="2">Maximum<br/>Historic<br/>Crest (ft)</th> <th rowspan="2">Peak<br/>Discharge<br/>(cfs)</th> <th colspan="4">Flood Categories</th> </tr> <tr> <th>Action<br/>Stage<br/>(ft)</th> <th>Flood<br/>Stage<br/>(ft)</th> <th>Moderate<br/>Flood<br/>Stage (ft)</th> <th>Major<br/>Flood<br/>Stage<br/>(ft)</th> </tr> </thead> <tbody> <tr> <td colspan="8"><b>Adams County</b></td> </tr> <tr> <td>St. Catherine Creek near Natchez</td> <td>5/17/1953</td> <td>33.80</td> <td>31,000</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>Spanish Bayou at Natchez</td> <td>10/12/1970</td> <td>15.12</td> <td>1,990</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> </tbody> </table> |                                   |                            |                         |                        |                                 |                                 | Location/<br>Jurisdiction | Date | Maximum<br>Historic<br>Crest (ft) | Peak<br>Discharge<br>(cfs) | Flood Categories |  |  |  | Action<br>Stage<br>(ft) | Flood<br>Stage<br>(ft) | Moderate<br>Flood<br>Stage (ft) | Major<br>Flood<br>Stage<br>(ft) | <b>Adams County</b> |  |  |  |  |  |  |  | St. Catherine Creek near Natchez | 5/17/1953 | 33.80 | 31,000 | NA | NA | NA | NA | Spanish Bayou at Natchez | 10/12/1970 | 15.12 | 1,990 | NA | NA | NA | NA |
| Location/<br>Jurisdiction        | Date   | Maximum<br>Historic<br>Crest (ft) | Peak<br>Discharge<br>(cfs) | Flood Categories        |                        |                                 |                                 |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                     |  |  |  |  |  |  |  |                                  |           |       |        |    |    |    |    |                          |            |       |       |    |    |    |    |
|                                  |  |                                   |                            | Action<br>Stage<br>(ft) | Flood<br>Stage<br>(ft) | Moderate<br>Flood<br>Stage (ft) | Major<br>Flood<br>Stage<br>(ft) |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                     |  |  |  |  |  |  |  |                                  |           |       |        |    |    |    |    |                          |            |       |       |    |    |    |    |
| <b>Adams County</b>              |  |                                   |                            |                         |                        |                                 |                                 |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                     |  |  |  |  |  |  |  |                                  |           |       |        |    |    |    |    |                          |            |       |       |    |    |    |    |
| St. Catherine Creek near Natchez | 5/17/1953  | 33.80                             | 31,000                     | NA                      | NA                     | NA                              | NA                              |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                     |  |  |  |  |  |  |  |                                  |           |       |        |    |    |    |    |                          |            |       |       |    |    |    |    |
| Spanish Bayou at Natchez         | 10/12/1970   | 15.12                             | 1,990                      | NA                      | NA                     | NA                              | NA                              |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                     |  |  |  |  |  |  |  |                                  |           |       |        |    |    |    |    |                          |            |       |       |    |    |    |    |

**SECTION 5: HAZARD PROFILES**

|   |            |       |          |    |    |    |    |
|---|------------|-------|----------|----|----|----|----|
| Homochitto River near Kingston          | 4/2/1947   | 26.39 | 45,400   | NA | NA | NA | NA |
| Second Creek at Sibley                  | 5/3/1953   | 13.70 | 22,500   | NA | NA | NA | NA |
| Homochitto River near Doloroso          | 5/19/1953  | 33.00 | 134,000* | NA | NA | NA | NA |
| Mississippi River at Natchez            | 5/19/2011  | 61.95 | NA       | 38 | 48 | 51 | 57 |
| <b>Amite County</b>                     |            |       |          |    |    |    |    |
| Stock Pond Draw near Liberty            | 10/16/1975 | 8.26  | 443      | NA | NA | NA | NA |
| East Fork Amite River near Peoria       | 1/25/1990  | 21.10 | 34,000   | NA | NA | NA | NA |
| Tanyard Creek at Liberty                | 4/13/1955  | 94.31 | 8,000    | NA | NA | NA | NA |
| Crs Draw near Liberty                   | 6/8/1975   | 11.81 | 993      | NA | NA | NA | NA |
| <b>Franklin County</b>                  |            |       |          |    |    |    |    |
| Homochitto River at Eddiceton           | 5/13/1990  | 21.06 | 55,400*  | NA | NA | NA | NA |
| McCall Creek near Lucien                | 4/13/1974  | 92.70 | 23,000   | NA | NA | NA | NA |
| Beaver Run near McCall Creek            | 4/13/1974  | 10.85 | 1,220    | NA | NA | NA | NA |
| Homochitto River near Bude              | 4/13/1974  | 22.00 | 95,000   | NA | NA | NA | NA |
| Homochitto River at Rosetta             | 3/31/1949  | 37.80 | 150,000* | 18 | 19 | 30 | 37 |
| <b>Jefferson County</b>                 |            |       |          |    |    |    |    |
| Little Creek near Fayette               | 4/13/1974  | 15.45 | 1,800    | NA | NA | NA | NA |
| North Fork Coles Creek near Church Hill | 3/2/2001   | 39.62 | 15,700   | NA | NA | NA | NA |

**SECTION 5: HAZARD PROFILES**

|   |            |       |         |    |    |    |    |
|---|------------|-------|---------|----|----|----|----|
| South Fork Coles Creek near Church Hill | 3/2/2001   | 29.05 | 22,500  | NA | NA | NA | NA |
| Coles Creek near Fayette                | 4/12/1974  | 31.96 | 75,000  | NA | NA | NA | NA |
| <b>Lawrence County</b>                  |            |       |         |    |    |    |    |
| Bahala Creek near Oma                   | 4/12/1974  | 25.78 | 40,000  | NA | NA | NA | NA |
| Small Pine Ditch near Monticello        | 3/24/1973  | 8.24  | 281     | NA | NA | NA | NA |
| Pearl River near Monticello             | 4/20/1979  | 34.08 | 122,000 | 21 | 22 | 25 | 33 |
| Roadside Park Ditch near Monticello     | 4/12/1974  | 7.06  | 289     | NA | NA | NA | NA |
| New Hebron Gulley at New Hebron         | 4/12/1974  | 17.05 | 2,650   | NA | NA | NA | NA |
| Silver Creek at Silver Creek            | 8/30/2012  | 17.55 | 20,500  | NA | NA | NA | NA |
| Whitesand Creek near Oakvale            | 4/13/1974  | 18.76 | 25,400  | NA | NA | NA | NA |
| <b>Lincoln County</b>                   |            |       |         |    |    |    |    |
| Bogue Chitto near Brookhaven            | 10/4/1964  | 19.33 | 9,000*  | NA | NA | NA | NA |
| Big Creek at Bogue Chitto               | 10/4/1964  | 27.40 | 13,700  | NA | NA | NA | NA |
| Dry Draw near Brookhaven                | 4/12/1955  | 10.18 | 460     | NA | NA | NA | NA |
| <b>Pike County</b>                      |            |       |         |    |    |    |    |
| Bogue Chitto near Pricedale             | 12/XX/1919 | 53.60 | 70,000  | NA | NA | NA | NA |
| Bogue Chitto near Tylertown             | 1/7/1950   | 33.50 | 45,700  | 14 | 15 | 17 | 23 |

**SECTION 5: HAZARD PROFILES**

|   |           |       |        |    |    |    |    |
|---|-----------|-------|--------|----|----|----|----|
| Tangipahoa River Tributary near McComb  | 3/24/1973 | 10.23 | 1,460  | NA | NA | NA | NA |
| Little Tangipahoa River at Magnolia     | 10/4/1964 | 22.22 | 7,600  | NA | NA | NA | NA |
| Tangipahoa River at Osyka               | 4/28/1997 | 18.66 | 31,000 | 14 | 15 | 20 | 25 |
| <b>Walthall County</b>                  |           |       |        |    |    |    |    |
| Middle Fork Hickory Flat near Tylertown | 8/22/1953 | 13.95 | 2,300  | NA | NA | NA | NA |
| Union Creek near Tylertown              | 8/22/1953 | 19.20 | 12,800 | NA | NA | NA | NA |
| McGees Creek at Tylertown               | 4/7/1983  | 31.38 | 30,000 | NA | NA | NA | NA |
| <b>Wilkinson County</b>                 |           |       |        |    |    |    |    |
| Observers Draw near Doloroso            | 3/17/1961 | 10.10 | 418    | NA | NA | NA | NA |
| Buffalo River near Woodville            | 3/25/1973 | 22.30 | 65,000 | NA | NA | NA | NA |
| Moores Branch near Woodville            | 3/24/1973 | 9.90  | 455    | NA | NA | NA | NA |

NA= Data not available for this particular gage  
 \*Occurred on a different date than Maximum Historic Crest

| <b>Fire-related Hazards</b> |  |
|-----------------------------|--|
| Drought                     | Drought extent is defined by the U.S. Drought Monitor Classifications which include Abnormally Dry, Moderate Drought, Severe Drought, Extreme Drought, and Exceptional Drought. According to the U.S. Drought Monitor Classifications, the most severe drought condition is Exceptional. All of the participating counties have received this ranking at least once over the 17-year reporting period. |
| Lightning                   | According to the Vaisala’s flash density map, the MEMA District 7 Region is located in an area that experiences 12 to 28 lightning flashes per square mile per year. It should be noted that future lightning occurrences may exceed these figures.  |
| Wildfire                    | Wildfire data was provided by the Mississippi Forestry Commission and is reported annually by county from 2007-2016. The greatest number of fires to occur in a given year was 90 in Amite County and the greatest number of acres burned in one year was 1,650 in Walthall County.<br><br>Information on specific occurrences of wildfire and the most severe fires in each jurisdiction is           |

not available. Analyzing the data by county indicates the following wildfire hazard extent for each county. Although this data lists the extent that has occurred, larger and more frequent wildfires are possible.

**Adams County**

- The greatest number of fires to occur in any year was 5 in 2008.
- The great number of acres to burn in a single year occurred in 2008 when 249 acres were burned.

**Amite County**

- The greatest number of fires to occur in any year was 90 in 2007.
- The great number of acres to burn in a single year occurred in 2011 when 1,517 acres were burned.

**Franklin County**

- The greatest number of fires to occur in any year was 39 in 2011.
- The great number of acres to burn in a single year occurred in 2008 when 248 acres were burned.

**Jefferson County**

- The greatest number of fires to occur in any year was 19 in 2008.
- The great number of acres to burn in a single year occurred in 2014 when 365 acres were burned.

**Lawrence County**

- The greatest number of fires to occur in any year was 55 in 2007.
- The great number of acres to burn in a single year occurred in 2007 when 562 acres were burned.

**Lincoln County**

- The greatest number of fires to occur in any year was 87 in 2011.
- The great number of acres to burn in a single year occurred in 2007 when 1,632 acres were burned.

**Pike County**

- The greatest number of fires to occur in any year was 53 in 2011.
- The great number of acres to burn in a single year occurred in 2007 when 540 acres were burned.

**Walthall County**

- The greatest number of fires to occur in any year was 60 in 2011 and 2016.
- The great number of acres to burn in a single year occurred in 2011 when 1,650 acres were burned.

**Wilkinson County**

- The greatest number of fires to occur in any year was 27 in 2011.
- The great number of acres to burn in a single year occurred in 2008 when 336 acres were burned.

**Geologic Hazards**

Earthquake

Earthquake extent can be measured by the Richter Scale or the Modified Mercalli Intensity (MMI) scale. According to data provided by the National Centers for Environmental

**SECTION 5: HAZARD PROFILES**

|                                |   |
|--------------------------------|---|
|                                | <p>Information, the greatest earthquake to impact the MEMA District 7 Region had an MMI of VI (strong) and a Richter Scale magnitude of 7.2 (reported on December 16, 1811).</p> <ul style="list-style-type: none"> <li>• Adams County: MMI of VI; 7.2 magnitude</li> <li>• Amite County: None reported (less than 2)</li> <li>• Franklin County: None reported (less than 2)</li> <li>• Jefferson County: None reported (less than 2)</li> <li>• Lawrence County: None reported (less than 2)</li> <li>• Lincoln County: MMI of II; no Richter magnitude available</li> <li>• Pike County: None reported (less than 2)</li> <li>• Walthall County: MMI of III, no Richter magnitude available</li> <li>• Wilkinson County: None reported (less than 2)</li> </ul>    |
| <b>Wind-related Hazards</b>    |   |
| Extreme Heat                   | <p>The extent of extreme heat can be measured by the record high temperature recorded. Official long term temperature records are not kept for any areas in the MEMA District 7 Region. However, the highest recorded temperature in the region was 106°F in 2007 with heat index values recorded above 115°F.</p>  |
| Hailstorm                      | <p>Hail extent can be defined by the size of the hail stone. The largest hail stone reported in the MEMA District 7 Region was 2.75 inches (reported in several counties on multiple days). It should be noted that future events may exceed this.</p> <ul style="list-style-type: none"> <li>• Adams County: 2.75 inches</li> <li>• Amite County: 2.0 inches</li> <li>• Franklin County: 2.75 inches</li> <li>• Jefferson County: 2.75 inches</li> <li>• Lawrence County: 2.75 inches</li> <li>• Lincoln County: 2.75 inches</li> <li>• Pike County: 2.75 inches</li> <li>• Walthall County: 2.75 inches</li> <li>• Wilkinson County: 1.75 inches</li> </ul>   |
| Hurricane and Tropical Storm   | <p>Hurricane extent is defined by the Saffir-Simpson Scale which classifies hurricanes into Category 1 through Category 5. The greatest classification of hurricane to impact the MEMA District 7 Region was a Category 3 storm. This occurred in 1969 with Hurricane Camille and in 2005 with Hurricane Katrina. The storm track of both storms passed just to the east of the region, but due to the size of these storms, their impact was felt across the region.</p>   |
| Severe Thunderstorm/ High Wind | <p>Thunderstorm extent is defined by the number of thunder events and wind speeds reported. According to a 67-year history from the National Climatic Data Center, the strongest recorded wind event in the MEMA District 7 Region was reported on March 26, 2009 at 83 knots (approximately 96 mph). It should be noted that future events may exceed these historical occurrences.</p> <ul style="list-style-type: none"> <li>• Adams County: 78 knots</li> <li>• Amite County: 61 knots</li> <li>• Franklin County: 78 knots</li> <li>• Jefferson County: 70 knots</li> <li>• Lawrence County: 75 knots</li> <li>• Lincoln County: 83 knots</li> <li>• Pike County: 75 knots</li> <li>• Walthall County: 65 knots</li> <li>• Wilkinson County: 75 knots</li> </ul> |
| Tornado                        | <p>Tornado hazard extent is measured by tornado occurrences in the US provided by FEMA as well as the Fujita/Enhanced Fujita Scale. The greatest magnitude reported was an F4 (last reported on April 18, 1978).</p>  |

|                                |   |
|--------------------------------|---|
|                                | <ul style="list-style-type: none"> <li>• Adams County: F2</li> <li>• Amite County: F3</li> <li>• Franklin County: F2</li> <li>• Jefferson County: F4</li> <li>• Lawrence County: F4</li> <li>• Lincoln County: F4</li> <li>• Pike County: F4</li> <li>• Walthall County: F2</li> <li>• Wilkinson County: F2</li> </ul>  |
| <p>Winter Storm and Freeze</p> | <p>The extent of winter storms can be measured by the amount of snowfall received (in inches). Official long term snow records are not kept for any areas in the MEMA District 7 Region. However, reports from NCDC of the greatest snowfall in the region have been 8-10 inches in Lawrence County (reported on December 11, 2008) and 4-10 inches in Lincoln County (reported on December 11, 2008).</p> <ul style="list-style-type: none"> <li>• Adams County: 6 inches</li> <li>• Amite County: 4 inches</li> <li>• Franklin County: 6.5 inches</li> <li>• Jefferson County: 6 inches</li> <li>• Lawrence County: 8 to 10 inches</li> <li>• Lincoln County: 4 to 10 inches</li> <li>• Pike County: 5 inches</li> <li>• Walthall County: 4 inches</li> <li>• Wilkinson County: 3 inches</li> </ul> |
| <p>Radiological Event</p>      | <p>Although there is no history of a nuclear accident at either the Grand Gulf Nuclear Station or River Bend Nuclear Station, other events across the globe and in the United States in particular indicate that an event is possible. Since several national and international events were Level 7 events on the INES, the potential for a Level 7 event at these stations is possible.</p>  |

### 5.17.2 Priority Risk Index

In order to draw some meaningful planning conclusions on hazard risk for the MEMA District 7 Region, the results of the hazard profiling process were used to generate region-wide hazard classifications according to a “Priority Risk Index” (PRI). The purpose of the PRI is to categorize and prioritize all potential hazards for the MEMA District 7 Region as high, moderate, or low risk. Combined with the asset inventory and quantitative vulnerability assessment provided in the next section, the summary hazard classifications generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes and, more specifically, the identification of hazard mitigation opportunities for the MEMA District 7 Region to consider as part of their proposed mitigation strategy.

The prioritization and categorization of identified hazards for the MEMA District 7 Region is based principally on the PRI, a tool used to measure the degree of risk for identified hazards in a particular planning area. The PRI is used to assist the MEMA District 7 Regional Hazard Mitigation Council in gaining consensus on the determination of those hazards that pose the most significant threat to the MEMA District 7 counties based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective planning tool for classifying and prioritizing hazard risks in the MEMA District 7 Region based on standardized criteria.

The application of the PRI results in numerical values that allow identified hazards to be ranked against one another (the higher the PRI value, the greater the hazard risk). PRI values are obtained by assigning varying degrees of risk to five categories for each hazard (probability, impact, spatial extent, warning time, and duration). Each degree of risk has been assigned a value (1 to 4) and an agreed upon weighting factor<sup>30</sup>, as summarized in **Table 5.35**. To calculate the PRI value for a given hazard, the assigned risk value for each category is multiplied by the weighting factor. The sum of all five categories equals the final PRI value, as demonstrated in the example equation below:

$$\text{PRI VALUE} = [(\text{PROBABILITY} \times .30) + (\text{IMPACT} \times .30) + (\text{SPATIAL EXTENT} \times .20) + (\text{WARNING TIME} \times .10) + (\text{DURATION} \times .10)]$$

According to the weighting scheme and point system applied, the highest possible value for any hazard is 4.0. When the scheme is applied for the MEMA District 7 Region, the highest PRI value is 3.3 (hurricane and tropical storm). Prior to being finalized, PRI values for each identified hazard were reviewed and accepted by the members of the MEMA District 7 Regional Hazard Mitigation Council.

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<sup>30</sup> The MEMA District 7 Regional Hazard Mitigation Council, based upon any unique concerns or factors for the planning area, may adjust the PRI weighting scheme during future plan updates.

**TABLE 5.35: PRIORITY RISK INDEX FOR THE MEMA DISTRICT 7 REGION**

| PRI Category   | Degree of Risk     |   |             | Assigned Weighting Factor |
|----------------|--------------------|---|-------------|---------------------------|
|                | Level              | Criteria  | Index Value |                           |
| Probability    | Unlikely           | Less than 1% annual probability   | 1           | 30%                       |
|                | Possible           | Between 1 and 10% annual probability  | 2           |                           |
|                | Likely             | Between 10 and 100% annual probability  | 3           |                           |
|                | Highly Likely      | 100% annual probability   | 4           |                           |
| Impact         | Minor              | Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of critical facilities.                             | 1           | 30%                       |
|                | Limited            | Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one day.                   | 2           |                           |
|                | Critical           | Multiple deaths/injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one week.    | 3           |                           |
|                | Catastrophic       | High number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more. | 4           |                           |
| Spatial Extent | Negligible         | Less than 1% of area affected   | 1           | 20%                       |
|                | Small              | Between 1 and 10% of area affected  | 2           |                           |
|                | Moderate           | Between 10 and 50% of area affected   | 3           |                           |
|                | Large              | Between 50 and 100% of area affected  | 4           |                           |
| Warning Time   | More than 24 hours | Self explanatory  | 1           | 10%                       |
|                | 12 to 24 hours     | Self explanatory  | 2           |                           |
|                | 6 to 12 hours      | Self explanatory  | 3           |                           |
|                | Less than 6 hours  | Self explanatory  | 4           |                           |
| Duration       | Less than 6 hours  | Self explanatory  | 1           | 10%                       |
|                | Less than 24 hours | Self explanatory  | 2           |                           |
|                | Less than one week | Self explanatory  | 3           |                           |
|                | More than one week | Self explanatory  | 4           |                           |

### 5.17.3 Priority Risk Index Results

**Table 5.36** summarizes the degree of risk assigned to each category for all initially identified hazards based on the application of the PRI. Assigned risk levels were based on the detailed hazard profiles developed for this section, as well as input from the Regional Hazard Mitigation Council. The results were then used in calculating PRI values and making final determinations for the risk assessment.

**TABLE 5.36: SUMMARY OF PRI RESULTS FOR THE MEMA DISTRICT 7 REGION**

| Hazard                        | Category/Degree of Risk |              |                |                    |                    | PRI Score  |
|-------------------------------|-------------------------|--------------|----------------|--------------------|--------------------|------------|
|                               | Probability             | Impact       | Spatial Extent | Warning Time       | Duration           |            |
| <b>Flood-related Hazards</b>  |                         |              |                |                    |                    |            |
| Dam Failure and Levee Failure | Unlikely                | Critical     | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>2.3</b> |
| Erosion                       | Likely                  | Critical     | Moderate       | More than 24 hours | More than 1 week   | <b>2.9</b> |
| Flood                         | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 24 hours | <b>3.2</b> |
| <b>Fire-related Hazards</b>   |                         |              |                |                    |                    |            |
| Drought                       | Likely                  | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.8</b> |
| Lightning                     | Highly Likely           | Limited      | Small          | 6 to 12 hours      | Less than 6 hours  | <b>2.6</b> |
| Wildfire                      | Highly Likely           | Limited      | Small          | Less than 6 hours  | Less than 1 week   | <b>2.9</b> |
| <b>Geologic Hazards</b>       |                         |              |                |                    |                    |            |
| Earthquake                    | Unlikely                | Minor        | Small          | Less than 6 hours  | Less than 6 hours  | <b>1.5</b> |
| <b>Wind-related Hazards</b>   |                         |              |                |                    |                    |            |
| Extreme Heat                  | Likely                  | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.8</b> |
| Hailstorm                     | Highly Likely           | Limited      | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>2.8</b> |
| Hurricane and Tropical Storm  | Likely                  | Catastrophic | Large          | More than 24 hours | Less than 1 week   | <b>3.3</b> |
| Severe Thunderstorm/High Wind | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>3.1</b> |
| Tornado                       | Likely                  | Catastrophic | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>3.2</b> |
| Winter Storm and Freeze       | Likely                  | Minor        | Moderate       | More than 24 hours | Less than 1 week   | <b>2.2</b> |
| <b>Human-caused Hazards</b>   |                         |              |                |                    |                    |            |
| Radiological Event            | Unlikely                | Critical     | Moderate       | More than 24 hours | Less than 1 week   | <b>2.2</b> |

### 5.18 FINAL DETERMINATIONS

The conclusions drawn from the hazard profiling process for the MEMA District 7 Region, including the PRI results and input from the Regional Hazard Mitigation Council, resulted in the classification of risk for each identified hazard according to three categories: High Risk, Moderate Risk, and Low Risk (**Table 5.37**). For purposes of these classifications, risk is expressed in relative terms according to the estimated impact that a hazard will have on human life and property throughout all of the MEMA District 7 Region. A more quantitative analysis to estimate potential dollar losses for each hazard has been performed separately and is described in Section 6: *Vulnerability Assessment*. It should be noted that although some hazards are classified below as posing low risk, their occurrence of varying or unprecedented

magnitudes is still possible in some cases and their assigned classification will continue to be evaluated during future plan updates. In most cases, the hazards of greatest concern did not change much since the last plan update, indicating that the priorities remained relatively stable and there were few changes in priorities.

**TABLE 5.37: CONCLUSIONS ON HAZARD RISK FOR THE MEMA DISTRICT 7 REGION**

|                      |  |
|----------------------|--|
| <b>HIGH RISK</b>     | Hurricane and Tropical Storm<br>Tornado<br>Flood<br>Severe Thunderstorm/High Wind    |
| <b>MODERATE RISK</b> | Wildfire<br>Erosion<br>Hailstorm<br>Drought<br>Extreme Heat<br>Lightning             |
| <b>LOW RISK</b>      | Dam and Levee Failure<br>Winter Storm and Freeze<br>Radiological Event<br>Earthquake |

# SECTION 6

## VULNERABILITY ASSESSMENT

This section identifies and quantifies the vulnerability of the MEMA District 7 Region to the significant hazards identified in the previous sections (*Hazard Identification and Profiles*). It consists of the following subsections:

- 6.1 Overview
- 6.2 Methodology
- 6.3 Explanation of Data Sources
- 6.4 Asset Inventory
- 6.5 Vulnerability Assessment Results
- 6.6 Conclusions on Hazard Vulnerability

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### 44 CFR Requirement

44 CFR Part 201.6(c)(2)(ii): The risk assessment shall include a description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. The description shall include an overall summary of each hazard and its impact on the community. The plan should describe vulnerability in terms of: (A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; (B) An estimate of the potential losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate; (C) Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

## 6.1 OVERVIEW

This section builds upon the information provided in Section 4: *Hazard Identification and Section 5: Hazard Profiles* by identifying and characterizing an inventory of assets in the MEMA District 7 Region. In addition, the potential impact and expected amount of damages caused to these assets by each identified hazard event is assessed. The primary objective of the vulnerability assessment is to quantify exposure and the potential loss estimates for each hazard. In doing so, the MEMA District 7 counties and their participating jurisdictions may better understand their unique risks to identified hazards and be better prepared to evaluate and prioritize specific hazard mitigation actions.

This section begins with an explanation of the methodology applied to complete the vulnerability assessment, followed by a summary description of the asset inventory as compiled for the MEMA District 7 Region. The remainder of this section focuses on the results of the assessment conducted.

## 6.2 METHODOLOGY

This vulnerability assessment was conducted using three distinct methodologies: (1) A stochastic risk assessment; (2) a geographic information system (GIS)-based analysis; and (3) a risk modeling software analysis. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation, including historical occurrence information provided in the *Hazard*

*Identification* and *Analysis* sections. A brief description of the three different approaches is provided on the following pages.

### **6.2.1 Stochastic Risk Assessment**

The stochastic risk assessment methodology was applied to analyze hazards of concern that were outside the scope of hazard risk models and the GIS-based risk assessment. This includes hazards that do not have geographically-definable boundaries and are therefore excluded from spatial analysis through GIS. A stochastic risk methodology was used for the following hazards:

- Drought
- Erosion
- Extreme Heat
- Hailstorm
- Lightning
- Severe Thunderstorm/High Wind
- Tornado
- Winter Storm and Freeze

Many of the hazards listed above are considered atmospheric and have the potential to affect all buildings and all populations. For many of the hazards listed above, no additional analysis was performed. When possible, annualized loss estimates were determined using the best available data on historical losses from sources including NOAA's National Climatic Data Center records, previous MEMA District 7 Region hazard mitigation plans, and local knowledge. Annualized loss is the estimated long-term weighted average value of losses to property in any single year in a specified geographic area (i.e., municipality or county). Annualized loss estimates were generated by totaling the amount of property damage over the period of time for which records were available, and calculating the average annual loss. Given the standard weighting analysis, losses can be readily compared across hazards providing an objective approach for evaluating mitigation alternatives.

For the erosion hazard, only anecdotal information on historical property damages was available. Therefore, annualized losses for these hazards are identified as negligible, though it should be noted that this does not indicate that future losses will not occur. Drought, extreme heat, hailstorm, lightning, severe thunderstorm/high wind, tornado, and winter storm and freeze have the potential to impact the entire MEMA District 7 Region. The results for these hazards are found near the end of this section in **Table 6.12**.

### **6.2.2 GIS-Based Analysis**

Other hazards have specified geographic boundaries that permit additional using Geographic Information Systems (GIS). These hazards include:

- Dam and Levee Failure
- Flood
- Radiological Event

➤ Wildfire

The objective of the GIS-based analysis was to determine the estimated vulnerability of critical facilities and populations for the identified hazards in the MEMA District 7 Region using best available geospatial data. Digital data was collected from local, regional, state, and national sources for hazards and buildings. Communities in the MEMA District 7 Region generally did not have readily available geospatial parcel or building footprint data, though where it was available, it was used in the analysis.

Despite this lack of data, the HMC wanted to have some estimate of potential building and dollar losses, so 2010 Census block data was extracted from Hazus MH that included building counts and dollar values of property in the region. Additionally, geo-referenced point locations for identified assets (critical facilities and infrastructure, special populations, etc.) were identified via from past plans and Hazus MH 4.0 and used in this vulnerability analysis. These critical facility lists were reviewed by the HMC prior to analysis. ESRI® ArcGIS™ 10.3.1 was used to assess hazard vulnerability utilizing digital hazard data, as well as local building and exposure data described above. Using these data layers, hazard vulnerability can be quantified by estimating the number and dollar value of census blocks determined to be located in identified hazard areas. However, it should be noted that this method likely overestimates the number and value of property at risk.

To estimate vulnerable populations in hazard areas, digital Census 2010 data by census block was obtained. This was intersected with hazard areas to determine exposed population counts. The results of the analysis provided an estimate of the number of people and critical facilities, as well as the value of buildings determined to be potentially at risk to those hazards with delineable geographic hazard boundaries.

### **6.2.3 Risk Modeling Software Analysis**

A risk modeling software was used for the following hazards:

- Earthquake
- Hurricane and Tropical Storm

There are several models that exist to model hazards. Hazus-MH was used in this vulnerability assessment to address the aforementioned hazards.

#### **HAZUS-MH**

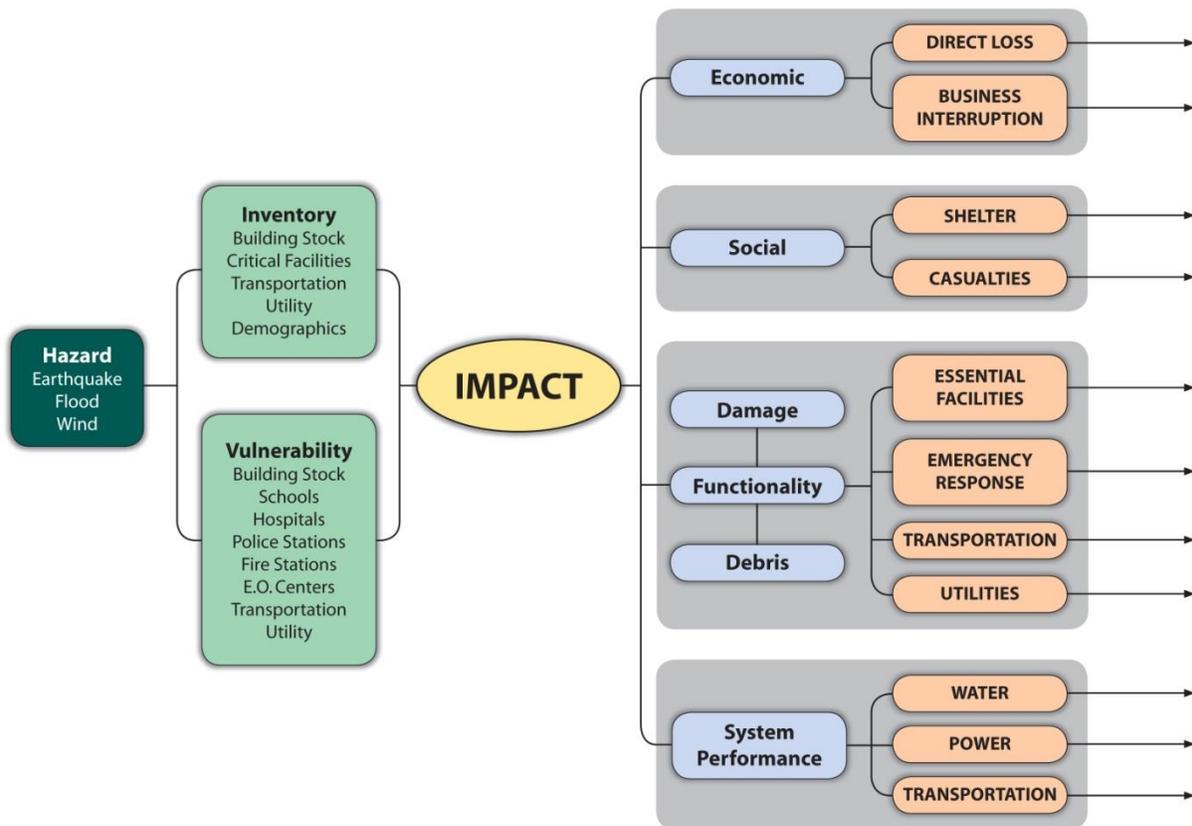
Hazus-MH (“Hazus”) is a standardized loss estimation software program developed by FEMA. It is built upon an integrated GIS platform to conduct analysis at a regional level (i.e., not on a structure-by-structure basis). The Hazus risk assessment methodology is parametric, in that distinct hazard and inventory parameters (e.g., wind speed and building types) can be modeled using the software to determine the impact (i.e., damages and losses) on the built environment.



The MEMA District 7 Regional Risk Assessment utilized Hazus-MH to produce hazard damage loss estimations for hazards for the planning area. At the time this analysis was completed, Hazus-MH 4.0 was used to estimate potential damages from the hurricane winds and earthquake hazards using Hazus-MH methodology. Although the program can also model losses for flood and storm surge, it was not used in this Risk Assessment.

Figure 6.1 illustrates the conceptual model of the Hazus-MH methodology.

**FIGURE 6.1: CONCEPTUAL MODEL OF HAZUS-MH METHODOLOGY**



Hazus-MH is capable of providing a variety of loss estimation results. In order to be consistent with other hazard assessments, annualized losses are presented when possible.

Loss estimates provided in this vulnerability assessment are based on best available data and methodologies. The results are an approximation of risk. These estimates should be used to understand relative risk from hazards and potential losses. Uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning natural hazards and their effects on the built environment. Uncertainties also result from approximations and simplifications that are necessary for a comprehensive analysis (e.g., incomplete inventories, non-specific locations, demographics, or economic parameters).

All conclusions are presented in “Conclusions on Hazard Vulnerability” at the end of this section.

## **6.3 EXPLANATION OF DATA SOURCES**

### ***DAM/LEEVE FAILURE***

Dam inundation data was available in GIS format for several of the major dams in the region from the Mississippi Department of Environmental Quality. Although not all high hazard dams have inundation mapping, several of the major dams in the region are included in this data. With that in mind, analysis with this data should not be considered inclusive of every critical facility or structure that may be at risk to a dam or levee failure as the data is far from being complete.

### ***FLOOD***

FEMA Digital Flood Insurance Rate Maps (DFIRM) flood data were used to determine flood vulnerability. DFIRM data can be used in ArcGIS for mapping purposes, and they identify several features including floodplain boundaries and base flood elevations (in some cases). Identified areas on the DFIRM represent some features of Flood Insurance Rate Maps including the 100-year flood areas (1.0-percent annual chance flood), and the 500-year flood areas (0.2-percent annual chance flood). For the vulnerability assessment, local improved property data and critical facilities were overlaid on the 1.0-percent annual chance floodplain (ACF) areas for counties that had digital parcel data available. Some 0.2-percent annual chance floodplain areas were also identified in some of the county DFIRMS. It should be noted that such an analysis does not account for building elevation.

### ***WILDFIRE***

The data used to determine vulnerability to wildfire in the MEMA District 7 Region is based on GIS data called the Southern Wildfire Risk Assessment (SWRA). This data is available on the Southern Wildfire Risk Assessment website and can be downloaded and imported into ArcGIS. A specific layer, known as “Wildland Urban Interface Risk Index” (WUIRI) was used to determine vulnerability of people and property. The WUIRI is presented on a scale of 0 to -9. It combines data on housing density with the data on the impact and likelihood of a wildfire occurring in a specific area. The primary purpose of the data is to highlight areas of concern that may be conducive to mitigation actions. Due to assumptions made, it is not true probability. However, it does provide a comparison of risk throughout the region.

### ***EARTHQUAKE***

Hazus-MH 4.0 (as described above) was used to assess earthquake vulnerability. A level 1, probabilistic scenario to estimate average annualized loss was utilized. In this scenario, several return periods (events of varying intensities) are run to determine annualized loss. Default Hazus earthquake damage functions and methodology were used to determine the probability of damage. Results are calculated at the 2010 U.S. Census tract level in Hazus and presented at the county level.

## **HURRICANE AND TROPICAL STORM WIND**

Hazus-MH 4.0 (as described above) was used to assess wind vulnerability. For the hurricane wind analysis, a probabilistic scenario was created to estimate the annualized loss damage in the MEMA District 7 Region. Default Hazus wind speed data, damage functions, and methodology were used in to determine the probability of damage for 50-, 100-, 500-, and 1,000-year frequency events (also known as a return period) in the scenario. Results are calculated in Hazus at the 2010 U.S. Census tract level and presented at the county level.

## **RADIOLOGICAL EVENT**

The data used to determine vulnerability to a nuclear accident in MEMA District 7 is based on the location of the Grand Gulf and River Bend Nuclear Power Stations and buffer radii recommended by the Nuclear Regulatory Commission for emergency management planning in the event of a nuclear accident.

## **6.4 ASSET INVENTORY**

An inventory of geo-referenced assets within the MEMA District 7 counties and jurisdictions was compiled in order to identify and characterize those properties potentially at risk to the identified hazards.<sup>1</sup> By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. Under this assessment, two categories of physical assets were created and then further assessed through GIS analysis. Additionally, social assets are addressed to determine population at risk to the identified hazards. These are presented below in Section 6.4.1.

### **6.4.1 Physical and Improved Assets**

The two categories of physical assets consist of:

1. **Improved Property:** Unfortunately, building footprint and parcel data was not available for most of the participating areas. Therefore the definition of improved property includes all improved properties in the MEMA District 7 Region according to building data extracted from Hazus MH 4.0. It should be noted that this data produced less accurate information concerning the number of buildings at risk than parcel data because the Hazus data was aggregated at a much larger geographic area, the census block level. Where local parcel data was available, it was used to improve analysis.

Hazus inventory data provides an estimate of the number of buildings in the study region. The economic exposure is also presented to be referenced with any Hazus-related results.

2. **Critical Facilities:** Critical facilities vary by jurisdiction. For this Vulnerability Assessment, facilities were initially collected from existing hazard mitigation plans and Hazus-MH. This includes fire stations, police stations, medical care facilities, emergency operation centers, schools, government/public buildings, transportation infrastructure, and private facilities. This data was then reviewed by local officials who used their knowledge to supplement the existing/Hazus

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<sup>1</sup> While potentially not all-inclusive for MEMA District 7, “georeferenced” assets include those assets for which specific location data is readily available for connecting the asset to a specific geographic location for purposes of GIS analysis.

data. It should be noted that this listing is not all-inclusive for assets located in the region, but it is anticipated that it will be expanded during future plan updates as more geo-referenced data becomes available for use in GIS analysis.

The following tables provide a detailed listing of the geo-referenced assets that have been identified for inclusion in the vulnerability assessment for the MEMA District 7 Region.

**Table 6.1** lists the estimated number of improved properties and the total value of improvements for participating areas of the MEMA District 7 Region (study area of vulnerability assessment). Because digital parcel data was not available for most communities, data obtained from Hazus-MH 4.0 inventory was utilized to complete the analysis.

**TABLE 6.1: IMPROVED PROPERTY IN THE MEMA DISTRICT 7 REGION**

| Location                | Counts of Improved Property | Total Value of Improvements |
|-------------------------|-----------------------------|-----------------------------|
| <b>Adams County</b>     | <b>14,661</b>               | <b>\$3,129,923,000</b>      |
| Natchez                 | 8,332                       | \$2,068,891                 |
| Unincorporated Area     | 6,329                       | \$3,127,854,109             |
| <b>Amite County</b>     | <b>6,928</b>                | <b>\$941,412,000</b>        |
| Gloster                 | 716                         | \$112,157                   |
| Liberty                 | 453                         | \$80,122                    |
| Unincorporated Area     | 5,759                       | \$941,219,721               |
| <b>Franklin County</b>  | <b>4,237</b>                | <b>\$650,604,000</b>        |
| Bude                    | 560                         | \$94,838                    |
| Meadville               | 314                         | \$82,402                    |
| Roxie                   | 275                         | \$36,555                    |
| Unincorporated Area     | 3,088                       | \$650,390,205               |
| <b>Jefferson County</b> | <b>3,686</b>                | <b>\$697,417,000</b>        |
| Fayette                 | 1,052                       | \$181,948                   |
| Unincorporated Area     | 2,634                       | \$697,235,052               |
| <b>Lawrence County</b>  | <b>6,240</b>                | <b>\$1,063,674,000</b>      |
| Monticello              | 862                         | \$219,887                   |
| New Hebron              | 262                         | \$53,898                    |
| Silver Creek            | 139                         | \$19,344                    |
| Unincorporated Area     | 4,977                       | \$1,063,380,871             |
| <b>Lincoln County</b>   | <b>15,788</b>               | <b>\$3,178,673,000</b>      |
| Brookhaven              | 4,644                       | \$1,333,728                 |
| Unincorporated Area     | 11,144                      | \$3,177,339,272             |
| <b>Pike County</b>      | <b>18,216</b>               | <b>\$3,497,301,000</b>      |
| Magnolia                | 1,106                       | \$221,010                   |
| McComb                  | 6,079                       | \$1,482,797                 |
| Osyka                   | 309                         | \$67,670                    |
| Summit                  | 963                         | \$162,688                   |
| Unincorporated Area     | 9,759                       | \$3,495,366,835             |
| <b>Walthall County</b>  | <b>7,509</b>                | <b>\$1,086,943,000</b>      |
| Tylertown               | 962                         | \$224,096                   |
| Unincorporated Area     | 6,547                       | \$1,086,718,904             |

| Location                              | Counts of Improved Property | Total Value of Improvements |
|---------------------------------------|-----------------------------|-----------------------------|
| <b>Wilkinson County</b>               | <b>5,220</b>                | <b>\$763,415,000</b>        |
| Centreville                           | 866                         | \$150,329                   |
| Crosby                                | 211                         | \$25,479                    |
| Woodville                             | 804                         | \$157,912                   |
| Unincorporated Area                   | 3,339                       | \$763,081,280               |
| <b>MEMA DISTRICT 7 REGIONAL TOTAL</b> | <b>82,485</b>               | <b>\$15,009,362,000</b>     |

Source: Hazus 4.0

**Table 6.2** lists the fire stations, police stations, medical care facilities, emergency operation centers, schools, government/public buildings, transportation infrastructure, and private facilities located in the MEMA District 7 Region according to previous plan data and Hazus-MH 4.0 data that was reviewed and updated by local officials.

In addition, **Figure 6.2** shows the locations of critical facilities in the MEMA District 7 Region. **Table 6.13**, at the end of this section, shows a complete list of the critical facilities by name, as well as the hazards that affect each facility. As noted previously, this list is not all-inclusive and only includes information provided through Hazus which was updated, as best as possible, with local knowledge.

**TABLE 6.2: CRITICAL FACILITY INVENTORY IN THE MEMA DISTRICT 7 REGION**

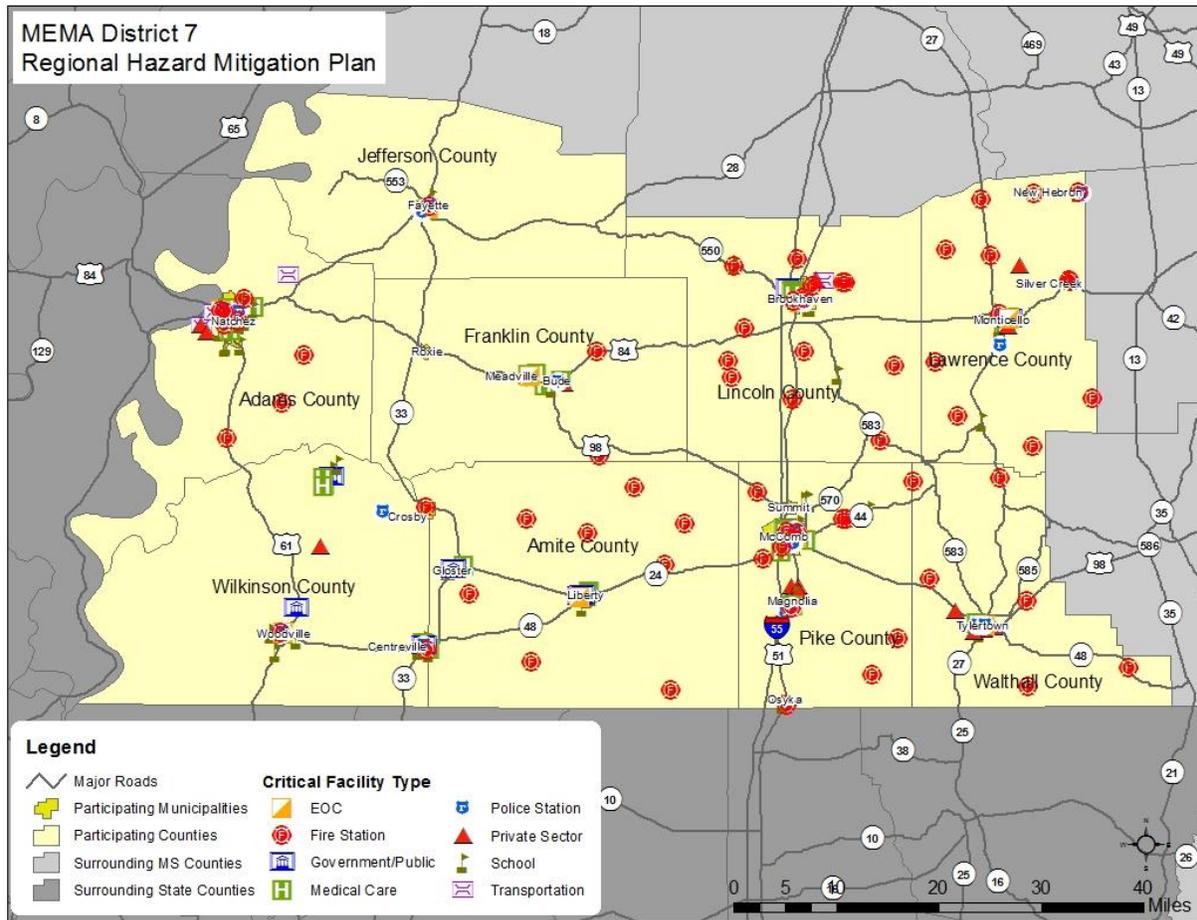
| Location                | Fire Stations | Police Stations | Medical Care | EOC      | Schools   | Gov't/<br>Public | Trans    | Private Sector |
|-------------------------|---------------|-----------------|--------------|----------|-----------|------------------|----------|----------------|
| <b>Adams County</b>     | <b>8</b>      | <b>2</b>        | <b>9</b>     | <b>1</b> | <b>17</b> | <b>1</b>         | <b>3</b> | <b>2</b>       |
| Natchez                 | 5             | 2               | 9            | 1        | 15        | 1                | 0        | 0              |
| Unincorporated Area     | 3             | 0               | 0            | 0        | 2         | 0                | 3        | 2              |
| <b>Amite County</b>     | <b>9</b>      | <b>3</b>        | <b>5*</b>    | <b>1</b> | <b>7</b>  | <b>3</b>         | <b>0</b> | <b>3</b>       |
| Gloster                 | 2             | 1               | 1            | 0        | 2         | 1                | 0        | 0              |
| Liberty                 | 3             | 2               | 2            | 1        | 4         | 2                | 0        | 3              |
| Unincorporated Area     | 4             | 0               | 1            | 0        | 1         | 0                | 0        | 0              |
| <b>Franklin County</b>  | <b>2</b>      | <b>3</b>        | <b>4</b>     | <b>1</b> | <b>3</b>  | <b>0</b>         | <b>0</b> | <b>1</b>       |
| Bude                    | 0             | 1               | 1            | 0        | 1         | 0                | 0        | 1              |
| Meadville               | 1             | 2               | 3            | 1        | 2         | 0                | 0        | 0              |
| Roxie                   | 0             | 0               | 0            | 0        | 0         | 0                | 0        | 0              |
| Unincorporated Area     | 1             | 0               | 0            | 0        | 0         | 0                | 0        | 0              |
| <b>Jefferson County</b> | <b>1</b>      | <b>2</b>        | <b>2</b>     | <b>1</b> | <b>1</b>  | <b>0</b>         | <b>0</b> | <b>0</b>       |
| Fayette                 | 1             | 2               | 2            | 1        | 1         | 0                | 0        | 0              |
| Unincorporated Area     | 0             | 0               | 0            | 0        | 0         | 0                | 0        | 0              |
| <b>Lawrence County</b>  | <b>12</b>     | <b>3</b>        | <b>2</b>     | <b>1</b> | <b>6</b>  | <b>1</b>         | <b>0</b> | <b>4</b>       |
| Monticello              | 1             | 2               | 2            | 1        | 4         | 1                | 0        | 3              |
| New Hebron              | 1             | 1               | 0            | 0        | 1         | 0                | 0        | 0              |
| Silver Creek            | 2             | 0               | 0            | 0        | 0         | 0                | 0        | 0              |
| Unincorporated Area     | 8             | 0               | 0            | 0        | 1         | 0                | 0        | 1              |
| <b>Lincoln County</b>   | <b>14</b>     | <b>2</b>        | <b>6</b>     | <b>1</b> | <b>14</b> | <b>1</b>         | <b>1</b> | <b>1</b>       |
| Brookhaven              | 4             | 2               | 6            | 1        | 10        | 1                | 1        | 1              |

**SECTION 6: VULNERABILITY ASSESSMENT**

| Location                                  | Fire Stations | Police Stations | Medical Care | EOC      | Schools   | Gov't/<br>Public | Trans    | Private Sector |
|---|---------------|-----------------|--------------|----------|-----------|------------------|----------|----------------|
| Unincorporated Area                       | 10            | 0               | 0            | 0        | 4         | 0                | 0        | 0              |
| <b>Pike County</b>                        | <b>11</b>     | <b>7</b>        | <b>9</b>     | <b>1</b> | <b>19</b> | <b>0</b>         | <b>0</b> | <b>3</b>       |
| Magnolia                                  | 1             | 3               | 2            | 0        | 4         | 0                | 0        | 3              |
| McComb                                    | 4             | 4               | 7            | 1        | 9         | 0                | 0        | 0              |
| Osyka                                     | 2             | 0               | 0            | 0        | 1         | 0                | 0        | 0              |
| Summit                                    | 1             | 0               | 0            | 0        | 1         | 0                | 0        | 0              |
| Unincorporated Area                       | 3             | 0               | 0            | 0        | 4         | 0                | 0        | 0              |
| <b>Walthall County</b>                    | <b>7</b>      | <b>4</b>        | <b>2</b>     | <b>1</b> | <b>1</b>  | <b>0</b>         | <b>0</b> | <b>4</b>       |
| Tylertown                                 | 1             | 4               | 2            | 1        | 1         | 0                | 0        | 3              |
| Unincorporated Area                       | 6             | 0               | 0            | 0        | 0         | 0                | 0        | 1              |
| <b>Wilkinson County</b>                   | <b>3</b>      | <b>5</b>        | <b>4</b>     | <b>1</b> | <b>6</b>  | <b>2</b>         | <b>0</b> | <b>1</b>       |
| Centreville                               | 1             | 1               | 4*           | 0        | 3         | 1                | 0        | 0              |
| Crosby                                    | 1             | 1               | 0            | 0        | 0         | 0                | 0        | 0              |
| Woodville                                 | 1             | 3               | 1            | 1        | 2         | 0                | 0        | 0              |
| Unincorporated Area                       | 0             | 0               | 0            | 0        | 1         | 1                | 0        | 1              |
| <b>MEMA DISTRICT 7<br/>REGIONAL TOTAL</b> | <b>67</b>     | <b>31</b>       | <b>42</b>    | <b>9</b> | <b>74</b> | <b>8</b>         | <b>4</b> | <b>19</b>      |

\*One of these facilities is located in the part of Centreville that is located in Amite County  
 Source: Hazus-MH 4.0; Local Officials

**FIGURE 6.2: CRITICAL FACILITY LOCATIONS IN THE MEMA DISTRICT 7 REGION**



Source: Hazus-MH 4.0; Local Officials

### 6.4.2 Social Vulnerability

In addition to identifying those assets potentially at risk to identified hazards, it is important to identify and assess those particular segments of the resident population in the MEMA District 7 Region that are potentially at risk to these hazards.

**Table 6.3** lists the population by jurisdiction according to U.S. Census, American Community Survey 2015 population estimates. The total population in the MEMA District 7 Region according to Census data was 172,011 persons. Additional population estimates are presented in Section 3: *Community Profile*.

**TABLE 6.3: TOTAL POPULATION IN THE MEMA DISTRICT 7 REGION**

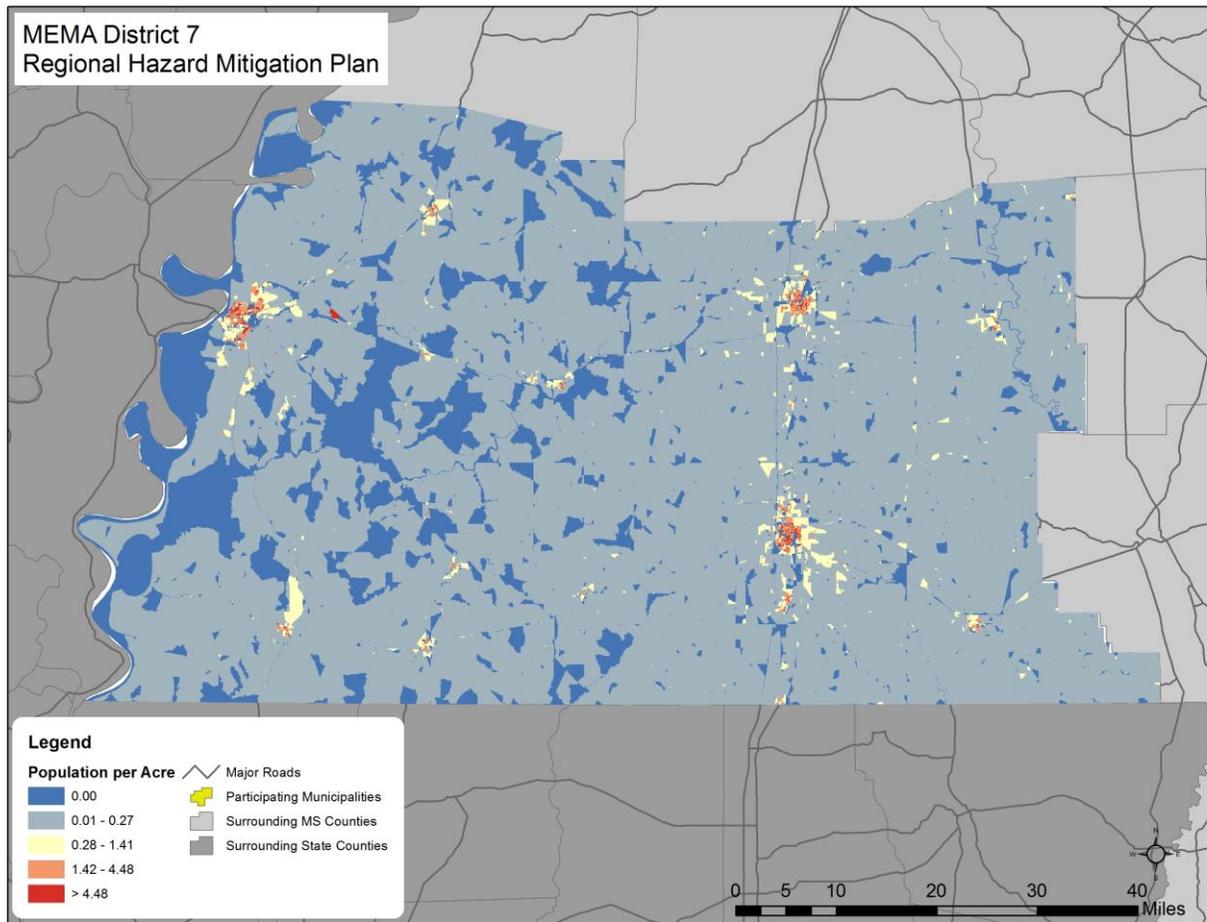
| Location         | Total 2015 Population |
|------------------|-----------------------|
| Adams County     | 31,979                |
| Amite County     | 12,840                |
| Franklin County  | 7,857                 |
| Jefferson County | 7,586                 |
| Lawrence County  | 12,586                |

| Location                            | Total 2015 Population |
|-------------------------------------|-----------------------|
| Lincoln County                      | 34,765                |
| Pike County                         | 40,075                |
| Walthall County                     | 14,978                |
| Wilkinson County                    | 9,345                 |
| <b>MEMA DISTRICT 7 REGION TOTAL</b> | <b>172,011</b>        |

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

In addition, **Figure 6.3** illustrates the population density per acre by census block as it was reported by the U.S. Census Bureau in 2010. As can be seen in the figure, the population is relatively dispersed with concentrations in large municipal areas such as the Natchez in the west and Brookhaven and McComb further east.

**FIGURE 6.3: POPULATION DENSITY IN THE MEMA DISTRICT 7 REGION**



Source: United States Census Bureau, 2010 Census

### 6.4.3 Development Trends and Changes in Vulnerability

Since the previous hazard mitigation plan was approved, MEMA District 7 Region has experienced limited growth and development. **Table 6.4** shows the number of building units constructed since 2010 according to the U.S. Census American Community Survey.

**TABLE 6.4: BUILDING COUNTS FOR THE MEMA DISTRICT 7 REGION**

| Location                | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|-------------------------|----------------------------|---------------------------|----------------------------------|
| <b>Adams County</b>     | <b>14,622</b>              | <b>81</b>                 | <b>0.55%</b>                     |
| Natchez                 | 7,833                      | 0                         | 0.00%                            |
| Unincorporated Area     | 6,789                      | 81                        | 1.19%                            |
| <b>Amite County</b>     | <b>6,636</b>               | <b>111</b>                | <b>1.67%</b>                     |
| Gloster                 | 548                        | 0                         | 0.00%                            |
| Liberty                 | 372                        | 16                        | 4.30%                            |
| Unincorporated Area     | 5,716                      | 95                        | 1.66%                            |
| <b>Franklin County</b>  | <b>4,157</b>               | <b>66</b>                 | <b>1.59%</b>                     |
| Bude                    | 495                        | 0                         | 0.00%                            |
| Meadville               | 222                        | 0                         | 0.00%                            |
| Roxie                   | 248                        | 7                         | 2.82%                            |
| Unincorporated Area     | 3,192                      | 59                        | 1.85%                            |
| <b>Jefferson County</b> | <b>3,677</b>               | <b>57</b>                 | <b>1.55%</b>                     |
| Fayette                 | 668                        | 0                         | 0.00%                            |
| Unincorporated Area     | 3,009                      | 57                        | 1.89%                            |
| <b>Lawrence County</b>  | <b>6,027</b>               | <b>142</b>                | <b>2.36%</b>                     |
| Monticello              | 780                        | 0                         | 0.00%                            |
| New Hebron              | 204                        | 0                         | 0.00%                            |
| Silver Creek            | 103                        | 0                         | 0.00%                            |
| Unincorporated Area     | 4,940                      | 142                       | 2.87%                            |
| <b>Lincoln County</b>   | <b>15,271</b>              | <b>482</b>                | <b>3.16%</b>                     |
| Brookhaven              | 5158                       | 127                       | 2.46%                            |
| Unincorporated Area     | 10,113                     | 355                       | 3.51%                            |
| <b>Pike County</b>      | <b>17,898</b>              | <b>381</b>                | <b>2.13%</b>                     |
| Magnolia                | 861                        | 0                         | 0.00%                            |
| McComb                  | 6,005                      | 87                        | 1.45%                            |
| Osyka                   | 200                        | 0                         | 0.00%                            |
| Summit                  | 883                        | 0                         | 0.00%                            |
| Unincorporated Area     | 9,949                      | 294                       | 2.96%                            |
| <b>Walthall County</b>  | <b>7,147</b>               | <b>135</b>                | <b>1.89%</b>                     |
| Tylertown               | 780                        | 0                         | 0.00%                            |
| Unincorporated Area     | 6,367                      | 135                       | 2.12%                            |
| <b>Wilkinson County</b> | <b>5,047</b>               | <b>199</b>                | <b>3.94%</b>                     |
| Centreville             | 754                        | 0                         | 0.00%                            |
| Crosby                  | 160                        | 14                        | 8.75%                            |
| Woodville               | 656                        | 41                        | 6.25%                            |
| Unincorporated Area     | 3,477                      | 144                       | 4.14%                            |

**SECTION 6: VULNERABILITY ASSESSMENT**

| Location                              | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|---------------------------------------|----------------------------|---------------------------|----------------------------------|
| <b>MEMA DISTRICT 7 REGIONAL TOTAL</b> | <b>80,482</b>              | <b>1,654</b>              | <b>2.06%</b>                     |

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

Table 6.5 shows population growth estimates for the region from 2010 to 2015 based on the U.S. Census American Community Survey.

**TABLE 6.5: POPULATION GROWTH FOR THE MEMA DISTRICT 7 REGION**

| Location                | Population Estimates |               |               |               |               |               | % Change 2010-2015 |
|-------------------------|----------------------|---------------|---------------|---------------|---------------|---------------|--------------------|
|                         | 2010                 | 2011          | 2012          | 2013          | 2014          | 2015          |                    |
| <b>Adams County</b>     | <b>32,659</b>        | <b>32,431</b> | <b>32,391</b> | <b>32,308</b> | <b>32,189</b> | <b>31,979</b> | <b>-2.08%</b>      |
| Natchez                 | 16,279               | 16,025        | 15,847        | 15,711        | 15,563        | 15,474        | -4.95%             |
| Unincorporated Area     | 16,380               | 16,406        | 16,544        | 16,597        | 16,626        | 16,505        | 0.76%              |
| <b>Amite County</b>     | <b>13,318</b>        | <b>13,213</b> | <b>13,139</b> | <b>13,061</b> | <b>12,957</b> | <b>12,840</b> | <b>-3.59%</b>      |
| Gloster                 | 1,388                | 1,210         | 1,084         | 956           | 1,026         | 972           | -29.97%            |
| Liberty                 | 639                  | 694           | 666           | 759           | 809           | 771           | 20.66%             |
| Unincorporated Area     | 11,291               | 11,309        | 11,389        | 11,346        | 11,122        | 11,097        | -1.72%             |
| <b>Franklin County</b>  | <b>8,130</b>         | <b>8,112</b>  | <b>8,055</b>  | <b>8,013</b>  | <b>7,944</b>  | <b>7,857</b>  | <b>-3.36%</b>      |
| Bude                    | 1,023                | 1,263         | 1,229         | 1,295         | 990           | 905           | -11.53%            |
| Meadville               | 492                  | 596           | 610           | 549           | 440           | 454           | -7.72%             |
| Roxie                   | 520                  | 492           | 544           | 573           | 568           | 551           | 5.96%              |
| Unincorporated Area     | 6,095                | 5,761         | 5,672         | 5,596         | 5,946         | 5,947         | -2.43%             |
| <b>Jefferson County</b> | <b>7,970</b>         | <b>7,845</b>  | <b>7,743</b>  | <b>7,690</b>  | <b>7,634</b>  | <b>7,586</b>  | <b>-4.82%</b>      |
| Fayette                 | 1,500                | 1,781         | 2,243         | 2,218         | 1,799         | 1,563         | 4.20%              |
| Unincorporated Area     | 6,470                | 6,064         | 5,500         | 5,472         | 5,835         | 6,023         | -6.91%             |
| <b>Lawrence County</b>  | <b>13,016</b>        | <b>12,945</b> | <b>12,832</b> | <b>12,734</b> | <b>12,636</b> | <b>12,586</b> | <b>-3.30%</b>      |
| Monticello              | 1,837                | 1,689         | 1,630         | 1,642         | 1,627         | 1,559         | -15.13%            |
| New Hebron              | 470                  | 495           | 548           | 546           | 586           | 526           | 11.91%             |
| Silver Creek            | 225                  | 237           | 182           | 241           | 223           | 206           | -8.44%             |
| Unincorporated Area     | 10,484               | 10,524        | 10,472        | 10,305        | 10,200        | 10,295        | -1.80%             |
| <b>Lincoln County</b>   | <b>34,622</b>        | <b>34,751</b> | <b>34,850</b> | <b>34,870</b> | <b>34,824</b> | <b>34,765</b> | <b>0.41%</b>       |
| Brookhaven              | 12,618               | 12,581        | 12,549        | 12,538        | 12,499        | 12,465        | -1.21%             |
| Unincorporated Area     | 22,004               | 22,170        | 22,301        | 22,332        | 22,325        | 22,300        | 1.35%              |
| <b>Pike County</b>      | <b>40,284</b>        | <b>40,314</b> | <b>40,300</b> | <b>40,269</b> | <b>40,209</b> | <b>40,075</b> | <b>-0.52%</b>      |
| Magnolia                | 2,607                | 2,056         | 2,266         | 2,103         | 1,926         | 2,021         | -22.48%            |
| McComb                  | 12,932               | 12,881        | 12,841        | 12,814        | 12,771        | 12,723        | -1.62%             |
| Osyka                   | 518                  | 470           | 589           | 583           | 375           | 425           | -17.95%            |
| Summit                  | 1,631                | 1,630         | 1,651         | 1,945         | 2,108         | 2,307         | 41.45%             |
| Unincorporated Area     | 22,596               | 23,277        | 22,953        | 22,824        | 23,029        | 22,599        | 0.01%              |
| <b>Walthall County</b>  | <b>15,530</b>        | <b>15,495</b> | <b>15,405</b> | <b>15,265</b> | <b>15,126</b> | <b>14,978</b> | <b>-3.55%</b>      |
| Tylertown               | 2,083                | 2,086         | 1,878         | 1,767         | 1,652         | 1,641         | -21.22%            |
| Unincorporated Area     | 13,447               | 13,409        | 13,527        | 13,498        | 13,474        | 13,337        | -0.82%             |
| <b>Wilkinson County</b> | <b>10,070</b>        | <b>9,946</b>  | <b>9,778</b>  | <b>9,653</b>  | <b>9,481</b>  | <b>9,345</b>  | <b>-7.20%</b>      |
| Centreville             | 1,559                | 1,820         | 1,817         | 1,710         | 1,760         | 1,765         | 13.21%             |

| Location                                  | Population Estimates |                |                |                |                |                | % Change<br>2010-2015 |
|---|----------------------|----------------|----------------|----------------|----------------|----------------|-----------------------|
|   | 2010                 | 2011           | 2012           | 2013           | 2014           | 2015           |                       |
| Crosby                                    | 586                  | 517            | 514            | 414            | 440            | 413            | -29.52%               |
| Woodville                                 | 1,129                | 1,071          | 864            | 1,050          | 1,133          | 1,245          | 10.27%                |
| Unincorporated Area                       | 6,796                | 6,538          | 6,583          | 6,479          | 6,148          | 5,922          | -12.86%               |
| <b>MEMA DISTRICT 7<br/>REGIONAL TOTAL</b> | <b>175,599</b>       | <b>175,052</b> | <b>174,493</b> | <b>173,863</b> | <b>173,000</b> | <b>172,011</b> | <b>-3.46%</b>         |

Source: United States Census Bureau, 2006-2010, 2007-2011, 2008-2012, 2009-2013, and 2010-2014, and 2011-2015 American Community Survey 5-Year Estimates

Based on the data above, there has been a relatively low rate of residential development and population growth in the region since 2010, and many jurisdictions have actually experienced population declines. However, it is notable that communities in several smaller towns experienced significant rates of growth and development compared to the rest of the region, resulting in an increased number of people and structures that are vulnerable to the potential impacts of the identified hazards. Therefore, development and population growth have impacted the region's vulnerability since the previous hazard mitigation plan was approved and there has been a slight increase in the overall vulnerability as well as a significant increase in certain areas and communities.

It is also important to note that as development increases in the future, greater populations and more structures and infrastructure will be exposed to potential hazards if development occurs in the floodplains or other high risk areas.

## 6.5 VULNERABILITY ASSESSMENT RESULTS

As noted earlier, only hazards with a specific geographic boundary, available modeling tool, or sufficient historical data allow for further analysis in this section. Those results are presented here. All other hazards are assumed to impact the entire planning region (drought, extreme heat, hailstorm, lightning, severe thunderstorm/high wind, tornado, and winter storm) or, due to lack of data, analysis would not lead to credible results (erosion). The total region exposure, and thus risk to these hazards, was presented in **Table 6.1**.

The hazards to be further analyzed in this section include: dam/levee failure, flood, wildfire, earthquake, hurricane and tropical storm winds, and radiological event.

The annualized loss estimate for all hazards is presented near the end of this section in **Table 6.12**.

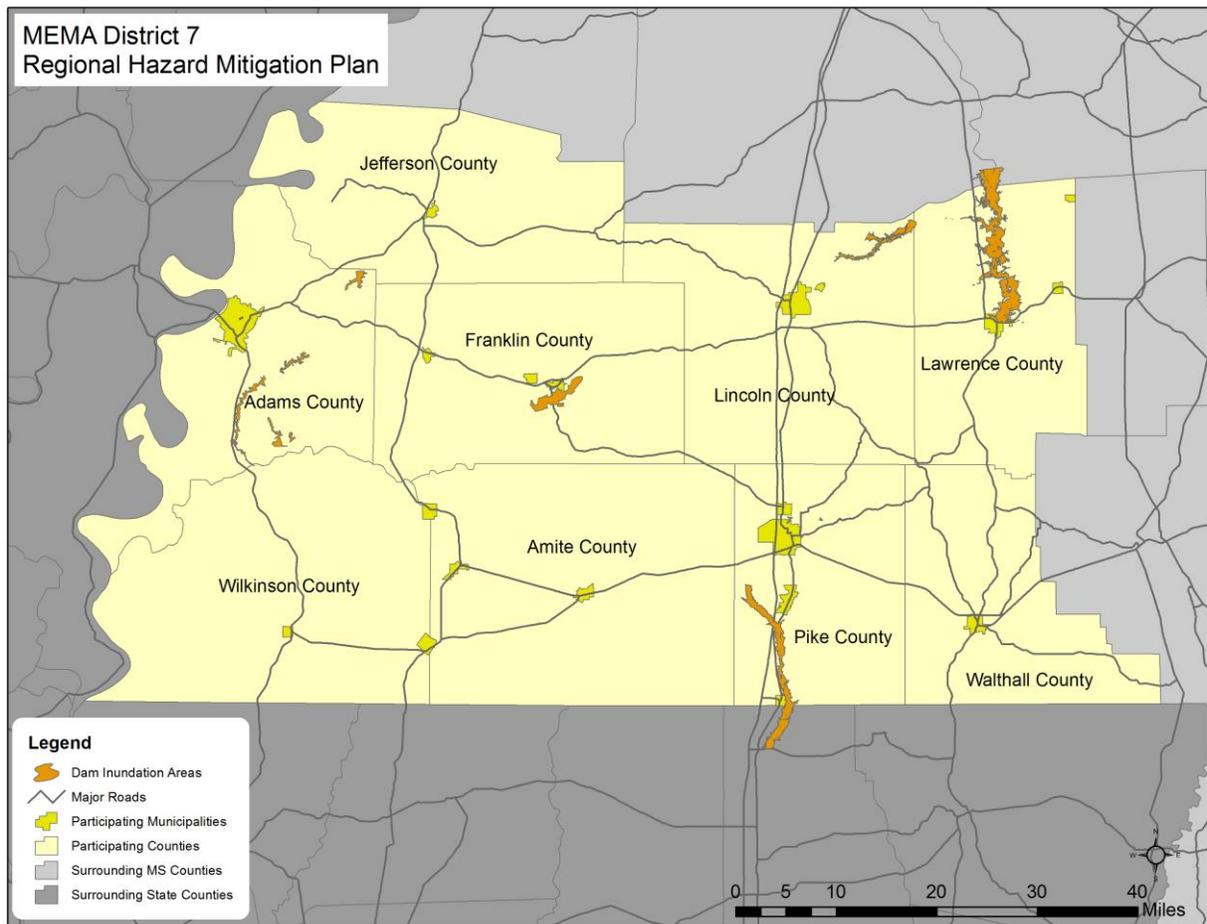
### 6.5.1 Dam/Levee Failure

In order to assess risk to a dam or levee failure, a GIS-based analysis was used to estimate exposure to one of the areas delineated by the Mississippi Department of Environmental Quality as a potential inundation area in the event of a failure. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified inundation area. As mentioned previously, this type of inundation mapping has not been completed for every dam/levee in the region, so the results of this analysis likely underestimate the overall vulnerability to a dam or levee failure. However, the analysis is still useful as a sort of baseline minimum of property that is potentially at-risk. The identified inundation areas can be found in **Figure 6.4**.

Due to a lack of digital parcel data in most counties, it was determined that an analysis using the inventory from Hazus-MH 4.0 would be used. It should be noted that this data will merely be an estimation and may not reflect actual counts or values located in dam inundation areas. Indeed, in almost all cases, this data likely overestimates the amount of property in the identified risk zones.

Table 6.6 presents the potential at-risk property. Both the number of buildings and the approximate improved value are presented.

**FIGURE 6.4: DAM INUNDATION AREAS IN THE MEMA DISTRICT 7 REGION**



Source: Mississippi Department of Environmental Quality

**TABLE 6.6: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE DAM/LEVEE FAILURE HAZARD**

| Location            | Dam Inundation Area            |                        |
|---------------------|--------------------------------|------------------------|
|                     | Approx. Number of Improvements | Approx. Improved Value |
| <b>Adams County</b> | <b>745</b>                     | <b>\$121,632,000</b>   |
| Natchez             | 0                              | \$0                    |
| Unincorporated Area | 745                            | \$121,632,000          |

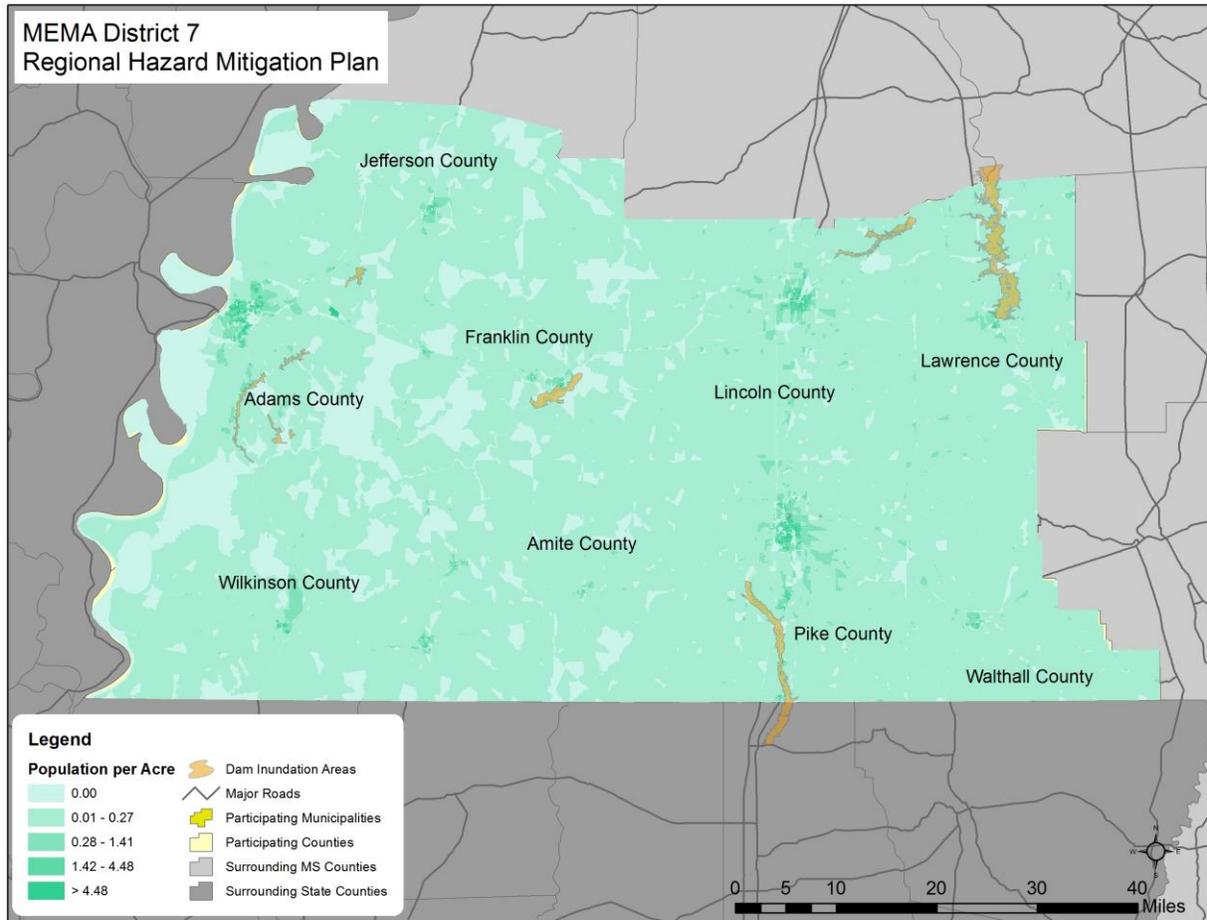
| Location                              | Dam Inundation Area            |                        |
|---------------------------------------|--------------------------------|------------------------|
|                                       | Approx. Number of Improvements | Approx. Improved Value |
| <b>Amite County</b>                   | <b>0</b>                       | <b>\$0</b>             |
| Gloster                               | 0                              | \$0                    |
| Liberty                               | 0                              | \$0                    |
| Unincorporated Area                   | 0                              | \$0                    |
| <b>Franklin County</b>                | <b>169</b>                     | <b>\$24,408,000</b>    |
| Bude                                  | 45                             | \$5,836,000            |
| Meadville                             | 0                              | \$0                    |
| Roxie                                 | 0                              | \$0                    |
| Unincorporated Area                   | 124                            | \$18,572,000           |
| <b>Jefferson County</b>               | <b>0</b>                       | <b>\$0</b>             |
| Fayette                               | 0                              | \$0                    |
| Unincorporated Area                   | 0                              | \$0                    |
| <b>Lawrence County</b>                | <b>791</b>                     | <b>\$119,752,000</b>   |
| Monticello                            | 135                            | \$29,179,000           |
| New Hebron                            | 0                              | \$0                    |
| Silver Creek                          | 0                              | \$0                    |
| Unincorporated Area                   | 656                            | \$90,573,000           |
| <b>Lincoln County</b>                 | <b>166</b>                     | <b>\$27,488,000</b>    |
| Brookhaven                            | 0                              | 0                      |
| Unincorporated Area                   | 166                            | \$27,488,000           |
| <b>Pike County</b>                    | <b>653</b>                     | <b>\$96,378,000</b>    |
| Magnolia                              | 86                             | \$10,018,000           |
| McComb                                | 157                            | \$22,551,000           |
| Osyka                                 | 38                             | \$7,399,000            |
| Summit                                | 41                             | \$4,841,000            |
| Unincorporated Area                   | 331                            | \$51,569,000           |
| <b>Walthall County</b>                | <b>0</b>                       | <b>\$0</b>             |
| Tylertown                             | 0                              | \$0                    |
| Unincorporated Area                   | 0                              | \$0                    |
| <b>Wilkinson County</b>               | <b>0</b>                       | <b>\$0</b>             |
| Centreville                           | 0                              | \$0                    |
| Crosby                                | 0                              | \$0                    |
| Woodville                             | 0                              | \$0                    |
| Unincorporated Area                   | 0                              | \$0                    |
| <b>MEMA DISTRICT 7 REGIONAL TOTAL</b> | <b>2,524</b>                   | <b>\$389,658,000</b>   |

Source: Mississippi Department of Environmental Quality; Hazus 4.0

### **SOCIAL VULNERABILITY**

Figure 6.5 is presented to gain a better understanding of at-risk population by evaluating census block level population data against dam inundation areas. There are areas of concern in several of the counties in this region, although it should be noted that most of the population of the region is not at risk to a dam/levee failure.

**FIGURE 6.5: POPULATION DENSITY NEAR DAM INUNDATION AREAS IN THE MEMA DISTRICT 7 REGION**



Source: Mississippi Department of Environmental Quality; United States Census Bureau, 2010 Census

**CRITICAL FACILITIES**

There are no critical facilities located within the identified dam inundation areas. Although there are no facilities located in the identified areas, this does not indicate that there is no risk to a dam/levee failure, especially considering not all dams have delineated inundation areas. A list of specific critical facilities and their associated risk can be found in **Table 6.13** at the end of this section.

In conclusion, a dam/levee failure has the potential to impact many existing and future buildings, facilities, and populations in the MEMA District 7 Region, though structures located near or in the dam inundation areas are at highest risk. Specific vulnerabilities for MEMA District 7 assets will be greatly dependent on their individual design and the mitigation measures in place where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates if data becomes available.

## 6.5.2 Flood

Historical evidence indicates that the MEMA District 7 Region is susceptible to flood events. A total of 177 flood events have been reported by the National Climatic Data Center resulting in over \$30.8 million (2017 dollars) in property damage. On an annualized level, these damages amounted to over \$2.0 million for the MEMA District 7 Region.

In order to assess flood risk, a GIS-based analysis was used to estimate exposure to flood events using Digital Flood Insurance Rate Map (DFIRM) data in combination with improved property records for each of the MEMA District 7 Counties. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified floodplain. Due to a lack of digital parcel data in most counties, it was determined that an analysis using the inventory from Hazus-MH 4.0 would be used, though it should be noted that the data will merely be an estimation and may not reflect actual counts or values located in the floodplain. Indeed, in almost all cases, this analysis likely overestimates the amount of property at risk. **Table 6.7** presents the potential at-risk property. Both the number of parcels and the approximate value are presented.

**TABLE 6.7: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE FLOOD HAZARD<sup>2</sup>**

| Location                | 1.0-percent ACF                |                        | 0.2-percent ACF                |                        |
|-------------------------|--------------------------------|------------------------|--------------------------------|------------------------|
|                         | Approx. Number of Improvements | Approx. Improved Value | Approx. Number of Improvements | Approx. Improved Value |
| <b>Adams County</b>     | <b>5,484</b>                   | <b>\$1,167,857,000</b> | <b>78</b>                      | <b>\$20,474,000</b>    |
| Natchez                 | 3,477                          | \$864,838,000          | 78                             | \$20,474,000           |
| Unincorporated Area     | 2,007                          | \$303,019,000          | 0                              | \$0                    |
| <b>Amite County</b>     | <b>3,826</b>                   | <b>\$501,729,000</b>   | <b>0</b>                       | <b>\$0</b>             |
| Gloster                 | 162                            | \$20,779,000           | 0                              | \$0                    |
| Liberty                 | 194                            | \$24,416,000           | 0                              | \$0                    |
| Unincorporated Area     | 3,470                          | \$456,534,000          | 0                              | \$0                    |
| <b>Franklin County</b>  | <b>2,303</b>                   | <b>\$327,845,000</b>   | <b>0</b>                       | <b>\$0</b>             |
| Bude                    | 162                            | \$25,687,000           | 0                              | \$0                    |
| Meadville               | 70                             | \$9,484,000            | 0                              | \$0                    |
| Roxie                   | 93                             | \$11,484,000           | 0                              | \$0                    |
| Unincorporated Area     | 1,978                          | \$281,190,000          | 0                              | \$0                    |
| <b>Jefferson County</b> | <b>998</b>                     | <b>\$146,762,000</b>   | <b>0</b>                       | <b>\$0</b>             |
| Fayette                 | 125                            | \$27,894,000           | 0                              | \$0                    |
| Unincorporated Area     | 873                            | \$118,868,000          | 0                              | \$0                    |
| <b>Lawrence County</b>  | <b>3,307</b>                   | <b>\$542,171,000</b>   | <b>0</b>                       | <b>\$0</b>             |
| Monticello              | 412                            | \$103,031,000          | 0                              | \$0                    |
| New Hebron              | 44                             | \$7,794,000            | 0                              | \$0                    |
| Silver Creek            | 94                             | \$14,154,000           | 0                              | \$0                    |
| Unincorporated Area     | 2,757                          | \$417,192,000          | 0                              | \$0                    |
| <b>Lincoln County</b>   | <b>7,369</b>                   | <b>\$1,380,765,000</b> | <b>0</b>                       | <b>\$0</b>             |
| Brookhaven              | 1,586                          | \$441,689,000          | 0                              | \$0                    |
| Unincorporated Area     | 5,783                          | \$939,076,000          | 0                              | \$0                    |

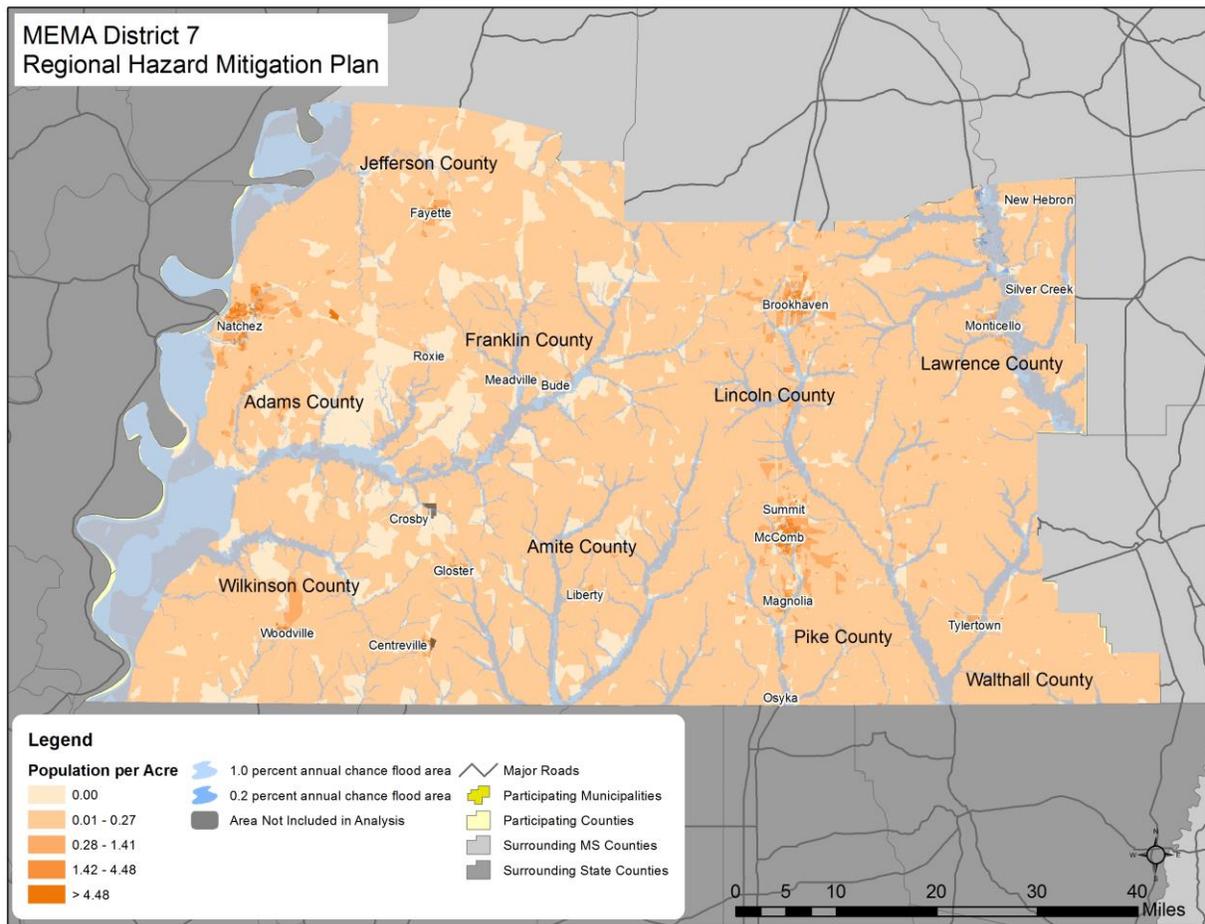
<sup>2</sup> As noted in Section 6.4, no building-specific data, such as building footprints, was available to determine buildings at risk. As a result of this data limitation, at-risk census block building counts and values of the structures were used.

| Location                              | 1.0-percent ACF                |                        | 0.2-percent ACF                |                        |
|---------------------------------------|--------------------------------|------------------------|--------------------------------|------------------------|
|                                       | Approx. Number of Improvements | Approx. Improved Value | Approx. Number of Improvements | Approx. Improved Value |
| <b>Pike County</b>                    | <b>4,032</b>                   | <b>\$691,179,000</b>   | <b>621</b>                     | <b>\$142,579,000</b>   |
| Magnolia                              | 261                            | \$48,177,000           | 621                            | \$142,579,000          |
| McComb                                | 779                            | \$171,902,000          | 0                              | \$0                    |
| Osyka                                 | 58                             | \$11,669,000           | 0                              | \$0                    |
| Summit                                | 107                            | \$24,697,000           | 0                              | \$0                    |
| Unincorporated Area                   | 2,827                          | \$434,734,000          | 0                              | \$0                    |
| <b>Walthall County</b>                | <b>2,703</b>                   | <b>\$394,227,000</b>   | <b>0</b>                       | <b>\$0</b>             |
| Tylertown                             | 451                            | \$94,415,000           | 0                              | \$0                    |
| Unincorporated Area                   | 2,252                          | \$299,812,000          | 0                              | \$0                    |
| <b>Wilkinson County</b>               | <b>3,118</b>                   | <b>\$417,218,000</b>   | <b>0</b>                       | <b>\$0</b>             |
| Centreville                           | 63                             | \$7,299,000            | 0                              | \$0                    |
| Crosby                                | 172                            | \$20,101,000           | 0                              | \$0                    |
| Woodville                             | 186                            | \$42,240,000           | 0                              | \$0                    |
| Unincorporated Area                   | 2,697                          | \$347,578,000          | 0                              | \$0                    |
| <b>MEMA DISTRICT 7 REGIONAL TOTAL</b> | <b>33,140</b>                  | <b>\$5,569,753,000</b> | <b>699</b>                     | <b>\$163,053,000</b>   |

Source: Federal Emergency Management Agency DFIRM; Hazus MH 4.0

### **SOCIAL VULNERABILITY**

Figure 6.6 is presented to gain a better understanding of at-risk population by evaluating census block level population data against mapped floodplains. There are areas of concern in several of the municipal population centers in this region including Natchez, McComb, and Brookhaven. Indeed, nearly every incorporated municipality is potentially at risk of being impacted by flooding within some areas of its jurisdictional boundary. Therefore, further investigation in these areas may be warranted.

**FIGURE 6.6 : POPULATION DENSITY NEAR FLOODPLAINS IN THE MEMA DISTRICT 7 REGION**

Source: Federal Emergency Management Agency DFIRM; United States Census Bureau, 2010 Census

### CRITICAL FACILITIES

The critical facility analysis revealed that there are 7 critical facilities located in the floodplain. (Please note, as previously indicated, this analysis does not consider building elevation, which may negate risk.) All of these facilities are located in the 1.0 percent annual chance flood zone, and they include 2 fire stations, 1 medical care facility, 1 private sector building, and 2 transportation infrastructure facilities. There is also 1 police department located in the 0.2 percent annual chance flood zone. A list of specific critical facilities and their associated risk can be found in **Table 6.13** at the end of this section.

In conclusion, a flood has the potential to impact many existing and future buildings, facilities, and populations in the MEMA District 7 Region, though some areas are at a higher risk than others. All types of structures in a floodplain are at-risk, though elevated structures will have a reduced risk. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. Furthermore, areas subject to repetitive flooding should be analyzed for potential mitigation actions.

### 6.5.3 Wildfire

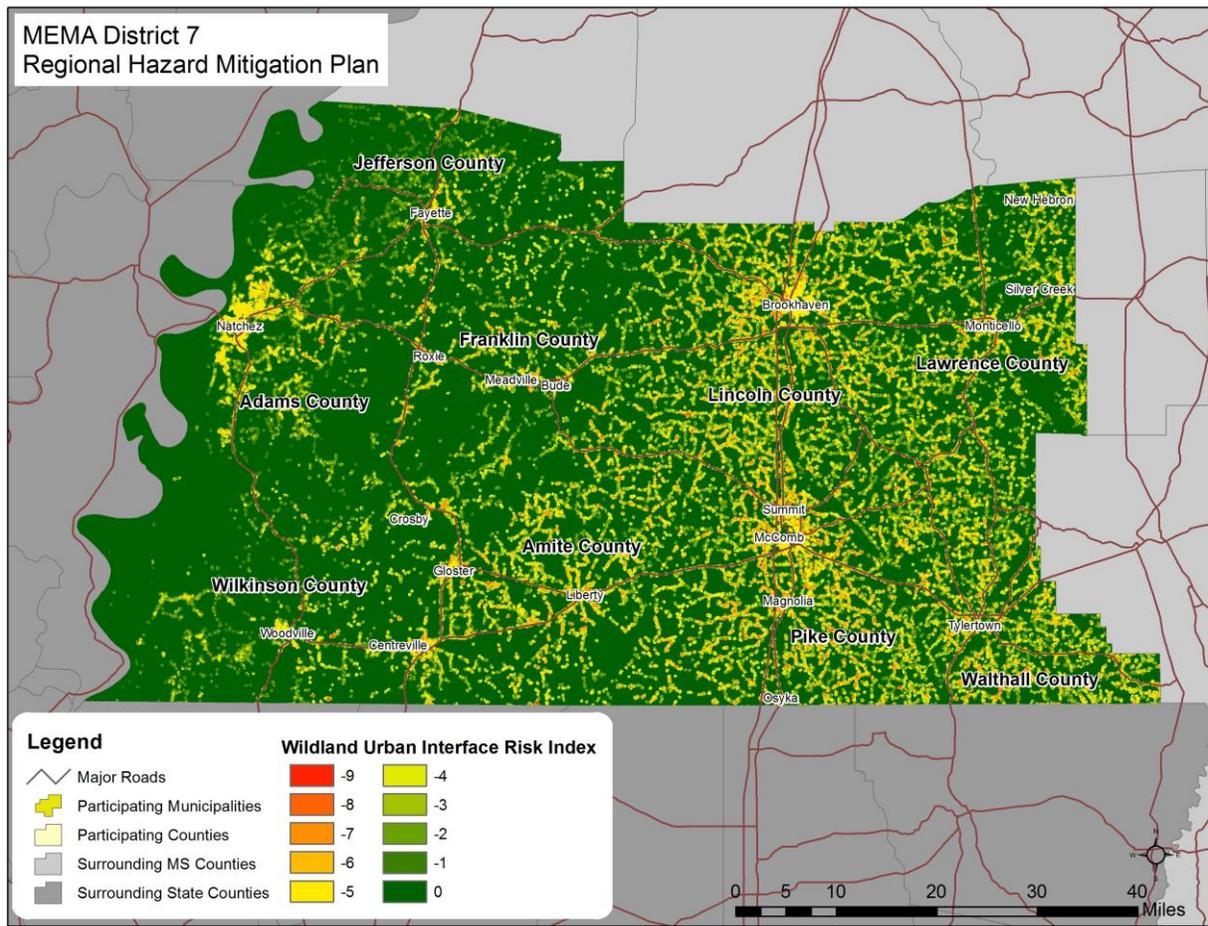
Although historical evidence indicates that the MEMA District 7 Region is susceptible to wildfire events, there are few reports which include information on historic dollar losses. Therefore, it is difficult to calculate a reliable annualized loss figure. Annualized loss is considered negligible though it should be noted that a single event could result in significant damages throughout the region.

To estimate exposure to wildfire, building data was obtained from Hazus-MH 4.0 which includes information that has been aggregated at the census block level and which has been deemed useful for analyzing wildfire vulnerability. However, it should be noted that the accuracy of Hazus data is somewhat lower than that of parcel data. For the critical facility analysis, areas of concern were intersected with critical facility locations.

**Figure 6.7** shows the Wildland Urban Interface Risk Index (WUIRI) data, which is a data layer that shows a rating of the potential impact of a wildfire on people and their homes. The key input, Wildland Urban Interface (WUI), reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the WUI and rural areas is key information for defining potential wildfire impacts to people and homes. Initially provided as raster data, it was converted to a polygon to allow for analysis. The Wildland Urban Interface Risk Index data ranges from 0 to -9 with lower values being most severe (as noted previously, this is only a measure of relative risk). **Figure 6.8** shows the areas of analysis where any grid cell is less than -4. Areas with a value below -4 were chosen to be displayed as areas of risk because this showed the upper echelon of the scale and the areas at highest risk.

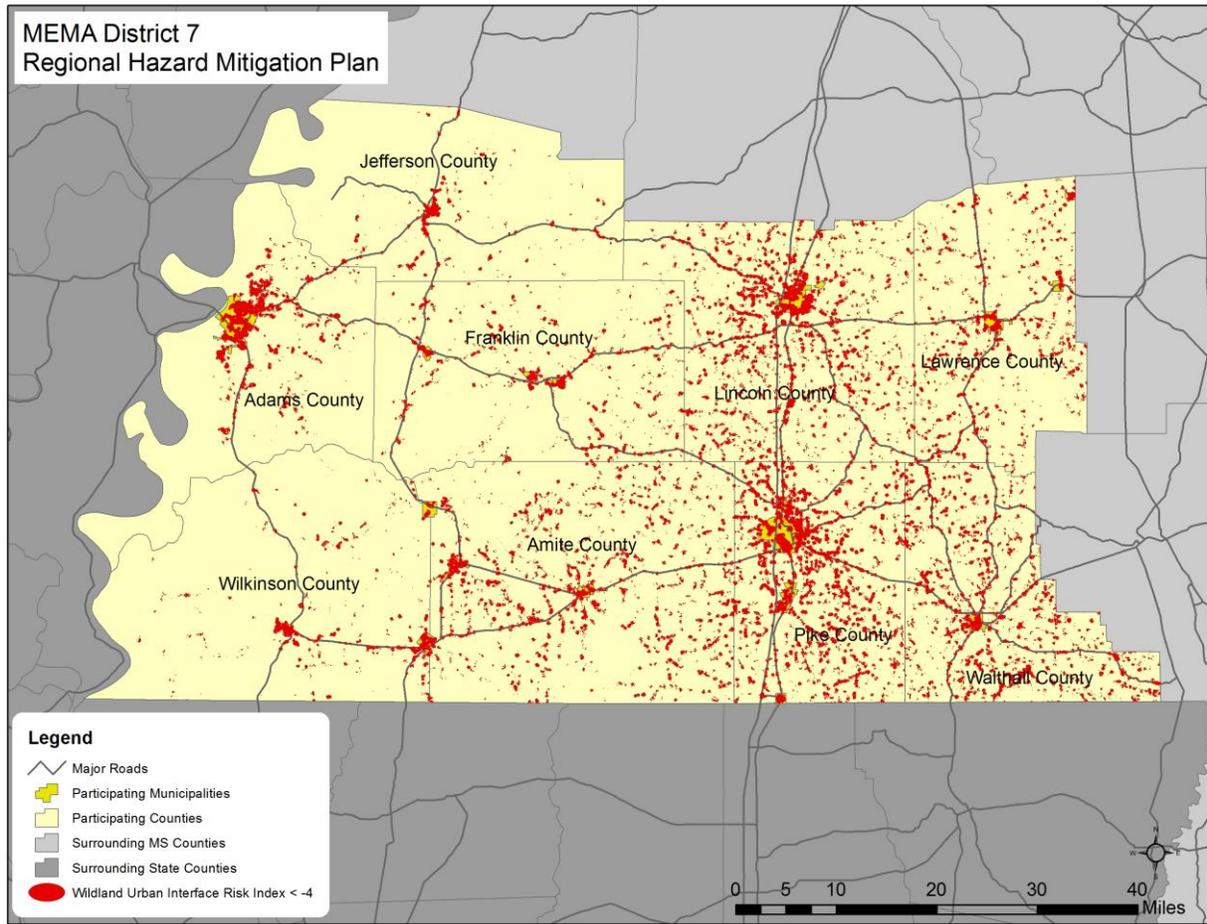
**Table 6.8** shows the results of the analysis.

FIGURE 6.7: WUI RISK INDEX AREAS IN THE MEMA DISTRICT 7 REGION



Source: Southern Wildfire Risk Assessment Data

**FIGURE 6.8: WILDFIRE RISK AREAS IN THE MEMA DISTRICT 7 REGION**



Source: Southern Wildfire Risk Assessment Data

**TABLE 6.8: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO WILDFIRE RISK AREAS<sup>3</sup>**

| Location               | Wildfire Risk Area             |                        |
|------------------------|--------------------------------|------------------------|
|                        | Approx. Number of Improvements | Approx. Improved Value |
| <b>Adams County</b>    | <b>13,868</b>                  | <b>\$2,873,269,000</b> |
| Natchez                | 7,774                          | \$1,852,133,000        |
| Unincorporated Area    | 6,094                          | \$1,021,136,000        |
| <b>Amite County</b>    | <b>6,840</b>                   | <b>\$930,287,000</b>   |
| Gloster                | 709                            | \$111,025,000          |
| Liberty                | 453                            | \$80,122,000           |
| Unincorporated Area    | 5,678                          | \$739,140,000          |
| <b>Franklin County</b> | <b>4,119</b>                   | <b>\$625,076,000</b>   |
| Bude                   | 560                            | \$94,838,000           |
| Meadville              | 313                            | \$82,258,000           |

<sup>3</sup> Parcel/Building Footprint data was not available for most of the MEMA District 7 counties. Therefore, building counts and values were pulled from Hazus-MH at the census block level and approximate improved value was calculated.

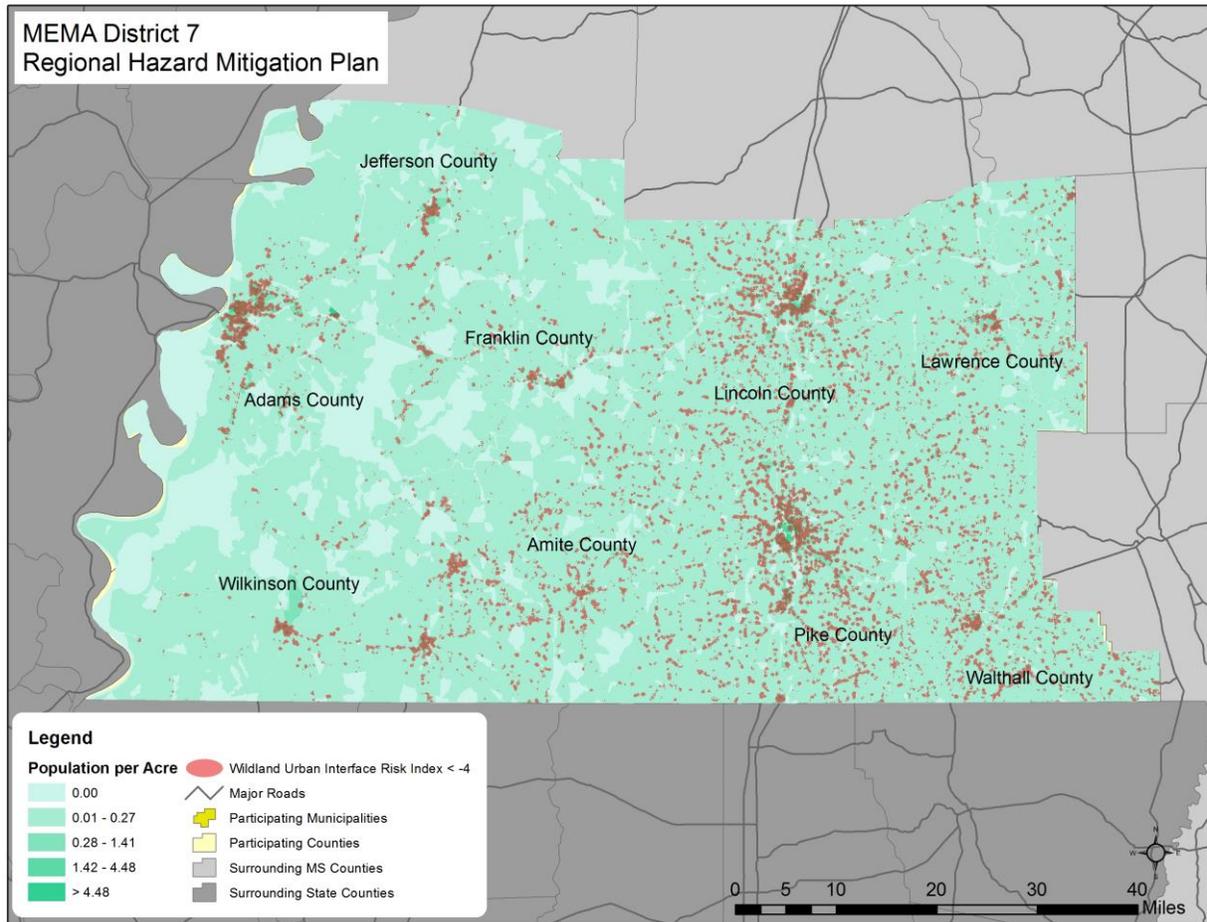
| Location                              | Wildfire Risk Area             |                         |
|---------------------------------------|--------------------------------|-------------------------|
|                                       | Approx. Number of Improvements | Approx. Improved Value  |
| Roxie                                 | 275                            | \$36,555,000            |
| Unincorporated Area                   | 2,971                          | \$411,425,000           |
| <b>Jefferson County</b>               | <b>3,147</b>                   | <b>\$417,407,000</b>    |
| Fayette                               | 1,052                          | \$181,948,000           |
| Unincorporated Area                   | 2,095                          | \$235,459,000           |
| <b>Lawrence County</b>                | <b>6,159</b>                   | <b>\$1,047,380,000</b>  |
| Monticello                            | 862                            | \$219,887,000           |
| New Hebron                            | 262                            | \$53,898,000            |
| Silver Creek                          | 139                            | \$19,344,000            |
| Unincorporated Area                   | 4,896                          | \$754,251,000           |
| <b>Lincoln County</b>                 | <b>15,220</b>                  | <b>\$2,903,654,000</b>  |
| Brookhaven                            | 4,223                          | \$1,083,421,000         |
| Unincorporated Area                   | 10,997                         | \$1,820,233,000         |
| <b>Pike County</b>                    | <b>16,572</b>                  | <b>\$3,056,843,000</b>  |
| Magnolia                              | 1,097                          | \$217,471,000           |
| McComb                                | 4,591                          | \$1,069,353,000         |
| Osyka                                 | 309                            | \$67,670,000            |
| Summit                                | 955                            | \$161,433,000           |
| Unincorporated Area                   | 9,620                          | \$1,540,916,000         |
| <b>Walthall County</b>                | <b>7,451</b>                   | <b>\$1,079,582,000</b>  |
| Tylertown                             | 960                            | \$223,826,000           |
| Unincorporated Area                   | 6,491                          | \$855,756,000           |
| <b>Wilkinson County</b>               | <b>4,940</b>                   | <b>\$724,159,000</b>    |
| Centreville                           | 857                            | \$145,347,000           |
| Crosby                                | 211                            | \$25,479,000            |
| Woodville                             | 804                            | \$157,912,000           |
| Unincorporated Area                   | 3,068                          | \$395,421,000           |
| <b>MEMA DISTRICT 7 REGIONAL TOTAL</b> | <b>78,316</b>                  | <b>\$13,657,657,000</b> |

Source: Southern Wildfire Risk Assessment; Hazus-MH 4.0

### SOCIAL VULNERABILITY

Given some level of susceptibility across the entire MEMA District 7 Region, it is assumed that the total population is at risk to the wildfire hazard. **Figure 6.9** shows an overlay of the wildfire risk areas identified above with the population density by census block. This shows that many of the areas of high population concentration are susceptible to wildfire because of their proximity to the wildland urban interface.

**FIGURE 6.9: WILDFIRE RISK AREAS IN THE MEMA DISTRICT 7 REGION**



Source: Southern Wildfire Risk Assessment Data; United States Census Bureau, 2010 Census

### CRITICAL FACILITIES

The critical facility analysis revealed that there are 161 critical facilities located in wildfire areas of concern, including 6 EOCs, 42 fire stations, 6 government/public buildings, 27 medical care facilities, 23 police stations, 8 private sector buildings, and 49 schools. It should be noted, that several factors could impact the spread of a wildfire putting all facilities at risk. A list of specific critical facilities and their associated risk can be found in **Table 6.13** at the end of this section.

In conclusion, a wildfire event has the potential to impact many existing and future buildings, critical facilities, and populations in the MEMA District 7 Region.

### 6.5.4 Earthquake

As the Hazus-MH model suggests below, and historical occurrences confirm, any significant earthquake activity in the area is likely to inflict minor damage to the planning area. Hazus-MH 4.0 estimates a total annualized loss of \$105,000 which includes structural and non-structural damage to buildings, contents, and inventory throughout the planning area.

For the earthquake hazard vulnerability assessment, a probabilistic scenario was created to estimate the average annualized loss<sup>4</sup> for the region on a county by county basis. The results of the analysis are generated at the census tract level within Hazus-MH and then aggregated to the county level. Since the scenario is annualized, no building counts are provided. Losses reported included losses due to structure failure, building loss, contents damage, and inventory loss. They do not include losses to business interruption, lost income, or relocation. **Table 6.9** summarizes the findings with results rounded to the nearest thousand.

**TABLE 6.9: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR EARTHQUAKE HAZARD**

| Location                            | Structural Damage | Non-Structural Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|-------------------------------------|-------------------|-----------------------|-----------------|----------------|-----------------------|
| Adams County                        | \$6,000           | \$13,000              | \$4,000         | \$0            | \$23,000              |
| Amite County                        | \$1,000           | \$3,000               | \$1,000         | \$0            | \$5,000               |
| Franklin County                     | \$1,000           | \$2,000               | \$1,000         | \$0            | \$4,000               |
| Jefferson County                    | \$2,000           | \$4,000               | \$1,000         | \$0            | \$7,000               |
| Lawrence County                     | \$2,000           | \$5,000               | \$1,000         | \$0            | \$8,000               |
| Lincoln County                      | \$7,000           | \$14,000              | \$4,000         | \$0            | \$25,000              |
| Pike County                         | \$6,000           | \$12,000              | \$4,000         | \$0            | \$22,000              |
| Walthall County                     | \$2,000           | \$4,000               | \$1,000         | \$0            | \$7,000               |
| Wilkinson County                    | \$1,000           | \$2,000               | \$1,000         | \$0            | \$4,000               |
| <b>MEMA DISTRICT 7 REGION TOTAL</b> | <b>\$28,000</b>   | <b>\$59,000</b>       | <b>\$18,000</b> | <b>\$0</b>     | <b>\$105,000</b>      |

Source: Hazus-MH 4.0

### **SOCIAL VULNERABILITY**

It can be assumed that all existing and future populations are at risk to the earthquake hazard.

### **CRITICAL FACILITIES**

The Hazus-MH probabilistic analysis did not indicate that any critical facilities would sustain measurable damage in an earthquake event. However, all critical facilities should be considered at-risk to minor to moderate damage should an event occur. A list of specific critical facilities and their associated risk can be found in **Table 6.13** at the end of this section.

In conclusion, an earthquake has the potential to impact all existing and future buildings, facilities, and populations in the MEMA District 7 Region. Specific vulnerabilities for these assets will be greatly dependent on their individual design and the mitigation measures in place. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. The Hazus-MH scenario indicates that minimal to moderate damage is expected from an earthquake occurrence. While the MEMA District 7 Region may not experience a catastrophic earthquake, localized damage is possible with a moderate to larger scale occurrence.

<sup>4</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

### 6.5.5 Hurricane and Tropical Storm

Historical evidence indicates that the MEMA District 7 Region has significant risk to the hurricane and tropical storm hazard. There have been eight disaster declarations due to hurricanes as noted in previous sections. Several tracks have come near or traversed through the MEMA District 7 Region, as shown and discussed in Section 5: *Hazard Profiles*. Hazus-MH 4.0 estimates a total annualized loss of \$3,702,000 which includes buildings, contents, and inventory throughout the planning area.

Hurricanes and tropical storms can cause damage through numerous additional hazards such as flooding, erosion, tornadoes, and high winds, thus it is difficult to estimate total potential losses from these cumulative effects. The current Hazus-MH hurricane model only analyzes hurricane winds and is not capable of modeling and estimating cumulative losses from all hazards associated with hurricanes; therefore, only hurricane winds are analyzed in this section. It can be assumed that all existing and future buildings and populations are at risk to the hurricane and tropical storm hazard. Hazus-MH 4.0 was used to determine average annualized losses<sup>5</sup> for the region as shown below in **Table 6.10**. Only losses to buildings, inventory, and contents are included in the results.

**TABLE 6.10: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR HURRICANE WIND HAZARD**

| Location                            | Building Damage    | Contents Damage    | Inventory Loss | Total Annualized Loss |
|-------------------------------------|--------------------|--------------------|----------------|-----------------------|
| Adams County                        | \$203,000          | \$55,000           | \$0            | \$258,000             |
| Amite County                        | \$209,000          | \$100,000          | \$0            | \$309,000             |
| Franklin County                     | \$110,000          | \$62,000           | \$0            | \$172,000             |
| Jefferson County                    | \$39,000           | \$13,000           | \$0            | \$52,000              |
| Lawrence County                     | \$232,000          | \$103,000          | \$0            | \$335,000             |
| Lincoln County                      | \$497,000          | \$158,000          | \$1,000        | \$656,000             |
| Pike County                         | \$782,000          | \$301,000          | \$1,000        | \$1,084,000           |
| Walthall County                     | \$464,000          | \$210,000          | \$1,000        | \$675,000             |
| Wilkinson County                    | \$115,000          | \$46,000           | \$0            | \$161,000             |
| <b>MEMA DISTRICT 7 REGION TOTAL</b> | <b>\$2,651,000</b> | <b>\$1,046,000</b> | <b>\$3,000</b> | <b>\$3,702,000</b>    |

Source: Hazus-MH 4.0

#### **SOCIAL VULNERABILITY**

Given some equal susceptibility across the entire MEMA District 7 Region, it is assumed that the total population, both current and future, is at risk to the hurricane and tropical storm hazard.

#### **CRITICAL FACILITIES**

Given equal vulnerability across the MEMA District 7 Region, all critical facilities are considered to be at risk. Some buildings may perform better than others in the face of such an event due to construction and age, among other factors. Determining individual building response is beyond the scope of this plan. However, this plan will consider mitigation action for especially vulnerable structures and/or critical

<sup>5</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

facilities to mitigate against the effects of the hurricane hazard. A list of specific critical facilities can be found in **Table 6.13** at the end of this section.

In conclusion, a hurricane event has the potential to impact many existing and future buildings, critical facilities, and populations in the MEMA District 7 Region.

### 6.5.6 Radiological Event

The location of Grand Gulf and River Bend Nuclear Stations north and south of the region, respectively, demonstrate that the region is at some risk to the effects of a nuclear accident. Although there have not been any major events at these plants in the past, there have been major events at other nuclear stations around the country. Additionally, smaller scale incidents at both these nuclear stations have occurred.

In order to assess nuclear risk, a GIS-based analysis was used to estimate exposure during a nuclear event within each of the risk zones described in *Section 5: Hazard Profiles*. The determination of assessed value at-risk (exposure) was calculated using GIS analysis by summing the total values for those properties that were confirmed to be located within one of the risk zones. **Table 6.11** presents potential at-risk properties in the 50-mile buffer zone (no property was located in the 10-mile buffer zone). The number of buildings, parcels, and the approximate value are presented.

**TABLE 6.11: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO A NUCLEAR ACCIDENT**

| Location                | 50-mile Nuclear Buffer Area    |                        |
|-------------------------|--------------------------------|------------------------|
|                         | Approx. Number of Improvements | Approx. Improved Value |
| <b>Adams County</b>     | <b>14,661</b>                  | <b>\$3,129,923,000</b> |
| Natchez                 | 8,332                          | \$2,068,891,000        |
| Unincorporated Area     | 6,329                          | \$1,061,032,000        |
| <b>Amite County</b>     | <b>5,684</b>                   | <b>\$769,622,000</b>   |
| Gloster                 | 716                            | \$112,157,000          |
| Liberty                 | 453                            | \$80,122,000           |
| Unincorporated Area     | 4,515                          | \$577,343,000          |
| <b>Franklin County</b>  | <b>4,237</b>                   | <b>\$650,604,000</b>   |
| Bude                    | 560                            | \$94,838,000           |
| Meadville               | 314                            | \$82,402,000           |
| Roxie                   | 275                            | \$36,555,000           |
| Unincorporated Area     | 3,088                          | \$436,809,000          |
| <b>Jefferson County</b> | <b>3,686</b>                   | <b>\$697,417,000</b>   |
| Fayette                 | 1,052                          | \$181,948,000          |
| Unincorporated Area     | 2,634                          | \$515,469,000          |
| <b>Lawrence County</b>  | <b>0</b>                       | <b>\$0</b>             |
| Monticello              | 0                              | \$0                    |
| New Hebron              | 0                              | \$0                    |
| Silver Creek            | 0                              | \$0                    |
| Unincorporated Area     | 0                              | \$0                    |
| <b>Lincoln County</b>   | <b>12,215</b>                  | <b>\$2,622,669,000</b> |
| Brookhaven              | 4,644                          | \$1,333,728,000        |

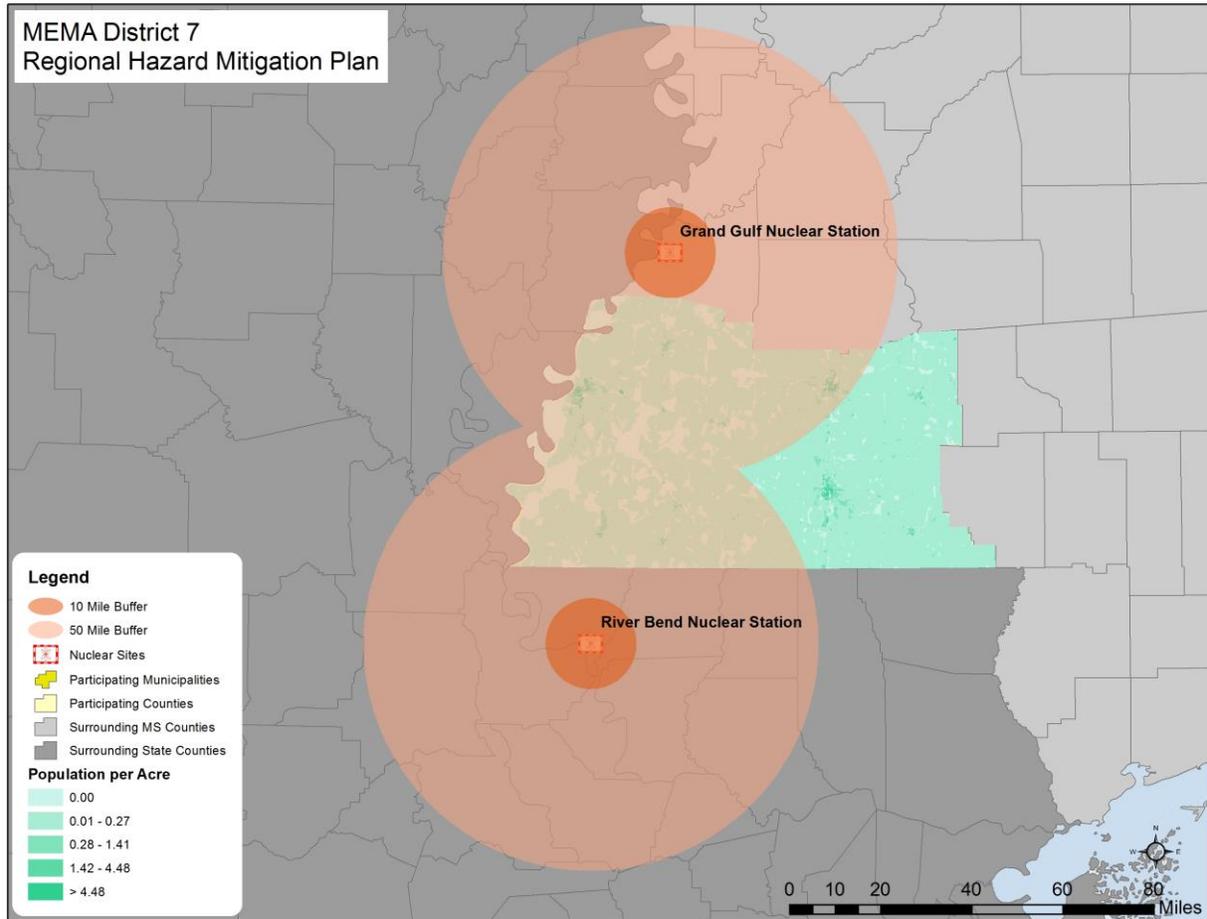
| Location                              | 50-mile Nuclear Buffer Area    |                        |
|---------------------------------------|--------------------------------|------------------------|
|                                       | Approx. Number of Improvements | Approx. Improved Value |
| Unincorporated Area                   | 7,571                          | \$1,288,941,000        |
| <b>Pike County</b>                    | <b>27</b>                      | <b>\$5,235,000</b>     |
| Magnolia                              | 0                              | \$0                    |
| McComb                                | 0                              | \$0                    |
| Osyka                                 | 0                              | \$0                    |
| Summit                                | 0                              | \$0                    |
| Unincorporated Area                   | 27                             | \$5,235,000            |
| <b>Walthall County</b>                | <b>0</b>                       | <b>\$0</b>             |
| Tylertown                             | 0                              | \$0                    |
| Unincorporated Area                   | 0                              | \$0                    |
| <b>Wilkinson County</b>               | <b>5,220</b>                   | <b>\$763,415,000</b>   |
| Centreville                           | 866                            | \$150,329,000          |
| Crosby                                | 211                            | \$25,479,000           |
| Woodville                             | 804                            | \$157,912,000          |
| Unincorporated Area                   | 3,339                          | \$429,695,000          |
| <b>MEMA DISTRICT 7 REGIONAL TOTAL</b> | <b>45,730</b>                  | <b>\$8,638,885,000</b> |

Source: International Atomic Energy Agency; Hazus-MH 4.0

**SOCIAL VULNERABILITY**

Since much of the western part of the region is within the 50-mile buffer area, this segment of the population is considered to be at high risk to a radiological event. However, other populations in the region may also be at some risk. This risk can be seen in **Figure 6.10**.

**FIGURE 6.10: POPULATION DENSITY NEAR NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN THE MEMA DISTRICT 7 REGION**



Source: International Atomic Energy Agency; United States Census Bureau, 2010 Census

### CRITICAL FACILITIES

The critical facility analysis revealed that there are 148 critical facilities located in the 50-mile nuclear buffer area, including 5 EOCs, 32 fire stations, 7 government/public buildings, 29 medical care facilities, 17 police stations, 8 private sector buildings, 46 schools, and 4 transportation facilities. No critical facilities are located in the 10-mile buffer area. A list of specific critical facilities and their associated risk can be found in **Table 6.13** at the end of this section.

In conclusion, a nuclear accident has the potential to impact many existing and future buildings, facilities, and populations in the MEMA District 7 Region, though areas in the west of the region are at a higher risk than others.

## 6.6 CONCLUSIONS ON HAZARD VULNERABILITY

The results of this vulnerability assessment are useful in at least three ways:

- Improving our understanding of the risk associated with the natural hazards in the MEMA District 7 Region through better understanding of the complexities and dynamics of risk, how levels of risk can be measured and compared, and the myriad of factors that influence risk. An understanding of these relationships is critical in making balanced and informed decisions on managing the risk.
- Providing a baseline for policy development and comparison of mitigation alternatives. The data used for this analysis presents a current picture of risk in the MEMA District 7 Region. Updating this risk “snapshot” with future data will enable comparison of the changes in risk with time. Baselines of this type can support the objective analysis of policy and program options for risk reduction in the region.
- Comparing the risk among the natural hazards addressed. The ability to quantify the risk to all these hazards relative to one another helps in a balanced, multi-hazard approach to risk management at each level of governing authority. This ranking provides a systematic framework to compare and prioritize the very disparate natural hazards that are present in the MEMA District 7 Region. This final step in the risk assessment provides the necessary information for local officials to craft a mitigation strategy to focus resources on only those hazards that pose the most threat to the MEMA District 7 counties.

Exposure to hazards can be an indicator of vulnerability. Economic exposure can be identified through values for improvements (buildings), and social exposure can be identified by estimating the population exposed to each hazard. This information is especially important for decision-makers to use in planning for evacuation or other public safety-related needs.

The types of assets included in these analyses include all building types in the participating jurisdictions. Specific information about the types of assets that are vulnerable to the identified hazards is included in each hazard subsection (for example all building types are considered at risk to the winter storm hazard).

**Table 6.12** presents a summary of annualized loss for each hazard in the MEMA District 7 Region. Due to the reporting of hazard damages primarily at the county level, it was difficult to determine an accurate annualized loss estimate for each municipality. Therefore, an annualized loss was determined through the damage reported through historical occurrences at the county level. These values should be used as an additional planning tool or measure risk for determining hazard mitigation strategies throughout the region.

**TABLE 6.12: ANNUALIZED LOSS FOR THE MEMA DISTRICT 7 REGION**

| Hazard                       | Adams County | Amite County | Franklin County | Jefferson County | Lawrence County |
|------------------------------|--------------|--------------|-----------------|------------------|-----------------|
| <b>Flood-related Hazards</b> |              |              |                 |                  |                 |
| Dam and Levee Failure        | Negligible   | Negligible   | Negligible      | Negligible       | Negligible      |
| Erosion                      | Negligible   | Negligible   | Negligible      | Negligible       | Negligible      |
| Flood                        | \$224,858    | \$46,832     | \$247,438       | \$229,109        | \$125,607       |
| <b>Fire-related Hazards</b>  |              |              |                 |                  |                 |
| Drought                      | Negligible   | Negligible   | \$4,269         | \$4,269          | \$5,336         |
| Lightning                    | \$18,282     | \$1,202      | \$16,186        | \$5,124          | \$25,249        |
| Wildfire                     | Negligible   | Negligible   | Negligible      | Negligible       | Negligible      |

**SECTION 6: VULNERABILITY ASSESSMENT**

| Hazard                        | Adams County | Amite County | Franklin County | Jefferson County | Lawrence County |
|-------------------------------|--------------|--------------|-----------------|------------------|-----------------|
| <b>Geologic Hazards</b>       |              |              |                 |                  |                 |
| Earthquake*                   | \$6,000      | \$1,000      | \$1,000         | \$2,000          | \$2,000         |
| <b>Wind-related Hazards</b>   |              |              |                 |                  |                 |
| Extreme Heat                  | Negligible   | Negligible   | Negligible      | Negligible       | Negligible      |
| Hailstorm                     | \$9,363      | \$0          | \$23,521        | \$4,381          | \$13,278        |
| Hurricane & Tropical Storm    | \$8,471,834  | \$6,245,984  | \$110,715       | \$2,115,937      | \$10,431,225    |
| Severe Thunderstorm/High Wind | \$2,077,786  | \$55,520     | \$97,500        | \$70,547         | \$67,885        |
| Tornado                       | \$363,924    | \$86,862     | \$195,723       | \$116,771        | \$11,325,217    |
| Winter Storm & Freeze         | \$68,864     | \$0          | \$44,791        | \$45,117         | \$147,017       |
| <b>Human-caused Hazards</b>   |              |              |                 |                  |                 |
| Radiological Event            | Negligible   | Negligible   | Negligible      | Negligible       | Negligible      |

\*No historic losses for earthquake were recorded, so Hazus estimates for annualized loss were used.

Note: In this table, the term “Negligible” is used to indicate that no records of dollar losses for the particular hazard were recorded. This could be the case either because there were no events that caused dollar damage or because documentation of that particular type of event is not well kept.

**TABLE 6.12: ANNUALIZED LOSS FOR THE MEMA DISTRICT 7 REGION (CONT.)**

| Hazard                        | Lincoln County | Pike County  | Walthall County | Wilkinson County | MEMA D7 Total |
|-------------------------------|----------------|--------------|-----------------|------------------|---------------|
| <b>Flood-related Hazards</b>  |                |              |                 |                  |               |
| Dam and Levee Failure         | Negligible     | Negligible   | Negligible      | Negligible       | Negligible    |
| Erosion                       | Negligible     | Negligible   | Negligible      | Negligible       | Negligible    |
| Flood                         | \$468,178      | \$297,705    | \$68,773        | \$349,495        | \$2,057,997   |
| <b>Fire-related Hazards</b>   |                |              |                 |                  |               |
| Drought                       | \$5,336        | Negligible   | Negligible      | Negligible       | \$19,209      |
| Lightning                     | \$21,898       | \$492        | \$0             | \$0              | \$88,432      |
| Wildfire                      | Negligible     | Negligible   | Negligible      | Negligible       | Negligible    |
| <b>Geologic Hazards</b>       |                |              |                 |                  |               |
| Earthquake*                   | \$7,000        | \$6,000      | \$2,000         | \$1,000          | \$28,000      |
| <b>Wind-related Hazards</b>   |                |              |                 |                  |               |
| Extreme Heat                  | Negligible     | Negligible   | Negligible      | Negligible       | Negligible    |
| Hailstorm                     | \$109,718      | \$3,548      | \$1,346         | \$35,475         | \$200,630     |
| Hurricane & Tropical Storm    | \$8,481,674    | \$24,593,909 | \$30,644,498    | \$1,232,778      | \$92,328,554  |
| Severe Thunderstorm/High Wind | \$207,393      | \$51,568     | \$17,705        | \$7,379          | \$2,653,283   |
| Tornado                       | \$455,546      | \$2,400,146  | \$124,441       | \$63,893         | \$15,132,522  |
| Winter Storm & Freeze         | \$97,106       | \$0          | \$0             | \$0              | \$402,896     |
| <b>Human-caused Hazards</b>   |                |              |                 |                  |               |
| Radiological Event            | Negligible     | Negligible   | Negligible      | Negligible       | Negligible    |

\*No historic losses for earthquake were recorded, so Hazus estimates for annualized loss were used.

Note: In this table, the term “Negligible” is used to indicate that no records of dollar losses for the particular hazard were recorded. This could be the case either because there were no events that caused dollar damage or because documentation of that particular type of event is not well kept.

As noted previously, all existing and future buildings and populations (including critical facilities) are vulnerable to atmospheric hazards including drought, lightning, extreme heat, hailstorm, hurricane and tropical storm, severe thunderstorm/high wind, tornado, and winter storm and freeze. Some buildings may be more vulnerable to these hazards based on other factors such as construction and building type. **Table 6.13** shows the critical facilities vulnerable to the hazards analyzed in this section. The table lists those assets that are determined to be exposed to each of the identified hazards (marked with an “X”).

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TABLE 6.13: AT-RISK CRITICAL FACILITIES

| FACILITY NAME                           | FACILITY TYPE     | FLOOD-RELATED         |         |                | FIRE-RELATED   |         |           | GEO      | WIND-RELATED |              |           |                              |                                |         | HUM                     |                                 |                                 |
|---|-------------------|-----------------------|---------|----------------|----------------|---------|-----------|----------|--------------|--------------|-----------|------------------------------|--------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|   |                   | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought | Lightning | Wildfire | Earthquake   | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/ High Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| <b>Adams County</b>                     |                   |                       |         |                |                |         |           |          |              |              |           |                              |                                |         |                         |                                 |                                 |
| Adams County EOC                        | EOC               |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Foster Mound Volunteer Fire Department  | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Kingston Volunteer Fire Department      | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Lake Montrose Volunteer Fire Department | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Liberty Road Volunteer Fire Department  | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Natchez Fire Department #1              | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Natchez Fire Department #2              | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Natchez Fire Department #3              | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Natchez Fire Department #4              | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Adams County Community Safe Room        | Government/Public |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Adams County Nursing Home               | Medical Care      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Arnolds Personal Care Home              | Medical Care      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Doctors Pavilion                        | Medical Care      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Glenburney Nursing Home                 | Medical Care      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Jefferson Comprehensive Health          | Medical Care      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Magnolia House                          | Medical Care      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Merit Health Natchez                    | Medical Care      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |
| Miss-Lou Rural Health                   | Medical Care      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                              | X       | X                       |                                 | X                               |

**SECTION 6: VULNERABILITY ASSESSMENT**

| FACILITY NAME                             | FACILITY TYPE  | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                               |         |                         | HUM                             |                                 |
|---|----------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|   |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/High Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Natchez Rehabilitation Healthcare Center  | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Adams County Sheriff's Office             | Police Station |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Natchez Police Department                 | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| MS River Corp                             | Private Sector |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Natchez-Adams County Port Industrial Park | Private Sector |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Adams County Christian School             | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Adams County Life Skills                  | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Alcorn State University                   | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Cathedral School                          | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Central Alternative School                | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Co-Lin Community College                  | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Fallin Career and Tech Center             | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Frazier Primary School                    | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| McLaurin Elementary School                | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Morganton Arts Academy                    | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Morganton CPL Academy                     | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Natchez-Adams School District             | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Natchez Freshman Academy                  | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Natchez High School                       | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Robert Lewis Middle School                | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |

**SECTION 6: VULNERABILITY ASSESSMENT**

| FACILITY NAME                                     | FACILITY TYPE     | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                               |         |                         | HUM                             |                                 |
|---|-------------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|   |                   | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/High Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Trinity Episcopal Day School                      | School            |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| West Primary School                               | School            |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Mississippi River Bridge                          | Transportation    |                       | X       | X              |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Natchez-Adams County Airport (Hardy-Anders Field) | Transportation    |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Natchez-Adams County Port                         | Transportation    |                       | X       | X              |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| <b>Amite County</b>                               |                   |                       |         |                |                |              |           |          |            |              |           |                              |                               |         |                         |                                 |                                 |
| Amite County EOC                                  | EOC               |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| East Central Rural Volunteer Fire Department      | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Gillsburg Rural Volunteer Fire Department         | Fire Station      |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Liberty Volunteer Fire Department                 | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Mars Hill VFD                                     | Fire Station      |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| North Central Amite Volunteer Fire Department     | Fire Station      |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| O'neil Volunteer Fire Department                  | Fire Station      |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Smithdale Volunteer Fire Department               | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Southwest Amite Volunteer Fire Department         | Fire Station      |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Street Volunteer Fire Department                  | Fire Station      |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Amite County Courthouse Complex                   | Government/Public |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Gloster Town Hall                                 | Government/Public |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Liberty Town Hall                                 | Government/Public |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |

**SECTION 6: VULNERABILITY ASSESSMENT**

| FACILITY NAME                                 | FACILITY TYPE  | FLOOD-RELATED         |         |                | FIRE-RELATED   |         |           | GEO      | WIND-RELATED |              |           |                              |                               |         | HUM                     |                                 |                                 |
|---|----------------|-----------------------|---------|----------------|----------------|---------|-----------|----------|--------------|--------------|-----------|------------------------------|-------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|   |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought | Lightning | Wildfire | Earthquake   | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/High Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Amite County Medical Services                 | Medical Care   |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Field Health System                           | Medical Care   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Gloster Clinic                                | Medical Care   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Liberty Community Living Center               | Medical Care   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Amite County Law Enforcement Complex          | Police Station |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Gloster Police Dept                           | Police Station |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Liberty Police Department                     | Police Station |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Air Cruisers                                  | Private Sector |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Freedom Industries                            | Private Sector |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Mabry Lumber Company                          | Private Sector |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Amite County High School                      | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Amite County Voc-Tech Complex                 | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Amite School Center                           | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Centreville Academy                           | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Gloster Elementary School                     | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Liberty Elementary School                     | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| Pine Hills Christian Academy                  | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| <b>Franklin County</b>                        |                |                       |         |                |                |         |           |          |              |              |           |                              |                               |         |                         |                                 |                                 |
| Franklin County EOC                           | EOC            |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       | X                       |                                 | X                               |
| East Franklin Rural Volunteer Fire Department | Fire Station   |                       | X       | X              |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         |                                 | X                               |

**SECTION 6: VULNERABILITY ASSESSMENT**

| FACILITY NAME                                | FACILITY TYPE  | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                               |         |                         | HUM                             |                                 |
|--|----------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|  |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/High Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Meadville Volunteer Fire Department District | Fire Station   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Bude Rural Health Clinic                     | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Family Medical Group of Meadville            | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Franklin County Hospital                     | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Meadville Convalescent Nursing Home          | Medical Care   |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Bude Police Dept                             | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Franklin County Sheriff                      | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Meadville Police Dept                        | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| American Railcar                             | Private Sector |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Franklin County Elementary School            | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Franklin County High School                  | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Franklin County Jr High School               | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| <b>Jefferson County</b>                      |                |                       |         |                |                |              |           |          |            |              |           |                              |                               |         |                         |                                 |                                 |
| Jefferson County EOC                         | EOC            |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Fayette Fire Department                      | Fire Station   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Jefferson County Hospital                    | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Jefferson County Nursing Home                | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Fayette Police Dept                          | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Jefferson County Sheriff                     | Police Station |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Jefferson County High School                 | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |

**SECTION 6: VULNERABILITY ASSESSMENT**

| FACILITY NAME                       | FACILITY TYPE     | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                               |         |                         | HUM                             |                                 |
|-------------------------------------|-------------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|                                     |                   | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/High Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| <b>Lawrence County</b>              |                   |                       |         |                |                |              |           |          |            |              |           |                              |                               |         |                         |                                 |                                 |
| Lawrence County EOC                 | EOC               |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| Arm Volunteer Fire Department       | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| Center Fire Department              | Fire Station      |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| Monticello Fire Department          | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| New Hebron Volunteer Fire Rescue    | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| North Pleasant Hill Fire Department | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| Oakvale Fire Department             | Fire Station      |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| Oma Fire Department                 | Fire Station      |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| Silver Creek Fire & Rescue          | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| Sontag Fire Department              | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| Tilton Fire Department              | Fire Station      |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| Topeka Fire Department              | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| Wanilla Fire Department             | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| Lawrence County Courthouse          | Government/Public |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| Lawrence County Hospital            | Medical Care      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| Lawrence County Nursing Home        | Medical Care      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| Lawrence County Sheriff's Ofc       | Police Station    |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| Monticello Police Dept              | Police Station    |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |
| New Hebron Police Dept              | Police Station    |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       | X                       |                                 |                                 |

**SECTION 6: VULNERABILITY ASSESSMENT**

| FACILITY NAME                            | FACILITY TYPE  | FLOOD-RELATED         |         |                | FIRE-RELATED   |         |           | GEO      | WIND-RELATED |              |           |                              |                               |         | HUM                     |                                 |
|--|----------------|-----------------------|---------|----------------|----------------|---------|-----------|----------|--------------|--------------|-----------|------------------------------|-------------------------------|---------|-------------------------|---------------------------------|
|  |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought | Lightning | Wildfire | Earthquake   | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/High Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area |
| Georgia-Pacific Corp                     | Private Sector |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         |                                 |
| Kellwood                                 | Private Sector |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 |
| Monticello Hardwood Inc                  | Private Sector |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 |
| Screening Systems Int.                   | Private Sector |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         |                                 |
| Lawrence County High School              | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 |
| Lawrence County Voc-Tech Center          | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 |
| Monticello Elementary School             | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 |
| New Hebron Attendance Center             | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 |
| Paige Middle School                      | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 |
| Topeka-Tilton Attendance Center          | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 |
| <b>Lincoln County</b>                    |                |                       |         |                |                |         |           |          |              |              |           |                              |                               |         |                         |                                 |
| Lincoln County EOC                       | EOC            |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         | X                               |
| Bogue Chitto Volunteer Fire Department   | Fire Station   |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         |                                 |
| Brookhaven Central Fire Department       | Fire Station   |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         | X                               |
| Brookhaven Fire Department #2            | Fire Station   |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         | X                               |
| Brookhaven Fire Department #3            | Fire Station   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         | X                               |
| East Lincoln VFD                         | Fire Station   |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         |                                 |
| Heuck's Retreat Community Volunteer Fire | Fire Station   |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         | X                               |
| Heucks Retreat VFD                       | Fire Station   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         | X                               |
| Hog Chain VFD                            | Fire Station   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         | X                               |

**SECTION 6: VULNERABILITY ASSESSMENT**

| FACILITY NAME                         | FACILITY TYPE     | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                               |         |                         | HUM                             |                                 |
|---------------------------------------|-------------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|                                       |                   | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/High Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Loyd Star Volunteer Fire Department   | Fire Station      |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| New Sight VFD                         | Fire Station      |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Ruth VFD                              | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Zetus Volunteer Fire Department #1    | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Zetus Volunteer Fire Department #2    | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Zetus Volunteer Fire Department #3    | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Mississippi Juvenile Detention Center | Government/Public |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Brook Manor Nursing Home              | Medical Care      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| County Brook Living Center            | Medical Care      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Haven Hall Healthcare Center          | Medical Care      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Kings Daughters Hospital              | Medical Care      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Lincoln County Residential Center     | Medical Care      |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Silver Cross Home                     | Medical Care      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Brookhaven Police Dept                | Police Station    |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Lincoln County Sheriff                | Police Station    |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Brookhaven Industrial Park            | Private Sector    |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Alexander Jr High School              | School            |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Bogue Chita School                    | School            |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Brookhaven Elementary School          | School            |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Brookhaven High School                | School            |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |

**SECTION 6: VULNERABILITY ASSESSMENT**

| FACILITY NAME                         | FACILITY TYPE  | FLOOD-RELATED         |         |                | FIRE-RELATED   |         |           | GEO      | WIND-RELATED |              |           |                              |                               |         | HUM                     |                                 |                                 |
|---------------------------------------|----------------|-----------------------|---------|----------------|----------------|---------|-----------|----------|--------------|--------------|-----------|------------------------------|-------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|                                       |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought | Lightning | Wildfire | Earthquake   | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/High Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Brookhaven School District            | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Brookhaven Technical Cener            | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Enterprise School                     | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Lincoln County School District        | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Lipsey School                         | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Loyd Star School                      | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Martin Elementary School              | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| MS School for the Arts                | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Mullins School                        | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| West Lincoln School                   | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Brookhaven-Lincoln County Airport     | Transportation |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| <b>Pike County</b>                    |                |                       |         |                |                |         |           |          |              |              |           |                              |                               |         |                         |                                 |                                 |
| Pike County EOC                       | EOC            |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Friendship Fire Department #2         | Fire Station   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Friendship Volunteer Fire Department  | Fire Station   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Magnolia Fire Department              | Fire Station   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| McComb Fire Chief                     | Fire Station   |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| McComb Fire Department #2             | Fire Station   |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| McComb Fire Department #3             | Fire Station   |                       | X       | X              |                | X       | X         |          | X            | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Progress Volunteer Fire Department #1 | Fire Station   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                             | X       |                         |                                 |                                 |

**SECTION 6: VULNERABILITY ASSESSMENT**

| FACILITY NAME                                      | FACILITY TYPE  | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                               |         |                         | HUM                             |                                 |
|--|----------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|  |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/High Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Progress Volunteer Fire Department #2              | Fire Station   |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Rural Osyka Volunteer Fire Department              | Fire Station   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Summit Rural Volunteer Fire Department             | Fire Station   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Sunnyhill Vol. Fire Dept.<br>Hwy 48 West McComb,MS | Fire Station   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Aston Court Assisted Living Personal Care          | Medical Care   |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Beacham Memorial Hospital                          | Medical Care   |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Camelia Estates Living/Nursing Home                | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Family Practice Clinic of McComb                   | Medical Care   |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Magnolia Clinic                                    | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| McComb Extended Care Center                        | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| McComb Nursing and Rehab                           | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| SW Miss Regional Hospital                          | Medical Care   |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| The Clibourne                                      | Medical Care   |                       | X       | X              |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Magnolia Police Dept                               | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Mc Comb Police-Animal Control                      | Police Station |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Mc Comb Police-Support Svc                         | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Mc Comb Police Chief                               | Police Station |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Pike County Sheriff's Office                       | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Pike County Sheriff's Office                       | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Summit Police Dept                                 | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |

**SECTION 6: VULNERABILITY ASSESSMENT**

| FACILITY NAME                           | FACILITY TYPE  | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                               |         |                         | HUM                             |                                 |
|---|----------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|   |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/High Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Kroft                                   | Private Sector |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Metro Pike Industrial Park              | Private Sector |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Weyerhaeuser Packaging                  | Private Sector |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Denman Jr High School                   | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Eva Gordon Elementary School            | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Higgins Middle School                   | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Kennedy Elementary School               | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Magnolia Elementary School              | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| McComb High School                      | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| McComb Voc-Tech Center                  | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| North Pike Elementary School            | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| North Pike High School                  | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| North Pike Middle School                | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Osyka Elementary School                 | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Otken Elementary School                 | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Parklane Academy                        | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| South Pike High School                  | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| South Pike Jr High School               | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Southwest Mississippi Community College | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| St. Alphonsus Elementary School         | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |

**SECTION 6: VULNERABILITY ASSESSMENT**

| FACILITY NAME                              | FACILITY TYPE  | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                               |         |                         | HUM                             |                                 |
|--|----------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|  |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/High Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Summit Learning Center                     | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Westbrook Head Start                       | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| <b>Walthall County</b>                     |                |                       |         |                |                |              |           |          |            |              |           |                              |                               |         |                         |                                 |                                 |
| Walthall County EOC                        | EOC            |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| 3rd District Fire Department               | Fire Station   |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| 4th District Fire Department               | Fire Station   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Enon Volunteer Fire Department             | Fire Station   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Lexie Volunteer Fire Department            | Fire Station   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Oak Grove Volunteer Fire Department        | Fire Station   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Southwest Marion Volunteer Fire Department | Fire Station   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Tylertown Fire Department                  | Fire Station   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Beverly Healthcare                         | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Walthall County Hospital                   | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Tylertown Police Dept                      | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Tylertown Police Dept                      | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Walthall County Sheriff                    | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Walthall County Sheriff                    | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Bill Dora Inc.                             | Private Sector |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Georgia Pacific                            | Private Sector |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Stringer Industries Inc.                   | Private Sector |                       | X       | X              |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |

**SECTION 6: VULNERABILITY ASSESSMENT**

| FACILITY NAME                          | FACILITY TYPE     | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                               |         |                         | HUM                             |                                 |
|--|-------------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|  |                   | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/High Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Walthall County Industrial Park        | Private Sector    |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| Tylertown High School                  | School            |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 |                                 |
| <b>Wilkinson County</b>                |                   |                       |         |                |                |              |           |          |            |              |           |                              |                               |         |                         |                                 |                                 |
| Wilkinson County EOC                   | EOC               |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| Centreville Volunteer Fire Department  | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| Crosby Fire Department                 | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| Woodville Fire Department              | Fire Station      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| A.O. Smith Community Center            | Government/Public |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| Wilkinson County Correctional Facility | Government/Public |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| Catchings Clinic                       | Medical Care      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| Field Clinic                           | Medical Care      |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| Field Memorial Community Hospital      | Medical Care      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| Wilkinson Nursing Home                 | Medical Care      |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| Centreville Police Dept                | Police Station    |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| Crosby Police Dept                     | Police Station    |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| Wilkinson County Sheriff               | Police Station    |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| Woodville Police Dept                  | Police Station    |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| Woodville Police Dept                  | Police Station    |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| Netterville Lumber Company             | Private Sector    |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |
| Finch Elementary School                | School            |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         | X                               |                                 |

**SECTION 6: VULNERABILITY ASSESSMENT**

| FACILITY NAME                      | FACILITY TYPE | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                               |         |                         | HUM                             |                                 |
|------------------------------------|---------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|                                    |               | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/High Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Wilkinson County Christian Academy | School        |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Wilkinson County Elementary School | School        |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Wilkinson County High School       | School        |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| Wilkinson County Voc-Tech Center   | School        |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |
| William Winams Alternative School  | School        |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                             | X       |                         |                                 | X                               |



# SECTION 7

## CAPABILITY ASSESSMENT

This section of the Plan discusses the capability of the MEMA District 7 Region to implement hazard mitigation activities. It consists of the following four subsections:

- 7.1 What is a Capability Assessment?
- 7.2 Conducting the Capability Assessment
- 7.3 Capability Assessment Findings
- 7.4 Conclusions on Local Capability

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### 7.1 WHAT IS A CAPABILITY ASSESSMENT?

The purpose of conducting a capability assessment is to determine the ability of a local jurisdiction to implement a comprehensive mitigation strategy and to identify potential opportunities for establishing or enhancing specific mitigation policies, programs, or projects.<sup>1</sup> As in any planning process, it is important to try to establish which goals, objectives, and/or actions are feasible based on an understanding of the organizational capacity of those agencies or departments tasked with their implementation. A capability assessment helps to determine which mitigation actions are practical, and likely to be implemented over time, given a local government’s planning and regulatory framework, level of administrative and technical support, amount of fiscal resources, and current political climate.

A capability assessment has two primary components: 1) an inventory of a local jurisdiction’s relevant plans, ordinances, or programs already in place and 2) an analysis of its capacity to carry them out. Careful examination of local capabilities will detect any existing gaps, shortfalls, or weaknesses with ongoing government activities that could hinder proposed mitigation activities and possibly exacerbate community hazard vulnerability. A capability assessment also highlights the positive mitigation measures already in place or being implemented at the local government level, which should continue to be supported and enhanced through future mitigation efforts.

The capability assessment completed for the MEMA District 7 Region serves as a critical planning step and an integral part of the foundation for designing an effective hazard mitigation strategy. Coupled with the Risk Assessment, the Capability Assessment helps identify and target meaningful mitigation actions for incorporation in the Mitigation Strategy portion of the Hazard Mitigation Plan. It not only helps establish the goals and objectives for the region to pursue under this Plan, but it also ensures that those goals and objectives are realistically achievable under given local conditions.

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<sup>1</sup> While the Final Rule for implementing the Disaster Mitigation Act of 2000 does not require a local capability assessment to be completed for local hazard mitigation plans, it is a critical step in developing a mitigation strategy that meets the needs of the region while taking into account their own unique abilities. The Rule does state that a community’s mitigation strategy should be “based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools” (44 CFR, Part 201.6(c)(3)).

## 7.2 CONDUCTING THE CAPABILITY ASSESSMENT

In order to facilitate the inventory and analysis of local government capabilities within the MEMA District 7 counties, a detailed Capability Assessment Survey was completed for each of the participating jurisdictions based on the information found in existing hazard mitigation plans and local government websites. The survey questionnaire compiled information on a variety of “capability indicators” such as existing local plans, policies, programs, or ordinances that contribute to and/or hinder the region’s ability to implement hazard mitigation actions. Other indicators included information related to the region’s fiscal, administrative, and technical capabilities, such as access to local budgetary and personnel resources for mitigation purposes. The current political climate, an important consideration for any local planning or decision making process, was also evaluated with respect to hazard mitigation.

At a minimum, survey results provide an extensive inventory of existing local plans, ordinances, programs, and resources that are in place or under development in addition to their overall effect on hazard loss reduction. However, the survey instrument can also serve to identify gaps, weaknesses, or conflicts that counties and local jurisdictions can recast as opportunities for specific actions to be proposed as part of the hazard mitigation strategy.

The information collected in the survey questionnaire was incorporated into a database for further analysis. A general scoring methodology was then applied to quantify each jurisdiction’s overall capability.<sup>2</sup> According to the scoring system, each capability indicator was assigned a point value based on its relevance to hazard mitigation.

Using this scoring methodology, a total score and an overall capability rating of “high,” “moderate,” or “limited” could be determined according to the total number of points received. These classifications are designed to provide nothing more than a general assessment of local government capability. The results of this capability assessment provide critical information for developing an effective and meaningful mitigation strategy.

## 7.3 CAPABILITY ASSESSMENT FINDINGS

The findings of the capability assessment are summarized in this Plan to provide insight into the relevant capacity of the MEMA District 7 Region to implement hazard mitigation activities. All information is based upon the review of existing hazard mitigation plans and local government websites through the Capability Assessment Survey and input provided by local government officials during meetings of the MEMA District 7 Region Hazard Mitigation Council.

In addition to the local capabilities that are outlined in the following pages, it is also important to note that during the plan development process, the HMC utilized a number of different sources outside of their own local government resources to incorporate into the plan. These other plans, studies, reports, and technical information came from a number of different sources and were instrumental in helping to provide key information such as hazard histories, spatial high-risk areas, and vulnerability information. For example, at the state level, the Mississippi State Hazard Mitigation Plan provided critical data to supplement the risk assessment of several hazards, most prominently, the dam/levee failure hazard. Moreover, technical information from private sector sources such as the Southern Wildfire Risk Assessment were used to improve the HMC’s understanding of spatial areas considered to be at the highest risk to this hazard. Furthermore, a great deal of information was gathered from federal sources

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<sup>2</sup> The scoring methodology used to quantify and rank the region’s capability can be found in Appendix B.

including the National Climatic Data Center which provided hazard history information and the Federal Emergency Management Agency which tracks a great deal of data on all hazards, perhaps notably, on flooding and insurance claims.

These plans, studies, and technical information were critical in the development of this plan and were used in many areas of the planning process, especially the risk assessment. The use of disparate information from a number of different sources helped the HMC compare data across hazards and gain a better understanding of overall risk.

### 7.3.1 Planning and Regulatory Capability

Planning and regulatory capability is based on the implementation of plans, ordinances, and programs that demonstrate a local jurisdiction’s commitment to guiding and managing growth, development, and redevelopment in a responsible manner while maintaining the general welfare of the community. It includes emergency response and mitigation planning, comprehensive land use planning, and transportation planning; the enforcement of zoning or subdivision ordinances and building codes that regulate how land is developed and structures are built; as well as protecting environmental, historic, and cultural resources in the community. Although some conflicts can arise, these planning initiatives generally present significant opportunities to integrate hazard mitigation principles and practices into the local decision making process.

This assessment is designed to provide a general overview of the key planning and regulatory tools and programs that are in place or under development for the MEMA District 7 Region along with their potential effect on loss reduction. This information will help identify opportunities to address existing gaps, weaknesses, or conflicts with other initiatives in addition to integrating the implementation of this Plan with existing planning mechanisms where appropriate.

**Table 7.1** provides a summary of the relevant local plans, ordinances, and programs already in place or under development for the MEMA District 7 Region. A checkmark (✓) indicates that the given item is currently in place and being implemented. An asterisk (\*) indicates that the given item is currently being developed for future implementation. A dagger (+) indicates that the given item is administered for that municipality by the county. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the MEMA District 7 Regional Hazard Mitigation Plan.

**TABLE 7.1: RELEVANT PLANS, ORDINANCES, AND PROGRAMS**

| Planning/Regulatory Tool                                     | ADAMS COUNTY           | Natchez | AMITE COUNTY | Gloster | Liberty | FRANKLIN COUNTY | Bude | Meadville | Roxie | JEFFERSON COUNTY | Fayette | LAWRENCE COUNTY | Monticello | New Hebron | Silver Creek | LINCOLN COUNTY | Brookhaven | PIKE COUNTY | Magnolia | McComb | Osyka | Summit | WALTHALL COUNTY | Tylertown | WILKINSON COUNTY | Centreville | Crosby | Woodville |
|--|------------------------|---------|--------------|---------|---------|-----------------|------|-----------|-------|------------------|---------|-----------------|------------|------------|--------------|----------------|------------|-------------|----------|--------|-------|--------|-----------------|-----------|------------------|-------------|--------|-----------|
|  | Hazard Mitigation Plan | ✓       | +            | ✓       | +       | +               | ✓    | +         | +     | +                | ✓       | +               | ✓          | +          | +            | +              | ✓          | +           | ✓        | +      | +     | +      | +               | ✓         | +                | ✓           | +      | +         |
| Threat and Hazard Identification and Risk Assessment (THIRA) |                        |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                |            |             |          |        |       |        |                 |           |                  |             |        |           |

**SECTION 7: CAPABILITY ASSESSMENT**

| Planning/Regulatory Tool  | ADAMS COUNTY                | Natchez | AMITE COUNTY | Gloster | Liberty | FRANKLIN COUNTY | Bude | Meadville | Roxie | JEFFERSON COUNTY | Fayette | LAWRENCE COUNTY | Monticello | New Hebron | Silver Creek | LINCOLN COUNTY | Brookhaven | PIKE COUNTY | Magnolia | McComb | Osyka | Summit | WALTHAM COUNTY | Tylertown | WILKINSON COUNTY | Centreville | Crosby | Woodville |   |
|---|-----------------------------|---------|--------------|---------|---------|-----------------|------|-----------|-------|------------------|---------|-----------------|------------|------------|--------------|----------------|------------|-------------|----------|--------|-------|--------|----------------|-----------|------------------|-------------|--------|-----------|---|
|   | Comprehensive Land Use Plan | ✓       |              |         |         |                 |      |           |       | ✓                | +       |                 |            |            |              |                |            | ✓           | ✓        | +      | ✓     | +      | +              |           |                  |             |        |           | ✓ |
| Floodplain Management Plan/Flood Mitigation Plan                |                             |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                | ✓          |             |          |        |       |        |                |           |                  |             |        |           |   |
| Open Space Management Plan (Parks & Rec/Greenway Plan)          |                             |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                |            |             |          |        |       |        |                |           |                  |             |        |           |   |
| Stormwater Management Plan/Ordinance                            |                             |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                | ✓          |             |          | ✓      |       |        |                |           |                  |             |        |           |   |
| Natural Resource Protection Plan                                |                             |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                |            |             |          |        |       |        |                |           |                  |             |        |           |   |
| Flood Response Plan   |                             |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                |            |             |          |        |       |        |                |           |                  |             |        |           |   |
| Emergency Operations Plan                                       | ✓                           | +       | ✓            | +       | +       | ✓               | +    | +         | +     | ✓                | +       | ✓               | +          | +          | +            | ✓              | +          | ✓           | +        | +      | +     | +      | +              | ✓         | +                | ✓           | +      | +         | + |
| Emergency Management Accreditation Program (EMAP Accreditation) |                             |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                | ✓          | +           |          |        |       |        |                |           |                  |             |        |           |   |
| Continuity of Operations Plan                                   |                             |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                | ✓          | +           |          |        |       |        |                |           |                  |             |        |           |   |
| Evacuation Plan   |                             |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                |            |             |          |        |       |        |                |           |                  |             |        |           |   |
| Disaster Recovery Plan  |                             |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                |            |             |          |        |       |        |                |           |                  |             |        |           |   |
| Capital Improvements Plan                                       |                             |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                |            |             |          |        |       |        |                |           |                  |             |        |           |   |
| Economic Development Plan                                       | ✓                           | +       | ✓            | +       | +       | ✓               | +    | +         | +     | ✓                | +       | ✓               | +          | +          | +            | ✓              | +          | ✓           | +        | +      | +     | +      | +              | ✓         | +                | ✓           | +      | +         | + |
| Historic Preservation Plan                                      |                             |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                |            |             |          |        |       |        |                |           |                  |             |        |           |   |
| Flood Damage Prevention Ordinance                               | ✓                           | ✓       | ✓            | ✓       | ✓       | ✓               |      |           | ✓     | ✓                | ✓       | ✓               | ✓          | ✓          | ✓            |                | ✓          | ✓           | ✓        | ✓      | ✓     |        | ✓              | ✓         | ✓                | ✓           | ✓      | ✓         |   |
| Zoning Ordinance  |                             | ✓       |              |         |         |                 |      |           |       |                  |         |                 | ✓          |            |              |                | ✓          |             | ✓        |        |       |        |                |           |                  |             |        | ✓         |   |
| Subdivision Ordinance   |                             | ✓       |              |         |         |                 |      |           |       |                  |         |                 | ✓          |            |              | ✓              | ✓          |             | ✓        | ✓      |       |        |                |           |                  |             |        |           |   |
| Unified Development Ordinance                                   |                             |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                |            |             |          |        |       |        |                |           |                  |             |        |           |   |
| Post-Disaster Redevelopment/ Reconstruction Plan/Ordinance      |                             |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                |            |             |          |        |       |        |                |           |                  |             |        |           |   |
| Building Code   |                             | ✓       |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                | ✓          |             |          | ✓      |       |        |                |           |                  |             |        | ✓         |   |
| Fire Code   |                             | ✓       |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                | ✓          |             |          | ✓      |       |        |                |           |                  |             |        |           |   |
| National Flood Insurance Program (NFIP)                         | ✓                           | ✓       | ✓            | ✓       | ✓       | ✓               |      |           | ✓     | ✓                | ✓       | ✓               | ✓          | ✓          | ✓            |                | ✓          | ✓           | ✓        | ✓      | ✓     |        | ✓              | ✓         | ✓                | ✓           | ✓      | ✓         |   |

| Planning/Regulatory Tool                   | ADAMS COUNTY<br>Natchez | AMITE COUNTY<br>Gloster<br>Liberty | FRANKLIN COUNTY<br>Bude<br>Meadville<br>Roxie | JEFFERSON COUNTY<br>Fayette | LAWRENCE COUNTY<br>Monticello<br>New Hebron<br>Silver Creek | LINCOLN COUNTY<br>Brookhaven | PIKE COUNTY<br>Magnolia<br>McComb<br>Osyka<br>Summit | WALTHAM COUNTY<br>Tylertown | WILKINSON COUNTY<br>Centreville<br>Crosby<br>Woodville |
|--|-------------------------|------------------------------------|---|-----------------------------|---|------------------------------|--|-----------------------------|--|
| NFIP Community Rating System (CRS Program) |                         |                                    |   |                             |   |                              |  |                             |  |

A more detailed discussion on the region’s planning and regulatory capability follows.

### 7.3.2 Emergency Management

Hazard mitigation is widely recognized as one of the four primary phases of emergency management. The three other phases include preparedness, response, and recovery. In reality, each phase is interconnected with hazard mitigation, as **Figure 7.1** suggests. Opportunities to reduce potential losses through mitigation practices are most often implemented before disaster strikes, such as the elevation of flood prone structures or the continuous enforcement of policies that prevent and regulate development that is vulnerable to hazards due to its location, design, or other characteristics. Mitigation opportunities will also be presented during immediate preparedness or response activities, such as installing storm shutters in advance of a hurricane, and certainly during the long-term recovery and redevelopment process following a hazard event.

**FIGURE 7.1: THE FOUR PHASES OF EMERGENCY MANAGEMENT**



Planning for each phase is a critical part of a comprehensive emergency management program and a key to the successful implementation of hazard mitigation actions. As a result, the Capability Assessment Survey asked several questions across a range of emergency management plans in order to assess the MEMA District 7 Region’s willingness to plan and their level of technical planning proficiency.

**Hazard Mitigation Plan:** A hazard mitigation plan represents a community's blueprint for how it intends to reduce the impact of natural and human-caused hazards on people and the built environment. The essential elements of a hazard mitigation plan include a risk assessment, capability assessment, and mitigation strategy.

- Each of the nine counties participating in this multi-jurisdictional plan has previously adopted a hazard mitigation plan. Each participating municipality was included in its respective county's plan.

**Threat and Hazard Identification and Risk Assessment (THIRA):** A THIRA is a comprehensive risk assessment process that helps a community understand its risks and estimate capability requirements. Outputs of the THIRA process can inform a variety of disaster preparedness and emergency management efforts, including emergency operations planning, mutual aid agreements, and hazard mitigation planning.

- None of the counties or municipalities participating in this multi-jurisdictional plan has completed a THIRA process. The counties should consider conducting a THIRA process to improve their understanding of risks and the resources required to prepare for those risks.

**Disaster Recovery Plan:** A disaster recovery plan serves to guide the physical, social, environmental, and economic recovery and reconstruction process following a disaster. In many instances, hazard mitigation principles and practices are incorporated into local disaster recovery plans with the intent of capitalizing on opportunities to break the cycle of repetitive disaster losses. Disaster recovery plans can also lead to the preparation of disaster redevelopment policies and ordinances to be enacted following a hazard event.

- None of the counties or municipalities participating in this multi-jurisdictional plan has adopted a disaster recovery plan. The counties should consider developing a plan to guide the recovery and reconstruction process following a disaster.

**Emergency Operations Plan:** An emergency operations plan outlines responsibilities and the means by which resources are deployed during and following an emergency or disaster.

- Each of the nine counties participating in this multi-jurisdictional plan maintains an emergency operations plan through their respective County Emergency Management Agency. Each participating municipality is also covered by its respective county's plan.

**Continuity of Operations Plan:** A continuity of operations plan establishes a chain of command, line of succession, and plans for backup or alternate emergency facilities in case of an extreme emergency or disaster event.

- Lincoln County and the City of Brookhaven are the only participating jurisdictions that have adopted a continuity of operations plan. The other counties should consider developing a plan to ensure the execution of essential functions during emergencies or disaster events.

**Flood Response Plan:** A flood response plan establishes procedures for responding to a flood emergency including coordinating and facilitating resources to minimize the impacts of flood.

- None of the counties or municipalities participating in this multi-jurisdictional plan has adopted a flood response plan.

**Emergency Management Accreditation Program (EMAP):** EMAP is the voluntary standards, assessment, and accreditation program for disaster preparedness programs. It provides emergency management programs the opportunity to be recognized for compliance with industry standards, to demonstrate accountability, and to focus attention on areas and issues where resources are needed.

- Lincoln County and the City of Brookhaven are the only participating jurisdictions that have earned EMAP accreditation.

### **7.3.3 General Planning**

The implementation of hazard mitigation activities often involves agencies and individuals beyond the emergency management profession. Stakeholders may include local planners, public works officials, economic development specialists, and others. In many instances, concurrent local planning efforts will help to achieve or complement hazard mitigation goals, even though they are not designed as such. Therefore, the Capability Assessment Survey also asked questions regarding general planning capabilities and the degree to which hazard mitigation is integrated into other on-going planning efforts in the MEMA District 7 Region.

**Comprehensive Land Use Plan:** A comprehensive land use plan establishes the overall vision for what a community wants to be and serves as a guide for future governmental decision making. Typically a comprehensive plan contains sections on demographic conditions, land use, transportation elements, and community facilities. Given the broad nature of the plan and its regulatory standing in many communities, the integration of hazard mitigation measures into the comprehensive plan can enhance the likelihood of achieving risk reduction goals, objectives, and actions.

- Pike County and Jefferson County are the only participating counties that have adopted a county comprehensive plan. The Pike County plan also includes the City of Magnolia, City of McComb, Town of Osyka, and Town of Summit and the Jefferson County Plan also includes the City of Fayette.
- Several of the municipalities participating in this multi-jurisdictional plan have also adopted municipal comprehensive plans, including the City of Natchez, City of Brookhaven, City of McComb, and Town of Woodville.

**Capital Improvements Plan:** A capital improvements plan guides the scheduling of spending on public improvements. A capital improvements plan can serve as an important mechanism for guiding future development away from identified hazard areas. Limiting public spending in hazardous areas is one of the most effective long-term mitigation actions available to local governments.

- None of the counties or municipalities participating in this multi-jurisdictional plan has adopted a capital improvements plan.

**Historic Preservation Plan:** A historic preservation plan is intended to preserve historic structures or districts within a community. An often overlooked aspect of the historic preservation plan is the assessment of buildings and sites located in areas subject to natural hazards and the identification of ways to reduce future damages. This may involve retrofitting or relocation techniques that account for

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the need to protect buildings that do not meet current building standards or are within a historic district that cannot easily be relocated out of harm's way.

- None of the counties or municipalities participating in this multi-jurisdictional plan has a historic preservation plan. However, the City of Natchez and City of McComb have adopted historic preservation ordinances. The Town of Woodville has also published historic preservation guidelines.

**Zoning Ordinance:** Zoning represents the primary means by which land use is controlled by local governments. As part of a community's police power, zoning is used to protect the public health, safety, and welfare of those in a given jurisdiction that maintains zoning authority. A zoning ordinance is the mechanism through which zoning is typically implemented. Since zoning regulations enable municipal governments to limit the type and density of development, a zoning ordinance can serve as a powerful tool when applied in identified hazard areas.

- None of the counties participating in this multi-jurisdictional plan has adopted a zoning ordinance.
- Several of the municipalities participating have adopted zoning ordinances, including the City of Natchez, Town of Monticello, City of Brookhaven, City of McComb, and the Town of Woodville.

**Subdivision Ordinance:** A subdivision ordinance is intended to regulate the development of residential, commercial, industrial, or other uses, including associated public infrastructure, as land is subdivided into buildable lots for sale or future development. Subdivision design that accounts for natural hazards can dramatically reduce the exposure of future development.

- Lincoln County is the only participating county that has adopted a subdivision ordinance.
- Several of the participating municipalities have adopted subdivision ordinances, including the City of Natchez, Town of Monticello, City of Brookhaven, City of Magnolia, and City of McComb.

**Building Codes, Permitting, and Inspections:** Building codes regulate construction standards. In many communities, permits, and inspections are required for new construction. Decisions regarding the adoption of building codes (that account for hazard risk), the type of permitting process required both before and after a disaster, and the enforcement of inspection protocols all affect the level of hazard risk faced by a community.

- Effective August 1, 2014, the State of Mississippi has adopted as a minimum any of the last three editions (2009, 2012, 2015) of the International Building Code and any additional codes as adopted by the Mississippi Building Code Council. Jurisdictions had 120 days to opt out of adoptions. Additionally, all state buildings, leased or owned, must meet the requirements set forth in the 2012 International Building Code.
- None of the counties participating in this multi-jurisdictional plan has adopted a building code.
- The following participating municipalities have adopted building codes: City of Natchez, City of Brookhaven, City of McComb, and Town of Woodville.

The adoption and enforcement of building codes by local jurisdictions is routinely assessed through the Building Code Effectiveness Grading Schedule (BCEGS) program developed by the Insurance Services

Office, Inc. (ISO).<sup>3</sup> In Mississippi, the Mississippi State Rating Bureau assesses the building codes in effect in a particular community and how the community enforces its building codes *with special emphasis on mitigation of losses from natural hazards*. The results of BCEGS assessments are routinely provided to ISO's member private insurance companies, which in turn may offer ratings credits for new buildings constructed in communities with strong BCEGS classifications. The concept is that communities with well-enforced, up-to-date codes should experience fewer disaster-related losses and, as a result, should have lower insurance rates.

In conducting the assessment, ISO collects information related to personnel qualification and continuing education as well as the number of inspections performed per day. This type of information combined with local building codes is used to determine a grade for that jurisdiction. The grades range from 1 to 10 with a BCEGS grade of 1 representing exemplary commitment to building code enforcement and a grade of 10 indicating less than minimum recognized protection.

### 7.3.4 Floodplain Management

Flooding represents the greatest natural hazard facing the nation. At the same time, the tools available to reduce the impacts associated with flooding are among the most developed when compared to other hazard-specific mitigation techniques. In addition to approaches that cut across hazards such as education, outreach, and the training of local officials, the *National Flood Insurance Program (NFIP)* contains specific regulatory measures that enable government officials to determine where and how growth occurs relative to flood hazards. Participation in the NFIP is voluntary for local governments; however, program participation is strongly encouraged by FEMA as a first step for implementing and sustaining an effective hazard mitigation program. It is therefore used as part of this assessment as a key indicator for measuring local capability.

In order for a county or municipality to participate in the NFIP, they must adopt a local flood damage prevention ordinance that requires jurisdictions to follow established minimum building standards in the floodplain. These standards require that all new buildings and substantial improvements to existing buildings will be protected from damage by a 100-year flood event and that new development in the floodplain will not exacerbate existing flood problems or increase damage to other properties.

A key service provided by the NFIP is the mapping of identified flood hazard areas. Once completed, the Flood Insurance Rate Maps (FIRMs) are used to assess flood hazard risk, regulate construction practices, and set flood insurance rates. FIRMs are an important source of information to educate residents, government officials, and the private sector about the likelihood of flooding in their community.

**Table 7.2** provides NFIP policy and claim information for each participating jurisdiction in the MEMA District 7 Region. Each of the jurisdictions that are participating in the development of this plan that also participate in the NFIP are committed to maintaining and enforcing their floodplain management ordinances and regulating new development in floodplains.

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<sup>3</sup> Participation in BCEGS is voluntary and may be declined by local governments if they do not wish to have their local building codes evaluated.

**TABLE 7.2: NFIP POLICY AND CLAIM INFORMATION**

| Jurisdiction             | Date Joined NFIP | Current Effective Map Date | NFIP Policies in Force | Insurance in Force | Closed Claims | Total Payments to Date |
|--------------------------|------------------|----------------------------|------------------------|--------------------|---------------|------------------------|
| <b>ADAMS COUNTY†</b>     | 09/29/89         | 06/16/11                   | 30                     | \$6,322,400        | 97            | \$1,367,517            |
| Natchez                  | 06/01/78         | 06/16/11                   | 34                     | \$9,803,100        | 23            | \$381,250              |
| <b>AMITE COUNTY†</b>     | 08/01/86         | 09/29/10                   | 18                     | \$3,595,700        | 0             | \$0                    |
| Gloster                  | 06/17/86         | 09/29/10                   | 0                      | \$0                | 0             | \$0                    |
| Liberty                  | 09/29/86         | 09/29/10                   | 0                      | \$0                | 2             | \$3,416                |
| <b>FRANKLIN COUNTY†</b>  | 12/13/12         | 01/06/10(M)                | 10                     | \$849,400          | 1             | \$6,854                |
| Bude*                    | --               | --                         | --                     | --                 | --            | --                     |
| Meadville*               | --               | --                         | --                     | --                 | --            | --                     |
| Roxie                    | 06/17/86         | 01/06/10(M)                | 1                      | \$175,000          | 0             | \$0                    |
| <b>JEFFERSON COUNTY†</b> | 07/03/90         | 09/29/10                   | 6                      | \$1,750,000        | 84            | \$917,584              |
| Fayette                  | 09/29/10         | 09/29/10                   | 0                      | \$0                | 0             | \$0                    |
| <b>LAWRENCE COUNTY†</b>  | 09/15/89         | 06/02/11                   | 50                     | \$6,992,300        | 15            | \$327,839              |
| Monticello               | 04/02/86         | 06/02/11                   | 17                     | \$4,137,100        | 10            | \$136,891              |
| New Hebron               | 08/05/85         | 06/02/11(M)                | 0                      | \$0                | 1             | \$250                  |
| Silver Creek             | 06/02/11         | 06/02/11(M)                | 0                      | \$0                | 0             | \$0                    |
| <b>LINCOLN COUNTY†*</b>  | --               | --                         | --                     | --                 | --            | --                     |
| Brookhaven               | 07/18/77         | 02/03/10                   | 68                     | \$13,466,000       | 12            | \$50,445               |
| <b>PIKE COUNTY†</b>      | 09/15/89         | 06/18/10                   | 75                     | \$14,498,900       | 67            | \$3,021,753            |
| Magnolia                 | 07/01/87         | 06/18/10                   | 2                      | \$1,323,400        | 7             | \$124,712              |
| McComb                   | 08/01/79         | 06/18/10                   | 45                     | \$11,809,700       | 29            | \$391,370              |
| Osyka                    | 10/16/12         | 06/18/10                   | 1                      | \$350,000          | 0             | \$0                    |
| Summit*                  | --               | --                         | --                     | --                 | --            | --                     |
| <b>WALTHALL COUNTY†</b>  | 08/01/86         | 07/06/10                   | 79                     | \$11,710,400       | 96            | \$1,554,515            |
| Tylertown                | 09/30/88         | 07/06/10                   | 17                     | \$4,400,000        | 53            | \$803,872              |
| <b>WILKINSON COUNTY†</b> | 07/16/90         | 04/19/10                   | 86                     | \$13,223,500       | 1,586         | \$20,305,199           |
| Centreville              | 03/12/10         | (NSFHA)                    | 0                      | \$0                | 0             | \$0                    |

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| <b>Jurisdiction</b> | <b>Date Joined NFIP</b> | <b>Current Effective Map Date</b> | <b>NFIP Policies in Force</b> | <b>Insurance in Force</b> | <b>Closed Claims</b> | <b>Total Payments to Date</b> |
|---------------------|-------------------------|-----------------------------------|-------------------------------|---------------------------|----------------------|-------------------------------|
| Crosby              | 02/01/86                | 04/19/10                          | 3                             | \$673,000                 | 2                    | \$15,459                      |
| Woodville           | 04/19/10                | 04/19/10                          | 1                             | \$107,100                 | 0                    | \$0                           |

†Includes unincorporated areas of county only

\*Community does not participate in the NFIP

(M) – No Elevation Determined, All Zone A, C and X

NSFHA – No Special Flood Hazard Area - All Zone C

Source: NFIP Community Status information as of 8/17/2017; NFIP claims and policy information as of 4/30/2017

All jurisdictions listed above that are participants in the NFIP will continue to comply with all required provisions of the program and will work to adequately comply in the future utilizing a number of strategies. For example, the jurisdictions will coordinate with MEMA and FEMA to develop maps and regulations related to special flood hazard areas within their jurisdictional boundaries and, through a consistent monitoring process, will design and improve their floodplain management program in a way that reduces the risk of flooding to people and property.

As noted above, several jurisdictions are not participants in the NFIP. The Town of Summit does not participate because it currently does not have any identified flood hazard areas within its jurisdiction, so most residents would be unlikely to purchase flood insurance. Lincoln County, Town of Bude, and Town of Meadville also do not participate in the NFIP due to a lack of capacity or resources to properly administer and maintain the program.

**Community Rating System:** An additional indicator of floodplain management capability is the active participation of local jurisdictions in the Community Rating System (CRS). The CRS is an incentive-based program that encourages counties and municipalities to undertake defined flood mitigation activities that go beyond the minimum requirements of the NFIP by adding extra local measures to provide protection from flooding. All of the 18 creditable CRS mitigation activities are assigned a range of point values. As points are accumulated and reach identified thresholds, communities can apply for an improved CRS class rating. Class ratings, which range from 10 to 1, are tied to flood insurance premium reductions as shown in **Table 7.3**. As class rating improves (the lower the number the better), the percent reduction in flood insurance premiums for NFIP policyholders in that community increases.

**TABLE 7.3: CRS PREMIUM DISCOUNTS, BY CLASS**

| CRS Class | Premium Reduction |
|-----------|-------------------|
| 1         | 45%               |
| 2         | 40%               |
| 3         | 35%               |
| 4         | 30%               |
| 5         | 25%               |
| 6         | 20%               |
| 7         | 15%               |
| 8         | 10%               |
| 9         | 5%                |
| 10        | 0                 |

Source: Federal Emergency Management Agency

Community participation in the CRS is voluntary. Any community that is in full compliance with the rules and regulations of the NFIP may apply to FEMA for a CRS classification better than class 10. The CRS application process has been greatly simplified over the past several years based on community comments. Changes were made with the intent to make the CRS more user-friendly and make extensive technical assistance available for communities who request it.

- None of the counties or municipalities participating in this multi-jurisdictional plan participates in the CRS. Participation in the CRS program should be considered as a mitigation action by the jurisdictions currently participating in the NFIP. The program would be most beneficial to Wilkinson County, Walthall County, Pike County, Brookhaven, and Lawrence County, which each have 50 or more NFIP policies in force.

**Flood Damage Prevention Ordinance:** A flood damage prevention ordinance establishes minimum building standards in the floodplain with the intent to minimize public and private losses due to flood conditions.

- All communities participating in the NFIP are required to adopt a local flood damage prevention ordinance. All counties and municipalities participating in this multi-jurisdictional plan, with the exception of Town of Bude, Town of Meadville, Lincoln County, and Town of Summit, also participate in the NFIP and they all have adopted flood damage prevention regulations.

**Floodplain Management Plan:** A floodplain management plan (or a flood mitigation plan) provides a framework for action regarding corrective and preventative measures to reduce flood-related impacts.

- The City of Brookhaven is the only participating jurisdiction that has adopted a floodplain management plan to help prevent damages associated with flooding and flood loss.

**Open Space Management Plan:** An open space management plan is designed to preserve, protect, and restore largely undeveloped lands in their natural state and to expand or connect areas in the public domain such as parks, greenways, and other outdoor recreation areas. In many instances, open space management practices are consistent with the goals of reducing hazard losses, such as the preservation of wetlands or other flood-prone areas in their natural state in perpetuity.

- None of the participating counties or municipalities has adopted an open space management plan.

**Stormwater Management Plan:** A stormwater management plan is designed to address flooding associated with stormwater runoff. The stormwater management plan is typically focused on design and construction measures that are intended to reduce the impact of more frequently occurring minor urban flooding.

- None of the participating counties has adopted a stormwater management plan or ordinance.
- The City of Brookhaven has adopted a local stormwater pollution prevention ordinance and the City of McComb has adopted a local stormwater detention ordinance.

### 7.3.6 Administrative and Technical Capability

The ability of a local government to develop and implement mitigation projects, policies, and programs is directly tied to its ability to direct staff time and resources for that purpose. Administrative capability can be evaluated by determining how mitigation-related activities are assigned to local departments and if there are adequate personnel resources to complete these activities. The degree of intergovernmental coordination among departments will also affect administrative capability for the implementation and success of proposed mitigation activities.

Technical capability can generally be evaluated by assessing the level of knowledge and technical expertise of local government employees, such as personnel skilled in using Geographic Information Systems (GIS) to analyze and assess community hazard vulnerability. The Capability Assessment Survey was used to capture information on administrative and technical capability through the identification of available staff and personnel resources.

**Table 7.4** provides a summary of the Capability Assessment Survey results for the MEMA District 7 Region with regard to relevant staff and personnel resources. A checkmark (✓) indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill. A dagger (+) indicates a county-level staff member(s) provides the specified knowledge or skill to that municipality.

**TABLE 7.4: RELEVANT STAFF/PERSONNEL RESOURCES**

| Staff/Personnel Resource  | ADAMS COUNTY<br>Natchez | AMITE COUNTY<br>Gloster<br>Liberty | FRANKLIN COUNTY<br>Bude<br>Meadville<br>Roxie | JEFFERSON COUNTY<br>Fayette | LAWRENCE COUNTY<br>Monticello<br>New Hebron<br>Silver Creek | LINCOLN COUNTY<br>Brookhaven | PIKE COUNTY<br>Magnolia<br>McComb<br>Osyka<br>Summit | WALTHAM COUNTY<br>Tylertown | WILKINSON COUNTY<br>Centreville<br>Crosby<br>Woodville |
|---|-------------------------|------------------------------------|---|-----------------------------|---|------------------------------|--|-----------------------------|--|
| Planners with knowledge of land development/land management practices                                   | ✓                       |                                    |   |                             |   |                              | ✓  |                             |  |
| Engineers or professionals trained in construction practices related to buildings and/or infrastructure | ✓                       |                                    |   |                             | ✓   | ✓                            | ✓  |                             | ✓  |

**SECTION 7: CAPABILITY ASSESSMENT**

| Staff/Personnel Resource   | ADAMS COUNTY | Natchez | AMITE COUNTY | Gloster | Liberty | FRANKLIN COUNTY | Bude | Meadville | Roxie | JEFFERSON COUNTY | Fayette | LAWRENCE COUNTY | Monticello | New Hebron | Silver Creek | LINCOLN COUNTY | Brookhaven | PIKE COUNTY | Magnolia | McComb | Osyka | Summit | WALTHAM COUNTY | Tylertown | WILKINSON COUNTY | Centreville | Crosby | Woodville |
|--|--------------|---------|--------------|---------|---------|-----------------|------|-----------|-------|------------------|---------|-----------------|------------|------------|--------------|----------------|------------|-------------|----------|--------|-------|--------|----------------|-----------|------------------|-------------|--------|-----------|
| Planners or engineers with an understanding of natural and/or human-caused hazards   |              |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              | ✓              | ✓          |             |          |        |       |        |                |           |                  |             |        |           |
| Emergency Manager  | ✓            | †       | ✓            | †       | †       | ✓               | †    | †         | †     | ✓                | †       | ✓               | †          | †          | †            | ✓              | †          | ✓           | †        | †      | †     | †      | ✓              | †         | ✓                | †           | †      | †         |
| Floodplain Manager   | ✓            | ✓       | ✓            | ✓       | †       | ✓               |      |           | ✓     | ✓                | ✓       | ✓               | ✓          | ✓          | ✓            |                | ✓          | ✓           | ✓        | ✓      | ✓     |        | ✓              | ✓         | ✓                | ✓           | ✓      | ✓         |
| Land Surveyors   |              |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              | ✓              |            |             |          |        |       |        |                |           |                  |             |        |           |
| Scientists familiar with the hazards of the community                                | ✓            | †       | ✓            | †       | †       | ✓               | †    | †         | †     | ✓                | †       | ✓               | †          | †          | †            | ✓              | †          | ✓           | †        | †      | †     | †      | ✓              | †         | ✓                | †           | †      | †         |
| Staff with education or expertise to assess the community's vulnerability to hazards | ✓            | †       | ✓            | †       | †       | ✓               | †    | †         | †     | ✓                | †       | ✓               | †          | †          | †            | ✓              | †          | ✓           | †        | †      | †     | †      | ✓              | †         | ✓                | †           | †      | †         |
| Personnel skilled in GIS and/or Hazus  | ✓            | †       | ✓            | †       | †       |                 |      |           |       |                  |         | ✓               | †          | †          | †            | ✓              | †          |             |          |        |       |        | ✓              | †         |                  |             |        |           |
| Resource development staff or grant writers  |              |         |              |         |         |                 |      |           |       |                  |         |                 |            |            |              |                |            |             |          |        |       |        |                |           |                  |             |        |           |

Credit for having a floodplain manager was given to those jurisdictions that have a flood damage prevention ordinance, and therefore an appointed floodplain administrator, regardless of whether the appointee was dedicated solely to floodplain management. Credit was given for having a scientist familiar with the hazards of the community if a jurisdiction has a Cooperative Extension Service or Soil and Water Conservation Department. Credit was also given for having staff with education or expertise to assess the community's vulnerability to hazards if a staff member from the jurisdiction was a participant on the existing hazard mitigation plan's planning committee.

**7.3.7 Fiscal Capability**

The ability of a local government to take action is often closely associated with the amount of money available to implement policies and projects. This may take the form of outside grant funding awards or locally-based revenue and financing. The costs associated with mitigation policy and project implementation vary widely. In some cases, policies are tied primarily to staff time or administrative costs associated with the creation and monitoring of a given program. In other cases, direct expenses are linked to an actual project, such as the acquisition of flood-prone homes, which can require a substantial commitment from local, state, and federal funding sources.

The Capability Assessment Survey was used to capture information on the region's fiscal capability through the identification of locally available financial resources.

**Table 7.5** provides a summary of the results for the MEMA District 7 Region with regard to relevant fiscal resources. A checkmark (✓) indicates that the given fiscal resource has previously been used to implement hazard mitigation actions. A dagger (†) indicates that the given fiscal resource is locally

available for hazard mitigation purposes (including match funds for state and federal mitigation grant funds).

**TABLE 7.5: RELEVANT FISCAL RESOURCES**

| Fiscal Tool/Resource  | ADAMS COUNTY<br>Natchez | AMITE COUNTY<br>Gloster<br>Liberty | FRANKLIN COUNTY<br>Bude<br>Meadville<br>Roxie | JEFFERSON COUNTY<br>Fayette | LAWRENCE COUNTY<br>Monticello<br>New Hebron<br>Silver Creek | LINCOLN COUNTY<br>Brookhaven | PIKE COUNTY<br>Magnolia<br>McComb<br>Osyka | Summit | WALTHAM COUNTY<br>Tylertown | WILKINSON COUNTY<br>Centerville<br>Crosby | Woodville |
|---|-------------------------|------------------------------------|---|-----------------------------|---|------------------------------|--|--------|-----------------------------|---|-----------|
| Capital Improvement Programming   |                         |                                    |   |                             |   |                              |  |        |                             |   |           |
| Community Development Block Grants (CDBG)   | +                       | ✓                                  | +   | +                           | +   | +                            | +  | +      | +                           | +   | +         |
| Special Purpose Taxes (or taxing districts)   |                         |                                    |   |                             |   |                              |  |        |                             |   |           |
| Gas/Electric Utility Fees   |                         |                                    |   |                             |   |                              |  |        |                             |   |           |
| Water/Sewer Fees  |                         |                                    |   |                             |   | +                            |  |        |                             |   |           |
| Stormwater Utility Fees   |                         |                                    |   |                             |   |                              |  |        |                             |   |           |
| Development Impact Fees   |                         |                                    |   |                             |   |                              |  |        |                             |   |           |
| General Obligation, Revenue, and/or Special Tax Bonds   |                         |                                    |   |                             |   |                              |  |        |                             |   |           |
| Partnering Arrangements or Intergovernmental Agreements   | ✓                       | +                                  | +   | ✓                           |   |                              | +  | +      |                             | ✓   |           |
| Other: FEMA Hazard Mitigation Grants, Homeland Security Grants, USDA Rural Development Agency Grants, and US Economic Development Administration Grants | ✓                       | ✓                                  | +   | +                           | +   | +                            | +  | +      | +                           | +   | +         |

### 7.3.8 Political Capability

One of the most difficult capabilities to evaluate involves the political will of a jurisdiction to enact meaningful policies and projects designed to reduce the impact of future hazard events. Hazard mitigation may not be a local priority or may conflict with or be seen as an impediment to other goals of the community, such as growth and economic development. Therefore, the local political climate must be considered in designing mitigation strategies as it could be the most difficult hurdle to overcome in accomplishing their adoption and implementation.

The Capability Assessment Survey was used to capture information on political capability of the MEMA District 7 Region. Previous hazard mitigation plans were reviewed for general examples of local political capability, such as guiding development away from identified hazard areas, restricting public investments or capital improvements within hazard areas, or enforcing local development standards

that go beyond minimum state or federal requirements (i.e., building codes, floodplain management, etc.).

- The previous hazard mitigation plans identified existing ordinances that address natural hazards or are related to hazard mitigation, such as emergency management, zoning, subdivision regulations, comprehensive land use plans, and flood damage prevention ordinances.
- During the months immediately following a disaster, local public opinion in the region is more likely to shift in support of hazard mitigation efforts.

Table 7.6 provides a summary of the results for the MEMA District 7 Region with regard to political capability. A checkmark (✓) indicates the expected degree of political support by local elected officials in terms of adopting/funding information.

**TABLE 7.6: LOCAL POLITICAL SUPPORT**

| Political Support | ADAMS COUNTY<br>Natchez | AMITE COUNTY<br>Gloster<br>Liberty | FRANKLIN COUNTY<br>Bude<br>Meadville<br>Roxie | JEFFERSON COUNTY<br>Fayette | LAWRENCE COUNTY<br>Monticello<br>New Hebron<br>Silver Creek | LINCOLN COUNTY<br>Brookhaven | PIKE COUNTY<br>Magnolia<br>McComb<br>Osyka<br>Summit | WALTHALL COUNTY<br>Tylertown | WILKINSON COUNTY<br>Centreville<br>Crosby<br>Woodville |
|-------------------|-------------------------|------------------------------------|---|-----------------------------|---|------------------------------|--|------------------------------|--|
| Limited           |                         |                                    | ✓<br>✓  |                             |   | ✓                            | ✓  |                              |  |
| Moderate          |                         | ✓<br>✓<br>✓                        |   | ✓<br>✓<br>✓                 | ✓<br>✓  |                              | ✓<br>✓<br>✓<br>✓                                     | ✓<br>✓                       | ✓<br>✓<br>✓<br>✓                                       |
| High              | ✓<br>✓                  |                                    |   |                             | ✓   | ✓                            |  |                              |  |

## 7.4 CONCLUSIONS ON LOCAL CAPABILITY

In order to form meaningful conclusions on the assessment of local capability, a quantitative scoring methodology was designed and applied to the results of the Capability Assessment Survey. The maximum number of points possible (one, two, or three) was assigned to each plan, ordinance, program, or resource based on its relevance to hazard mitigation. If a plan, ordinance, program, or resource was under development or administered for a municipality at the county-level, one point became the highest score possible. The maximum total number of points possible under the scoring methodology is 86, and three categories were established to classify capability level as limited (0-24 points), moderate (25-49 points), or high (50-86 points). This methodology, further described in Appendix B, attempts to assess the overall level of capability of the MEMA District 7 Region to implement hazard mitigation actions.

The overall capability to implement hazard mitigation actions varies among the participating jurisdictions. For planning and regulatory capability, the jurisdictions are in the limited range. The administrative and technical capabilities vary from limited to moderate among the jurisdictions with larger jurisdictions generally having greater staff and technical resources. All of the jurisdictions are in the limited range for fiscal capability.

**Table 7.7** shows the results of the capability assessment using the designed scoring methodology. The capability score is based solely on the information found in existing hazard mitigation plans and readily available on the jurisdictions' government websites. This information was reviewed by all jurisdictions and each jurisdiction provided feedback on the information included in the capability assessment. Local government input was vital to identifying capabilities. According to the assessment, the average local capability score for all jurisdictions is 21.0, which falls into the limited capability ranking.

**TABLE 7.7: CAPABILITY ASSESSMENT RESULTS**

| Jurisdiction            | Overall Capability Score | Overall Capability Rating |
|-------------------------|--------------------------|---------------------------|
| <b>ADAMS COUNTY</b>     | 26                       | Moderate                  |
| Natchez                 | 33                       | Moderate                  |
| <b>AMITE COUNTY</b>     | 23                       | Limited                   |
| Gloster                 | 18                       | Limited                   |
| Liberty                 | 17                       | Limited                   |
| <b>FRANKLIN COUNTY</b>  | 23                       | Limited                   |
| Bude                    | 9                        | Limited                   |
| Meadville               | 9                        | Limited                   |
| Roxie                   | 17                       | Limited                   |
| <b>JEFFERSON COUNTY</b> | 24                       | Limited                   |
| Fayette                 | 18                       | Limited                   |
| <b>LAWRENCE COUNTY</b>  | 22                       | Limited                   |
| Monticello              | 23                       | Limited                   |
| New Hebron              | 18                       | Limited                   |
| Silver Creek            | 18                       | Limited                   |
| <b>LINCOLN COUNTY</b>   | 24                       | Limited                   |
| Brookhaven              | 38                       | Moderate                  |
| <b>PIKE COUNTY</b>      | 27                       | Moderate                  |
| Magnolia                | 19                       | Limited                   |
| McComb                  | 32                       | Moderate                  |
| Osyka                   | 18                       | Limited                   |
| Summit                  | 10                       | Limited                   |

| <b>Jurisdiction</b>     | <b>Overall Capability Score</b> | <b>Overall Capability Rating</b> |
|-------------------------|---------------------------------|----------------------------------|
| <b>WALTHALL COUNTY</b>  | 22                              | Limited                          |
| Tylertown               | 18                              | Limited                          |
| <b>WILKINSON COUNTY</b> | 24                              | Limited                          |
| Centreville             | 17                              | Limited                          |
| Crosby                  | 17                              | Limited                          |
| Woodville               | 24                              | Limited                          |

As previously discussed, one of the reasons for conducting a Capability Assessment is to examine local capabilities to detect any existing gaps or weaknesses within ongoing government activities that could hinder proposed mitigation activities and possibly exacerbate community hazard vulnerability. These gaps or weaknesses have been identified for each jurisdiction in the tables found throughout this section. The participating jurisdictions used the Capability Assessment as part of the basis for the Mitigation Actions that are identified in Section 9; therefore, each jurisdiction addresses their ability to expand on and improve their existing capabilities through the identification of their Mitigation Actions.

#### **7.4.1 Linking the Capability Assessment with the Risk Assessment and the Mitigation Strategy**

The conclusions of the Risk Assessment and Capability Assessment serve as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the RHMC considered not only each jurisdiction’s level of hazard risk, but also their existing capability to minimize or eliminate that risk.

# SECTION 8

## MITIGATION STRATEGY

This section of the Plan provides the blueprint for the participating jurisdictions in the MEMA District 7 Region to follow in order to become less vulnerable to its identified hazards. It is based on general consensus of the Regional Hazard Mitigation Council (RHMC) and the findings and conclusions of the *Capability Assessment* and *Risk Assessment*. It consists of the following five subsections:

- 8.1 Introduction
  - 8.2 Mitigation Goals
  - 8.3 Identification and Analysis of Mitigation Techniques
  - 8.4 Selection of Mitigation Techniques for the MEMA District 7 Region
  - 8.5 Plan Update Requirement
- 

### 8.1 INTRODUCTION

The intent of the Mitigation Strategy is to provide the communities in the MEMA District 7 Region with the goals that will serve as guiding principles for future mitigation policy and project administration, along with an analysis of mitigation techniques deemed available to meet those goals and reduce the impact of identified hazards. It is designed to be comprehensive, strategic, and functional in nature:

- In being *comprehensive*, the development of the strategy includes a thorough review of all hazards and identifies extensive mitigation measures intended to not only reduce the future impacts of high risk hazards, but also to help the region achieve compatible economic, environmental, and social goals.
- In being *strategic*, the development of the strategy ensures that all policies and projects proposed for implementation are consistent with pre-identified, long-term planning goals.
- In being *functional*, each proposed mitigation action is linked to established priorities and assigned to specific departments or individuals responsible for their implementation with target completion deadlines. When necessary, funding sources are identified that can be used to assist in project implementation.

The first step in designing the Mitigation Strategy includes the identification of mitigation goals. Mitigation goals represent broad statements that are achieved through the implementation of more specific mitigation actions. These actions include both hazard mitigation policies (such as the regulation of land in known hazard areas through a local ordinance) and hazard mitigation projects that seek to address specifically targeted hazard risks (such as the acquisition and relocation of a repetitive loss structure).

The second step involves the identification, consideration, and analysis of available mitigation measures to help achieve the identified mitigation goals. This is a long-term, continuous process sustained through the development and maintenance of this Plan. Alternative mitigation measures will continue to be

considered as future mitigation opportunities are identified, as data and technology improve, as mitigation funding becomes available, and as this Plan is maintained over time.

The third and last step in designing the Mitigation Strategy is the selection and prioritization of specific mitigation actions for the communities in the MEMA District 7 Region (provided separately in Section 9: *Mitigation Action Plan*). Each county and participating jurisdiction has its own Mitigation Action Plan (MAP) that reflects the needs and concerns of that jurisdiction. The MAP represents an unambiguous and functional plan for action and is considered to be the most essential outcome of the mitigation planning process.

The MAP includes a prioritized listing of proposed hazard mitigation actions (policies and projects) for the MEMA District 7 counties and jurisdictions to complete. Each action has accompanying information, such as those departments or individuals assigned responsibility for implementation, potential funding sources, and an estimated target date for completion. The MAP provides those departments or individuals responsible for implementing mitigation actions with a clear roadmap that also serves as an important tool for monitoring success or progress over time. The cohesive collection of actions listed in the MAP can also serve as an easily understood menu of mitigation policies and projects for those local decision makers who want to quickly review the recommendations and proposed actions of the Regional Hazard Mitigation Plan.

In preparing each Mitigation Action Plan for the MEMA District 7 Region, officials considered the overall hazard risk and capability to mitigate the effects of hazards as recorded through the risk and capability assessment process, in addition to meeting the adopted mitigation goals and unique needs of the community.

### **8.1.1 Mitigation Action Prioritization**

Prioritization of the proposed mitigation actions was based on the following six factors:

- Effect on overall risk to life and property
- Ease of implementation
- Political and community support
- A general economic cost/benefit review<sup>1</sup>
- Funding availability
- Continued compliance with the NFIP

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<sup>1</sup> Only a general economic cost/benefit review was considered by the Regional Hazard Mitigation Council through the process of selecting and prioritizing mitigation actions. Mitigation actions with “high” priority were determined to be the most cost effective and most compatible with the participating jurisdictions’ unique needs. Actions with a “moderate” priority were determined to be cost-effective and compatible with jurisdictional needs, but may be more challenging to complete administratively or fiscally than “high” priority actions. Actions with a “low” priority were determined to be important community needs, but the community likely identified several potential challenges in terms of implementation (e.g. lack of funding, technical obstacles). A more detailed cost/benefit analysis will be applied to particular projects prior to the application for or obligation of funding, as appropriate.

The point of contact for each county helped coordinate the prioritization process by reviewing each action and working with the lead agency/department responsible to determine a priority for each action using the six factors listed above.

Using these criteria, actions were classified as high, moderate, or low priority by the participating jurisdiction officials.

## 8.2 MITIGATION GOALS

|  |
|--|
| <b>44 CFR Requirement</b>  |
| <b>44 CFR Part 201.6(c)(3)(i):</b> The mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards. |

The primary goal of all local governments is to promote the public health, safety, and welfare of its citizens. In keeping with this standard, the MEMA District 7 counties and the participating municipalities have developed six goal statements for local hazard mitigation planning in the region. In developing these goals, the project consultant reviewed the goals from the existing plan and found that generally they seemed to be in line with the region’s current vision for mitigation. **Table 8.1** provides a listing of all of the existing mitigation goals from the previous plan.

After reviewing the existing goals, the same six regional goals were presented to the Hazard Mitigation Council for their consideration. These proposed goals were reviewed, voted on, and accepted by the RHMC at their second meeting. Each goal, purposefully broad in nature, serves to establish parameters that were used in developing more mitigation actions. The final MEMA District 7 Regional Mitigation Goals are presented in **Table 8.2**. Consistent implementation of actions over time will ensure that community goals are achieved.

**TABLE 8.1: EXISTING MITIGATION GOALS**

| Goal   | Adams County | Amite County | Franklin County | Jefferson County | Lawrence County | Lincoln County | Pike County | Walthall County | Wilkinson County |
|--|--------------|--------------|-----------------|------------------|-----------------|----------------|-------------|-----------------|------------------|
| Increase the overall public awareness of natural hazards that face the region.                                   | Goal 1       | Goal 1       | Goal 1          | Goal 1           | Goal 1          | Goal 1         | Goal 1      | Goal 1          | Goal 1           |
| Retrofit of critical facilities and/or critical infrastructure to lower the risk of damage from natural hazards. | Goal 2       | Goal 2       | Goal 2          | Goal 2           | Goal 2          | Goal 2         | Goal 2      | Goal 2          | Goal 2           |
| General improvement of regional or local mitigation planning and capability.                                     | Goal 3       | Goal 3       | Goal 3          | Goal 3           | Goal 3          | Goal 3         | Goal 3      | Goal 3          | Goal 3           |

**SECTION 8: MITIGATION STRATEGY**

| Goal   | Adams County | Amite County | Franklin County | Jefferson County | Lawrence County | Lincoln County | Pike County | Walthall County | Wilkinson County |
|--|--------------|--------------|-----------------|------------------|-----------------|----------------|-------------|-----------------|------------------|
| Support State Identified Mitigation Initiatives such as saferooms and storm shelters, severe weather warning systems for universities and colleges, and severe weather notification systems for local communities. | Goal 4       | Goal 4       | Goal 4          | Goal 4           | Goal 4          | Goal 4         | Goal 4      | Goal 4          | Goal 4           |
| Reduce loss of life, damage and loss of property and infrastructure, economic costs, including response, recovery and disruption of economic activity.   | Goal 5       | Goal 5       | Goal 5          | Goal 5           | Goal 5          | Goal 5         | Goal 5      | Goal 5          | Goal 5           |
| Foster cooperation among all levels of governments and the private sector with respect to improving, updating, and implementing the hazard mitigation plan.  | Goal 6       | Goal 6       | Goal 6          | Goal 6           | Goal 6          | Goal 6         | Goal 6      | Goal 6          | Goal 6           |

**TABLE 8.2: MEMA DISTRICT 7 REGIONAL MITIGATION GOALS**

|         | Goal   |
|---------|--|
| Goal #1 | Increase the overall public awareness of natural hazards that face the region.   |
| Goal #2 | Retrofit of critical facilities and/or critical infrastructure to lower the risk of damage from natural hazards.   |
| Goal #3 | General improvement of regional or local mitigation planning and capability.   |
| Goal #4 | Support State Identified Mitigation Initiatives such as saferooms and storm shelters, severe weather warning systems for universities and colleges, and severe weather notification systems for local communities. |
| Goal #5 | Reduce loss of life, damage and loss of property and infrastructure, economic costs, including response, recovery and disruption of economic activity.   |
| Goal #6 | Foster cooperation among all levels of governments and the private sector with respect to improving, updating, and implementing the hazard mitigation plan.  |

**8.3 IDENTIFICATION AND ANALYSIS OF MITIGATION TECHNIQUES**

|   |
|---|
| <b>44 CFR Requirement</b>   |
| <b>44 CFR Part 201.6(c)(3)(ii):</b> The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effect of each hazard, with particular emphasis on new and existing buildings and infrastructure. |

In formulating the Mitigation Strategy for the MEMA District 7 Region, a wide range of activities were considered in order to help achieve the established mitigation goals, in addition to addressing any specific hazard concerns. These activities were discussed during the MEMA District 7 Regional Hazard Mitigation Planning meetings. In general, all activities considered by the RHMC can be classified under one of the following six (6) broad categories of mitigation techniques: Prevention, Property Protection, Natural Resource Protection, Structural Projects, Emergency Services, and Public Awareness and Education. These are discussed in detail below.

### **8.3.1 Prevention**

Preventative activities are intended to keep hazard problems from getting worse, and are typically administered through government programs or regulatory actions that influence the way land is developed and buildings are built. They are particularly effective in reducing a community's future vulnerability, especially in areas where development has not occurred or capital improvements have not been substantial. Examples of preventative activities include:

- Planning and zoning
- Building codes
- Open space preservation
- Floodplain regulations
- Stormwater management regulations
- Drainage system maintenance
- Capital improvements programming
- Riverine/fault zone setbacks

### **8.3.2 Property Protection**

Property protection measures involve the modification of existing buildings and structures to help them better withstand the forces of a hazard, or removal of the structures from hazardous locations. Examples include:

- Acquisition
- Relocation
- Building elevation
- Critical facilities protection
- Retrofitting (e.g., windproofing, floodproofing, seismic design techniques, etc.)
- Safe rooms, shutters, shatter-resistant glass
- Insurance

### **8.3.3 Natural Resource Protection**

Natural resource protection activities reduce the impact of natural hazards by preserving or restoring natural areas and their protective functions. Such areas include floodplains, wetlands, steep slopes, and sand dunes. Parks, recreation, or conservation agencies and organizations often implement these protective measures. Examples include:

- Floodplain protection
- Watershed management
- Riparian buffers
- Forest and vegetation management (e.g., fire resistant landscaping, fuel breaks, etc.)
- Erosion and sediment control
- Wetland preservation and restoration
- Habitat preservation
- Slope stabilization

### **8.3.4 Structural Projects**

Structural mitigation projects are intended to lessen the impact of a hazard by modifying the environmental natural progression of the hazard event through construction. They are usually designed by engineers and managed or maintained by public works staff. Examples include:

- Reservoirs
- Dams/levees/dikes/floodwalls
- Diversions/detention/retention
- Channel modification
- Storm sewers

### **8.3.5 Emergency Services**

Although not typically considered a “mitigation” technique, emergency service measures do minimize the impact of a hazard event on people and property. These commonly are actions taken immediately prior to, during, or in response to a hazard event. Examples include:

- Warning systems
- Evacuation planning and management
- Emergency response training and exercises
- Sandbagging for flood protection
- Installing temporary shutters for wind protection

### 8.3.6 Public Education and Awareness

Public education and awareness activities are used to advise residents, elected officials, business owners, potential property buyers, and visitors about hazards, hazardous areas, and mitigation techniques they can use to protect themselves and their property. Examples of measures to educate and inform the public include:

- Outreach projects
- Speaker series/demonstration events
- Hazard map information
- Real estate disclosure
- Library materials
- School children educational programs
- Hazard expositions

## 8.4 SELECTION OF MITIGATION TECHNIQUES FOR THE MEMA DISTRICT 7 REGION

In order to determine the most appropriate mitigation techniques for the communities in the MEMA District 7 Region, the RHMC members thoroughly reviewed and considered the findings of the *Capability Assessment* and *Risk Assessment* to determine the best activities for their respective communities. Other considerations included the effect of each mitigation action on overall risk to life and property, its ease of implementation, its degree of political and community support, its general cost-effectiveness, and funding availability (if necessary).

## 8.5 PLAN UPDATE REQUIREMENT

In keeping with FEMA requirements for plan updates, the Mitigation Actions identified in the previous MEMA District 7 plan were evaluated to determine their 2017 implementation status. Updates on the implementation status of each action are provided. The mitigation actions provided in Section 9: *Mitigation Action Plan* include the mitigation actions from the previous plan as well as any new mitigation actions proposed through the 2017 planning process.

# SECTION 9

## MITIGATION ACTION PLAN

This section includes the listing of the mitigation actions proposed by the participating jurisdictions in MEMA District 7. It consists of the following two subsections:

- 9.1 Overview
- 9.2 Mitigation Action Plans

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### 44 CFR Requirement

**44 CFR Part 201.6(c)(3)(iii):** The mitigation strategy shall include an action plan describing how the actions identified in paragraph (c)(2)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction.

## 9.1 OVERVIEW

As described in the previous section, the Mitigation Action Plan, or MAP, provides a functional plan of action for each jurisdiction. It is designed to achieve the mitigation goals established in Section 8: *Mitigation Strategy* and will be maintained on a regular basis according to the plan maintenance procedures established in Section 10: *Plan Maintenance*.

Each proposed mitigation action has been identified as an effective measure (policy or project) to reduce hazard risk for the communities in the MEMA District 7 Region. Each action is listed in the MAP in conjunction with background information such as hazard(s) addressed and relative priority. Other information provided in the MAP includes potential funding sources to implement the action should funding be required (not all proposed actions are contingent upon funding). Most importantly, implementation mechanisms are provided for each action, including the designation of a lead agency or department responsible for carrying the action out as well as a timeframe for its completion. These implementation mechanisms ensure that the MEMA District 7 Regional Hazard Mitigation Plan remains a functional document that can be monitored for progress over time. The proposed actions are not listed in priority order, though each has been assigned a priority level of “high,” “moderate,” or “low” as described below and in Section 8 (page 8.2).

The Mitigation Action Plan is organized by mitigation strategy category (Prevention, Property Protection, Natural Resource Protection, Structural Projects, Emergency Services, or Public Education and Awareness). The following are the key elements described in the Mitigation Action Plan:

- Hazard(s) Addressed—Hazard which the action addresses.
- Relative Priority—High, moderate, or low priority as assigned by the jurisdiction.
- Lead Agency/Department—Department responsible for undertaking the action.
- Potential Funding Sources—Local, State, or Federal sources of funds are noted here, where applicable.

- Implementation Schedule—Date by which the action the action should be completed. More information is provided when possible.
- Implementation Status (2017)—Indication of completion, progress, deferment, or no change since the previous plan. If the action is new, that will be noted here.

## 9.2 MITIGATION ACTION PLANS

The mitigation actions proposed by each of the participating jurisdictions are listed in 28 individual MAPs on the following pages. **Table 9.1** shows the location of each jurisdiction’s MAP within this section as well as the number of mitigation actions proposed by each jurisdiction. In most cases, jurisdictions had few changes in priorities since the last update of their plan. As noted in the individual action tables below, some actions have been completed, showing progress, while others have been identified for deletion as the action is no longer feasible for the community. In some cases, jurisdictions added new actions, indicating some change in focus concerning mitigation. However, many actions have been deferred due to lack of funding or due to lack of staff time available to fully complete the action. The fact that jurisdictions decided to keep these actions in the plan demonstrates that, in general, there was little change in priorities.

**TABLE 9.1: INDIVIDUAL MAP LOCATIONS**

| Location                | Page         | Number of Mitigation Actions |
|-------------------------|--------------|------------------------------|
| <b>Adams County</b>     | <b>9:4</b>   | <b>21</b>                    |
| Natchez                 | 9:17         | 17                           |
| <b>Amite County</b>     | <b>9:26</b>  | <b>18</b>                    |
| Gloster                 | 9:37         | 16                           |
| Liberty                 | 9:46         | 16                           |
| <b>Franklin County</b>  | <b>9:55</b>  | <b>19</b>                    |
| Bude                    | 9:66         | 16                           |
| Meadville               | 9:75         | 17                           |
| Roxie                   | 9:84         | 17                           |
| <b>Jefferson County</b> | <b>9:94</b>  | <b>22</b>                    |
| Fayette                 | 9:107        | 17                           |
| <b>Lawrence County</b>  | <b>9:117</b> | <b>18</b>                    |
| Monticello              | 9:128        | 17                           |
| New Hebron              | 9:137        | 16                           |
| Silver Creek            | 9:147        | 16                           |
| <b>Lincoln County</b>   | <b>9:156</b> | <b>22</b>                    |
| Brookhaven              | 9:171        | 18                           |
| <b>Pike County</b>      | <b>9:181</b> | <b>18</b>                    |
| Magnolia                | 9:192        | 16                           |
| McComb                  | 9:201        | 16                           |
| Osyka                   | 9:210        | 16                           |
| Summit                  | 9:219        | 16                           |
| <b>Walthall County</b>  | <b>9:228</b> | <b>33</b>                    |
| Tylertown               | 9:245        | 16                           |

**SECTION 9: MITIGATION ACTION PLAN**

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| <b>Location</b>         | <b>Page</b>  | <b>Number of Mitigation Actions</b> |
|-------------------------|--------------|-------------------------------------|
| <b>Wilkinson County</b> | <b>9:254</b> | <b>20</b>                           |
| Centreville             | 9:267        | 17                                  |
| Crosby                  | 9:277        | 16                                  |
| Woodville               | 9:286        | 17                                  |

### Adams County Mitigation Action Plan

| Action #          | Description   | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|-------------------|---|---------------------------|-------------------|--|---|-------------------------|---|
| <b>Prevention</b> |   |                           |                   |  |   |                         |   |
| P-1               | <p><b>Comprehensive Land Use and Long Term Recovery Planning –</b><br/>                     The City of Natchez and a portion of the surrounding Adams County have a Comprehensive Plan. This plan should be reviewed and updated if necessary in light of the Hurricane Katrina and Rita disasters. The remaining portion of Adams County not covered by this plan should be included.</p> | Hurricane or other hazard | High              | Adams County Board of Supervisors/ City of Natchez Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Adams County Board of Supervisors/City of Natchez Board of Aldermen and Mayor recognize that comprehensive land use planning yields many benefits for both the county and city. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. Although Natchez has adopted a Comprehensive Plan, the county has not developed a Comprehensive Plan. Therefore, this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-2      | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description   | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|------------------------------------|---|---|-------------------|--|---|-------------------------|---|
| <b>Property Protection</b>         |   |   |                   |  |   |                         |   |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Adams County Board of Supervisors/City of Natchez Board of Aldermen and Mayor should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Adams County Board of Supervisors/ City of Natchez Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Adams County Board of Supervisors/City of Natchez Board of Aldermen and Mayor recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/city government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |
| <b>Natural Resource Protection</b> |   |   |                   |  |   |                         |   |
| NRP-1                              |   |   |                   |  |   |                         |   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                   | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------------------------|--|---------------------|-------------------|--|---|-------------------------|---|
| <b>Structural Projects</b> |  |                     |                   |  |   |                         |   |
| SP-1                       | <b>Renovate Underground Drainage Structure</b> – The Adams County Board of Supervisors/City of Natchez Board of Aldermen and Mayor intends to reconstruct this entire underground drainage structure to protect current structures and access to this vital area and allow for continued growth. | Flood               | High              | Adams County Board of Supervisors/ City of Natchez Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Completed               | Within the City of Natchez in the area north of Madison Street, deterioration of old underground drainage structures threatens a vital historic area of Natchez. Additionally, failure of the underground drainage structures would close streets preventing residents, businesses and emergency vehicles access during times of distress. Also, many historic sites in the immediate area which is drained by the underground structure would be more susceptible to flooding. The City of Natchez secured funding through the Corps of Engineers and CDBG for this project. Phase 1 and Phase 2 of the project are now completed. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|---|---|-------------------------|--|
| SP-2     | <b>Improve Surface Drainage –</b><br>Improve the surface drainage through a combination of culverts and enlarged drainage ditches to allow floodwaters to run off without causing problems. | Flood               | High              | Adams County Board of Supervisors/<br>City of Natchez Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Completed               | Storm water runoff during intense storm events is flooding the roadway and 6 homes in the Liberty Road at Passback Drive area. In addition to the obvious damage to the roadway and homes, the floodwaters on the roadway make it impassable for emergency vehicles. The county completed the above project and also received funding from the Mississippi Development Authority to also improve drainage areas on Kingston Road, Cloverdale Road and in the Pineview/Grafton Heights neighborhoods. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | Completed               | Adams County is now a “storm ready” county. This action was combined with ES-7 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                  | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|--|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Adams County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Adams County will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department           | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|-----------------------------------|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Adams County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Adams County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department           | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|--|-------------------|-----------------------------------|---|-------------------------|--|
| ES-4     | <b>Construct New Emergency Shelter</b> – The county should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions. | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Adams County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Completed               | The Adams County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/city residents and evacuees from other areas during times of disaster. Previously a combination of schools, churches, and other government buildings were used. This worked acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility's designed function. The county applied for a FEMA 361 Shelter and a new emergency shelter was constructed in 2015. |
| ES-5     | <b>Construct New Emergency Operations Center</b> – The EOC should construct a new building of sufficient size to house all EOC staff and equipment, including Search and Rescue and Hazmat. The E911 dispatch center should also be housed in the new building.  | Hurricane or other hazard requiring action from the EOC                    | High              | Adams County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | The Adams County Emergency Operations Center (EOC) is currently housed in adequate space, and a new EOC is not needed at this time.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                            | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|--|--|-------------------------|---|
| ES-6     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county/city to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county/city where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide/citywide system.  | Tornado             | High              | Adams County Board of Supervisors/ City of Natchez | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County and/or City General Fund | Completed               | Many citizens in Adams County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings, as well as residents of Natchez. A siren system was installed in Adams County in 2013. |
| ES-7     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency            | MEMA, FEMA   | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department           | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|-----------------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                                   |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Adams County Board of Supervisors | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau            | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division         | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Adams County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## City of Natchez Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department  | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|--|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |  |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include lidar with aerial photography and 100 year base flood elevations in the A Zones and any other area where base flood elevations need to be computed.   | Flood               | High              | Adams County Board of Supervisors/ City of Natchez Mayor and Board of Aldermen | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate and A Zones need to be studied to determine the base flood elevation, so this action will remain in place to improve future vulnerability assessments.             |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as cities develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc.                  | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                   | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department  | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------------------------|--|---------------------|-------------------|--|--|-------------------------|--|
| P-3                        | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as cities develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc.    | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan.   |
| <b>Property Protection</b> |  |                     |                   |  |  |                         |  |
| PP-1                       | <b>Elevate Lift Station</b> – Elevate the sanitary sewer lift station and controls by six feet.  | Flood               | High              | City of Natchez Mayor and Board of Alderman/ Natchez Water Works | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants and Natchez Water Works                           | 2022                    | A Sanitary Sewer Lift Station adjacent to the Mississippi River is inundated during high water, therefore causing numerous businesses to be without sewer services resulting in a possible risk of Health Hazard. The City of Natchez/Natchez Water Works is working to secure funding to complete this project, therefore, this action will remain in the plan. |
| PP-2                       | <b>Elevate Gravel Road</b> – Elevate the Gravel Road approximately five feet.  | Flood               | High              | City of Natchez Mayor and Board of Alderman                      | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants and City General Fund                             | 2022                    | A gravel road adjacent to the Mississippi River is inundated during high water, therefore being impassable. The City of Natchez is working to secure funding to complete this project, therefore, this action will remain in the plan.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|------------------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Natural Resource Protection</b> |  |                         |                   |   |                           |                         |   |
| NRP-1                              |  |                         |                   |   |                           |                         |   |
| <b>Structural Projects</b>         |  |                         |                   |   |                           |                         |   |
| SP-1                               |  |                         |                   |   |                           |                         |   |
| <b>Emergency Services</b>          |  |                         |                   |   |                           |                         |   |
| ES-1                               | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | Completed               | Adams County is now a “storm ready” county. This action was combined with ES-4 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                            | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|--|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>City of Natchez Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The City of Natchez will continue to purchase critical facility generators as funding permits, so this action will remain in the plan</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|---|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Needs to update communications system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | City of Natchez Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The City of Natchez continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-4     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency     | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-5     | <b>Safe Rooms and Community Shelters</b> – The city should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | City of Natchez Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | City of Natchez           | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The City of Natchez will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Amite County Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------------|-------------------|---|---|-------------------------|---|
| <b>Prevention</b> |  |                           |                   |   |   |                         |   |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning</b> – The Amite County Board of Supervisors/Towns of Liberty, and Gloster should have a Comprehensive Plan developed to guide long term recovery and development.  | Hurricane or other hazard | High              | Amite County Board of Supervisors/ Towns of Liberty and Gloster | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Amite County Board of Supervisors/Towns of Liberty and Gloster recognize that comprehensive land use planning yields many benefits for both the county and towns. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. The county and towns have not developed a Comprehensive Plan. Therefore, this action will remain in the plan. |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction. | Flood                     | Moderate          | Southwest Mississippi Planning and Development District, Inc.   | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---|-------------------|--|---|-------------------------|--|
| <b>Property Protection</b>         |  |   |                   |  |   |                         |  |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Amite County Board of Supervisors/Towns of Liberty and Gloster should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Amite County Board of Supervisors/ Towns of Liberty and, Gloster | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Amite County Board of Supervisors/Towns of Liberty and Gloster recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/town government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |
| <b>Natural Resource Protection</b> |  |   |                   |  |   |                         |  |
| NRP-1                              |  |   |                   |  |   |                         |  |
| <b>Structural Projects</b>         |  |   |                   |  |   |                         |  |
| SP-1                               |  |   |                   |  |   |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                  | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|--|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Amite County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Since 2005, Amite County has added generators to the following critical facilities: Amite County Central Repair Facility, the repeater/communications tower, Justice Court and all supervisor district barns. Amite County will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department           | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|-----------------------------------|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Amite County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The county did purchase a generator for the repeater/communications tower to keep cell phones operational through disaster situations. Amite County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department           | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|-----------------------------------|---|-------------------------|---|
| ES-4     | <b>Construct New Emergency Shelter</b> – The county should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions.                              | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Amite County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Amite County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. Since a new emergency shelter has not been constructed in Amite County, this action will remain in the plan. |
| ES-5     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system. | Tornado  | High              | Amite County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County and/or Town General Fund  | 2022                    | Many citizens in Amite County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. Amite County added sirens to the Town of Liberty and Gloster. Additional sirens can be installed/upgraded to further improve the warning system in Amite County, so this action will remain in the plan.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---|---------------------------|-------------------------|--|
| ES-6                                  | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA                | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |
| <b>Public Education and Awareness</b> |   |                     |                   |   |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Amite County Board of Supervisors       | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|---|
| PEA-2    | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP. |
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                           |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.  | Dam Failure         | Moderate          | MDEQ, Dam Safety Division | N/A                       | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Amite County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others</b> – Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.                  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                      | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-7    | <p><b>Education: Public Outreach –</b><br/>                     Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan. |

## Town of Gloster Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---|---|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | Town of Gloster Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Gloster will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                           | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|---|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Gloster Board of Aldermen and Mayor       | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The county did purchase a generator for the repeater/communications tower to keep cell phones operational through disaster situations. The Town of Gloster continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Gloster/Amite County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County and/or Town General Fund  | 2022                    | Many citizens in Amite County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. One siren was added to the Town of Gloster since 2005. Additional sirens can be installed/upgraded to further improve the warning system in the Town of Gloster, so this action will remain in the plan.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency     | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Gloster Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Gloster           | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Gloster will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

### Town of Liberty Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                            | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|--|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of Liberty Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Liberty purchased and installed a generator at the Liberty Fire Station. The Town of Liberty will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                           | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|---|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Liberty Board of Aldermen and Mayor       | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The county did purchase a generator for the repeater/communications tower to keep cell phones operational through disaster situations. The Town of Liberty continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Liberty/Amite County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County and/or Town General Fund  | 2022                    | Many citizens in Amite County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. One siren was added to the town since 2005. Additional sirens can be installed/upgraded to further improve the warning system in the Town of Liberty, so this action will remain in the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency     | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Liberty Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Liberty           | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Liberty will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Franklin County Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------------|-------------------|---|---|-------------------------|---|
| <b>Prevention</b> |  |                           |                   |   |   |                         |   |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning</b> – The Franklin County Board of Supervisors/Towns of Meadville, Bude, and Roxie should have a Comprehensive Plan developed to guide long term recovery and development.                                 | Hurricane or other hazard | High              | Franklin County Board of Supervisors/ Towns of Meadville, Bude, and Roxie | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Franklin County Board of Supervisors/Towns of Meadville, Bude, and Roxie recognize that comprehensive land use planning yields many benefits for both the county and towns. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. The county and towns have not developed a Comprehensive Plan. Therefore, this action will remain in the plan. |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction. | Flood                     | Moderate          | Southwest Mississippi Planning and Development District, Inc.             | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|--|-------------------------|---|
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds      | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description   | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|---|---|-------------------|---|---|-------------------------|--|
| <b>Property Protection</b>         |   |   |                   |   |   |                         |  |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Franklin County Board of Supervisors/ Towns of Meadville, Bude, and Roxie should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Franklin County Board of Supervisors/ Towns of Meadville, Bude, and Roxie | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Franklin County Board of Supervisors/Towns of Meadville, Bude, and Roxie recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/town government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |
| <b>Natural Resource Protection</b> |   |   |                   |   |   |                         |  |
| NRP-1                              |   |   |                   |   |   |                         |  |
| <b>Structural Projects</b>         |   |   |                   |   |   |                         |  |
| SP-1                               |   |   |                   |   |   |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-7 since they were duplicate actions.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Franklin County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Franklin County will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|--------------------------------------|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Franklin County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Franklin County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|--|-------------------|--------------------------------------|---|-------------------------|---|
| ES-4     | <b>Construct New Emergency Shelter</b> – The county should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions. | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Franklin County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Franklin County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. Since a new emergency shelter has not been constructed in Franklin County, this action will remain in the plan. |
| ES-5     | <b>Renovate Emergency Operations Center</b> – The EOC should secure and renovate another building or construct a new one of sufficient size to house all EOC staff and equipment.  | Hurricane or other hazard requiring action from the EOC                    | High              | Franklin County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Franklin County Emergency Operations Center (EOC) is currently housed in inadequate space requiring staff and equipment to be quartered at several locations in the county. This severely hampers the EOC’s ability to perform its functions during times of emergency. Staff and equipment should be housed at one location to maximize efficiency and minimize response time. This action will remain in the plan to improve the EOC’s functions.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|---|--|-------------------------|--|
| ES-6     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system.   | Tornado             | High              | Franklin County Board of Supervisors    | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County General Fund | 2022                    | Many citizens in Franklin County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. A warning system needs to be installed in Franklin County, so this action will remain in the plan. |
| ES-7     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA   | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department              | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|--------------------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                                      |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Franklin County Board of Supervisors | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau               | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division            | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Franklin County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

### Town of Bude Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                             | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|---|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of Bude<br/>Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Bude will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                            | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|--|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Bude Board of Aldermen and Mayor           | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Bude continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Bude/ Franklin County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | 2022                    | In the event of inclement weather, it is essential that residents of the Town of Bude receive timely warnings. A warning system needs to be installed in the Town of Bude, so this action will remain in the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency  | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Bude Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Bude              | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Bude will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Meadville Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan.   |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               | <b>Drainage Improvements</b> – The Town of Meadville intends to implement flood control measures in this area to protect current property and encourage future growth.   | Flood               | High              | Town of Meadville, Franklin County                            | FEMA Hazard Mitigation Grant, Town of Meadville General Fund   | 2022                    | Flash flooding within the Town of Meadville in the Williams Street area has caused flooding of roadways and property. This flooding causes damage to the roadways and can prevent access to emergency vehicles during times of distress, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---|---|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | Town of Meadville Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Meadville will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                 | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---|-------------------|---|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Meadville Board of Aldermen and Mayor           | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Meadville continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Meadville/ Franklin County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | 2022                    | In the event of inclement weather, it is essential that residents of the Town of Meadville receive timely warnings. A warning system needs to be installed in the Town of Meadville, so this action will remain in the plan.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency       | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Meadville Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Meadville         | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Meadville will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Roxie Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan.   |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               | <b>Drainage Improvements</b> – The Town of Roxie is currently completing a drainage project and intends to continue implementing flood control measures.   | Flood               | High              | Town of Roxie, Franklin County                                | FEMA Hazard Mitigation Grant, Community Development Block Grant, Town of Roxie General Fund  | 2022                    | Flash flooding within the Town of Roxie has caused flooding of roadways and property. This flooding causes damage to the roadways and can prevent access to emergency vehicles during times of distress, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                          | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of Roxie Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Roxie will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|---|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Roxie Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Roxie continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                             | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|--|-------------------|---|---|-------------------------|--|
| ES-4     | <b>Construct Volunteer Fire Department/Emergency Evacuation Center</b> – The town should construct a 50 person evacuation shelter. The Volunteer Fire Department could be housed in the same facility.   | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Roxie Board of Aldermen and Mayor           | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2022                    | The Town of Roxie Board of Aldermen and Mayor recognize the need to have modern, safe emergency shelters for county/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. Also, the current facilities for the Volunteer Fire Department are inadequate. More space is needed to store equipment. Since a new emergency shelter has not been constructed in the Town of Roxie, this action will remain in the plan. |
| ES-5     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado  | High              | Town of Roxie/ Franklin County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | 2022                    | In the event of inclement weather, it is essential that residents of the Town of Roxie receive timely warnings. A warning system needs to be installed in the Town of Roxie, so this action will remain in the plan.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---|---------------------------|-------------------------|--|
| ES-6                                  | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA                | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |
| <b>Public Education and Awareness</b> |   |                     |                   |   |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Roxie                           | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| PEA-2    | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.    |
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                              |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.  | Dam Failure         | Moderate          | MDEQ, Dam Safety Division | N/A                       | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Roxie will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others</b> – Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.                  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                      | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan. |

## Jefferson Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------------|-------------------|---|---|-------------------------|---|
| <b>Prevention</b> |  |                           |                   |   |   |                         |   |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning</b> – The Jefferson County Board of Supervisors/City of Fayette should have a Comprehensive Plan developed to guide long term recovery and development.  | Hurricane or other hazard | High              | Jefferson County Board of Supervisors/ City of Fayette        | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Completed               | The Jefferson County Board of Supervisors/City of Fayette recognize that comprehensive land use planning yields many benefits for both the county and city. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. The county and city developed a Comprehensive Plan in 2016. |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction. | Flood                     | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2018-2019               | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description   | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|------------------------------------|---|---|-------------------|--|---|-------------------------|---|
| <b>Property Protection</b>         |   |   |                   |  |   |                         |   |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Jefferson County Board of Supervisors/City of Fayette Board of Alderman and Mayor should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Jefferson County Board of Supervisors/ City of Fayette Board of Alderman and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2018-2019               | The Jefferson County Board of Supervisors/City of Fayette Board of Alderman and Mayor recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/city government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |
| PP-2                               | <b>Floodplain Buyout</b> – The Jefferson County Board of Supervisors wishes to buy out the three remaining families in the Rodney Community and end the flooding problems in this area.   | Flood   | High              | Jefferson County Board of Supervisors  | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Completed               | The Rodney Community in Northwest Jefferson County is located in the Mississippi River floodplain and has been flooded many times. The last three remaining families in the community have been bought out.   |
| <b>Natural Resource Protection</b> |   |   |                   |  |   |                         |   |
| NRP-1                              |   |   |                   |  |   |                         |   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                   | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Structural Projects</b> |  |                         |                   |   |                           |                         |   |
| SP-1                       |  |                         |                   |   |                           |                         |   |
| <b>Emergency Services</b>  |  |                         |                   |   |                           |                         |   |
| ES-1                       | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. Jefferson County is in the process of filing the necessary paperwork to become “storm ready,” so this action will remain in the plan. This action was combined with ES-9 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                      | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Jefferson County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2018-2019</p>        | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Since 2005 the county has purchased three mobile generators for the purpose of rural water associations and the courthouse. They have a plan in place to purchase an additional three generators and will be applying for such funds in the near future, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department               | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---------------------------------------|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Jefferson County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Jefferson County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department               | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|--|-------------------|---------------------------------------|---|-------------------------|---|
| ES-4     | <b>Construct New Emergency Shelter</b> – The county should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions. | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Jefferson County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Jefferson County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/city residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. Since a new emergency shelter has not been constructed in Jefferson County, this action will remain in the plan. |
| ES-5     | <b>Renovate Emergency Operations Center</b> – The EOC should secure and renovate another building or construct a new one of sufficient size to house all EOC staff and equipment.  | Hurricane or other hazard requiring action from the EOC                    | High              | Jefferson County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Jefferson County Emergency Operations Center (EOC) is currently housed in inadequate space requiring staff and equipment to be quartered at several locations in the county. This severely hampers the EOC’s ability to perform its functions during times of emergency. Staff and equipment should be housed at one location to maximize efficiency and minimize response time. This action will remain in the plan to improve the EOC’s functions.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department               | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|---------------------------------------|--|-------------------------|--|
| ES-6     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system. | Tornado             | High              | Jefferson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/City General Fund          | 2018                    | Many citizens in Jefferson County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. The county has installed 1 new siren since 2005. Additional sirens should be installed, so this action will remain in the plan.   |
| ES-7     | <b>Improve Emergency Evacuation Routes</b> – Jefferson County sees the need to improve the condition of the evacuation routes including upgrading bridges where needed.   | Radiological        | High              | Jefferson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation grants, individual county general and special funds | 2018                    | Grand Gulf Nuclear Power Station is located in western Claiborne County. Part of the ten-mile Plume Emergency Planning Zone is in Jefferson County. The county is completely within the 50 mile Ingestion Emergency Planning Zone. Adequate warning systems and timely evacuation are the citizens only defense in the event of a release of contaminants from the facility. Also, if a release of radiological pollutants were to occur at Grand Gulf, many evacuees would come to or through Jefferson County. Therefore, this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department               | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---------------------------------------|--|-------------------------|--|
| ES-8     | <b>Upgrade Emergency Treatment Facilities</b> – Upgrade facilities, equipment, and training so that the hospital will be better able to respond to and treat patients suffering from radiological related illnesses. | Radiological        | High              | Jefferson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation grants, individual county general and special funds | 2018                    | Grand Gulf Nuclear Power Station is located in western Claiborne County. Part of the ten-mile Plume Emergency Planning Zone is in Jefferson County. The county is completely within the 50 mile Ingestion Emergency Planning Zone. In the event of a release of radiological contaminants from Grand Gulf, many persons evacuating to or through Jefferson County as well as many county residents may need emergency medical treatment for radiological related illnesses. The Jefferson County Hospital has no facilities, equipment, or trained personnel to handle this type of emergency. Therefore, this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---|---------------------------|-------------------------|--|
| ES-9                                  | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA                | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |
| <b>Public Education and Awareness</b> |   |                     |                   |   |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Jefferson County Board of Supervisors   | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|---|
| PEA-2    | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.                       |
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | Deleted                 | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, however, this action is the responsibility of MDEQ so it will be removed from the plan. |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.  | Dam Failure         | Moderate          | MDEQ, Dam Safety Division | N/A                       | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Jefferson County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.                     |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others</b> – Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.                  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                      | 2018-2019               | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-7    | <p><b>Education: Public Outreach –</b><br/>                     Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan. |

## City of Fayette Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds        | 2018                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as cities develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | 2018                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as cities develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | MEMA, FEMA                | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. The city is in the process of filing the necessary paperwork to become “storm ready,” so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                            | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>City of Fayette Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds</p> | <p>2018-2019</p>        | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Since 2005 the county has purchased three mobile generators for the purpose of rural water associations and the courthouse. They have a plan in place to purchase an additional three generators and will be applying for such funds in the near future, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|--|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | City of Fayette Board of Aldermen and Mayor            | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | Deleted                 | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Jefferson County continues to improve emergency communications throughout the county and will purchase a satellite phone system when funding allows, however, this action is the responsibility of the county so it will be removed from the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the city to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the city where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the city-wide system. | Tornado   | High              | City of Fayette/ Jefferson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/City General Fund   | Completed               | In the event of inclement weather, it is essential that residents of the City of Fayette receive timely warnings. The county has installed 1 new siren since 2005.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|--|--|-------------------------|--|
| ES-5     | <b>Improve Emergency Evacuation Routes</b> – The City of Fayette/ Jefferson County sees the need to improve the condition of the evacuation routes including upgrading bridges where needed. | Radiological        | High              | City of Fayette/ Jefferson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation grants, individual county general and special funds | 2018                    | Grand Gulf Nuclear Power Station is located in western Claiborne County. Part of the ten-mile Plume Emergency Planning Zone is in Jefferson County. The county is completely within the 50 mile Ingestion Emergency Planning Zone. Adequate warning systems and timely evacuation are the citizens only defense in the event of a release of contaminants from the facility. Also, if a release of radiological pollutants were to occur at Grand Gulf, many evacuees would come to or through Jefferson County. Therefore, this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-6     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency     | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-7     | <b>Safe Rooms and Community Shelters</b> – The city should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | City of Fayette Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|-------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                         |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | City of Fayette         | N/A                       | Deleted                 | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, however, this action is the responsibility of the county so it will be removed from the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau  | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.   | Dam Failure         | High              | MDEQ, Dam Safety Division                                     | N/A                             | Deleted                 | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, however, this action is the responsibility of MDEQ so it will be removed from the plan.  |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The City of Fayette will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Lawrence County Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------------|-------------------|---|---|-------------------------|---|
| <b>Prevention</b> |  |                           |                   |   |   |                         |   |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning</b> – The Lawrence County Board of Supervisors/Towns of Monticello, Silver Creek, and New Hebron should have a Comprehensive Plan developed to guide long term recovery and development.                   | Hurricane or other hazard | High              | Lawrence County Board of Supervisors/ Towns of Monticello, Silver Creek, and New Hebron | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Lawrence County Board of Supervisors/Towns of Monticello, Silver Creek, and New Hebron recognize that comprehensive land use planning yields many benefits for both the county and towns. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. The county and towns have not developed a Comprehensive Plan. Therefore, this action will remain in the plan. |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction. | Flood                     | Moderate          | Southwest Mississippi Planning and Development District, Inc.                           | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|------------------------------------|--|---|-------------------|---|---|-------------------------|---|
| <b>Property Protection</b>         |  |   |                   |   |   |                         |   |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Lawrence County Board of Supervisors/Towns of Monticello, Silver Creek, and New Hebron should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Lawrence County Board of Supervisors/ Towns of Monticello, Silver Creek, and New Hebron | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Lawrence County Board of Supervisors/Towns of Monticello, Silver Creek, and New Hebron recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/town government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures |
| <b>Natural Resource Protection</b> |  |   |                   |   |   |                         |   |
| NRP-1                              |  |   |                   |   |   |                         |   |
| <b>Structural Projects</b>         |  |   |                   |   |   |                         |   |
| SP-1                               |  |   |                   |   |   |                         |   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. The county is in the process of becoming “storm ready” countywide including the towns, so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|---|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Lawrence County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Lawrence County has received 5 generators since 2005. One at the Emergency Management office and one at New Hebron, Sontag, Monticello, and Silver Creek water associations. Lawrence County will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|--------------------------------------|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Lawrence County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Lawrence County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|--------------------------------------|---|-------------------------|---|
| ES-4     | <b>Construct New Emergency Shelter</b><br>– The county should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions.                           | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Lawrence County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Lawrence County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. A 200 person evacuation shelter is still being planned but still in the initial stages of planning, so this action will remain in the plan. |
| ES-5     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system. | Tornado  | High              | Lawrence County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County General Fund  | 2022                    | Many citizens in Lawrence County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. The county currently has 5 weather sirens in addition to the sirens located within the municipalities. Additional sirens can be installed/upgraded to further improve the warning system in Lawrence County, so this action will remain in the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---|---------------------------|-------------------------|--|
| ES-6                                  | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA                | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |
| <b>Public Education and Awareness</b> |   |                     |                   |   |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Lawrence County Board of Supervisors    | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| PEA-2    | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.  |
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                            |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.  | Dam Failure         | Moderate          | MDEQ, Dam Safety Division | N/A                       | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Lawrence County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others</b> – Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.                  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                      | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan. |

## Town of Monticello Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as cities develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as cities develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan.   |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              | <b>Bank Stabilization along Pearl River</b> – The Town of Monticello Board of Aldermen and Mayor plan to embark on a bank stabilization project to shore up the river bank in this area and prevent further damage.  | Flood               | High              | Town of Monticello Board of Aldermen and Mayor                | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2022                    | Continued failure of a section of the bank of the Pearl River in Monticello is threatening both public and private structures, including the library, county offices, and private homes and businesses. The town installed rocks along the river bank at the library and at the end of Caswell Street to assist in the stabilization and continues to explore any additional options for future stabilization, so this action will remain in the plan. |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. The county is in the process of becoming “storm ready” countywide including the towns, so this action will remain in the plan This action was combined with ES-5 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                               | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of Monticello Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Lawrence County has received 5 generators since 2005. One at the Emergency Management office and one at New Hebron, Sontag, Monticello, and Silver Creek water associations. The Town of Monticello will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|--|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Monticello Board of Aldermen and Mayor           | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Monticello continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Monticello/ Lawrence County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | Completed               | In the event of inclement weather, it is essential that residents of the Town of Monticello receive timely warnings. The town currently has 4 sirens which is deemed adequate.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                        | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency        | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Monticello Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Monticello        | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Monticello will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of New Hebron Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. The county is in the process of becoming “storm ready” countywide including the towns, so this action will remain in the plan This action was combined with ES-6 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                               | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of New Hebron Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Lawrence County has received 5 generators since 2005. One at the Emergency Management office and one at New Hebron, Sontag, Monticello, and Silver Creek water associations. The Town of New Hebron will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                        | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|--|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of New Hebron Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of New Hebron continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                        | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|--|-------------------|--|---|-------------------------|--|
| ES-4     | <b>Construct New Emergency Shelter</b><br>– The town should construct a 50 person evacuation shelter. The town’s Volunteer Fire Department could also be housed in the new facility. | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of New Hebron Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Town of New Hebron Board of Aldermen and Mayor recognize the need to have modern, safe emergency shelters for county/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short- term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. Also, the facilities for the Volunteer Fire Department do not have adequate storage space for all of the firefighting equipment. The county has installed storm shelters for workers at all county barns, fire stations and town halls. Also, the town is still in the initial stages of planning a larger shelter, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                     | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---|---|-------------------------|---|
| ES-5     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system.  | Tornado             | High              | Town of New Hebron/<br>Lawrence County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund | Completed               | In the event of inclement weather, it is essential that residents of the Town of New Hebron receive timely warnings. The town has 2 sirens which is deemed adequate at this time. |
| ES-6     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency                     | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of New Hebron        | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of New Hebron will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Silver Creek Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. The county is in the process of becoming “storm ready” countywide including the towns, so this action will remain in the plan This action was combined with ES-5 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                                 | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of Silver Creek Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Lawrence County has received 5 generators since 2005. One at the Emergency Management office and one at New Hebron, Sontag, Monticello, and Silver Creek water associations. The Town of Silver Creek will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|--|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Silver Creek Board of Aldermen and Mayor           | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Silver Creek continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Silver Creek/ Lawrence County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | Completed               | In the event of inclement weather, it is essential that residents of the Town of Silver Creek receive timely warnings. The town has 1 siren which is deemed adequate.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                          | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency          | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Silver Creek Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Sliver Creek      | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Silver Creek will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Lincoln County Mitigation Action Plan

| Action #          | Description   | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department                                 | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|-------------------|---|---------------------------|-------------------|---|---|-------------------------|---|
| <b>Prevention</b> |   |                           |                   |   |   |                         |   |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning –</b><br>The Lincoln County Board of Supervisors/City of Brookhaven should have a Comprehensive Plan developed to guide long term recovery and development. | Hurricane or other hazard | High              | Lincoln County Board of Supervisors/ City of Brookhaven | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Lincoln County Board of Supervisors/City of Brookhaven recognize that comprehensive land use planning yields many benefits for both the county and city. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. Although Brookhaven has adopted a Comprehensive Plan, the county has not developed a Comprehensive Plan. Therefore, this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-2      | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---|-------------------|---|---|-------------------------|--|
| <b>Property Protection</b>         |  |   |                   |   |   |                         |  |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Lincoln County Board of Supervisors/City of Brookhaven Board of Aldermen and Mayor should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Lincoln County Board of Supervisors/ City of Brookhaven Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Lincoln County Board of Supervisors/City of Brookhaven Board of Aldermen and Mayor recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/city government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |
| <b>Natural Resource Protection</b> |  |   |                   |   |   |                         |  |
| NRP-1                              |  |   |                   |   |   |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                   | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department             | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------------------------|---|---------------------|-------------------|-------------------------------------|--|-------------------------|--|
| <b>Structural Projects</b> |   |                     |                   |                                     |  |                         |  |
| SP-1                       | <b>Drainage Improvements in Bogue Chitto Community</b> – To eliminate damage to current and future structures, Lincoln County plans to initiate drainage improvements and possibly buyout or relocate homeowners in the floodway. | Flood               | High              | Lincoln County Board of Supervisors | FEMA Hazard Mitigation Grant, Community Development Block Grant, Lincoln County General Fund | 2022                    | Flash flooding within the Bogue Chitto community has caused flooding of roadways, property and structures. This flooding causes damage to the structures and roadways and can prevent access to emergency vehicles during times of distress. Lincoln County will continue to seek funding to complete drainage improvements, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2022                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. Once the county installs a new siren and gets funding for the 361 shelter, they will then proceed with requesting “storm ready” status, so this action will remain in the plan. This action was combined with ES-9 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                    | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|--|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Lincoln County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The jurisdiction has replaced some existing old generators but continues to pursue generator funding for other facilities that currently lack generators, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department             | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|-------------------------------------|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Upgrade all emergency services communications to the 700 MHz system. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Lincoln County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Lincoln County continues to improve emergency communications and will upgrade all emergency services communications to the 700 MHz system as funding allows (rather than purchasing a satellite phone system), so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department             | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|--|-------------------|-------------------------------------|---|-------------------------|---|
| ES-4     | <b>Upgrade Disaster Distribution Centers</b> – Upgrade each VFD with additional restroom facilities. | Hurricane or other hazard requiring distribution of food, water, ice, etc. | High              | Lincoln County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | Large scale distribution of food, water, ice, and other commodities to the general population after a major disaster presents logistical problems for any jurisdiction. Lincoln County chose to overcome these problems during the Hurricane Katrina disaster by using Volunteer Fire Departments (VFD) as primary distribution points from which citizens could pick up needed supplies. With many more persons manning the VFDs fulltime each day and many citizens coming and going, the sanitary facilities at each site were woefully inadequate. Since upgrades to VFDs have not been completed in Lincoln County, this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department             | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|-------------------------------------|---|-------------------------|---|
| ES-5     | <b>Upgrade VFD Communications –</b><br>Upgrade VFD Communications to the 700 MHz system. | Hurricane           | High              | Lincoln County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Lincoln County Volunteer Fire Departments (VFD) have a separate conventional communications system that also serves as a backup for the county EMS and Sheriffs Office. Their current system uses an antenna mounted on a water tower that is 60 feet short of the recommended effective height. This leads to more drop out of signal due to terrain shadowing, which hampers the VFDs effectiveness. Field units find themselves having to drive to the nearest hill to communicate with dispatchers thereby delaying their arrival at a fire or other emergency. Also, intermittent communications could lead to longer response times if injuries to the firefighters themselves occurred. Rather than building a new tower for housing communications antennas, Lincoln County will upgrade the VFD communications system to the 700 MHz system, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-6     | <b>Renovate Emergency Operations Center</b> – The EOC has secured another building located four miles to the north in the Industrial Park. This building should be renovated to provide a more modern, safe location for the EOC.   | Hurricane or Tornado   | High              | Lincoln County Board of Supervisors/ City of Brookhaven Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | The Lincoln County EOC is currently housed in an adequate building, and renovations are not needed at this time. This action no longer applies and will be removed from the plan.  |
| ES-7     | <b>Construct New Emergency Shelter</b> – The county/city should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions. | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Lincoln County Board of Supervisors/ City of Brookhaven Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Lincoln County Board of Supervisors/City of Brookhaven Board of Aldermen and Mayor recognize the need to have modern, safe emergency shelters for county/city residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and the basement of the county/city Government building is used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. The jurisdiction currently has an application with MEMA for funding of a 361 shelter to be placed within the City of Brookhaven, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|---|---|-------------------------|--|
| ES-8     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system.   | Tornado             | High              | Lincoln County Board of Supervisors     | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/City General Fund | 2022                    | Many citizens in Lincoln County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. The jurisdiction is currently working on a siren grant through MEMA for the City of Brookhaven, so this action will remain in the plan. |
| ES-9     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department             | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|--|---------------------|-------------------|-------------------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |  |                     |                   |                                     |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.                           | Earthquake          | Moderate          | Lincoln County Board of Supervisors | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative.  | Flood               | High              | MEMA Mitigation Bureau              | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). The jurisdiction currently has an application in for the National Flood Insurance Program, so this action will remain in the plan.   |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Dam Failure         | High              | MDEQ, Dam Safety Division           | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Lincoln County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

### City of Brookhaven Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as cities develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as cities develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                   | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department            | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------------------------|--|---------------------|-------------------|------------------------------------|---|-------------------------|---|
| <b>Structural Projects</b> |  |                     |                   |                                    |   |                         |   |
| SP-1                       | <p><b>Improve Surface Drainage</b> – The City of Brookhaven plans to:</p> <ul style="list-style-type: none"> <li>• Remove and replace undersized culverts at Minnesota, Evelyn, Center and St. George Streets.</li> <li>• Remove the existing undersized and undermined concrete ditch between Minnesota Street and its terminus, just south of St. George Street.</li> <li>• Excavate channel and reconstruct concrete ditch between Minnesota and St. George Street.</li> <li>• Purchase two small tracts of vacant land for the creation of green space.</li> <li>• Channel cross section restoration between St. George and Washington Streets.</li> </ul> | Flood               | High              | City of Brookhaven, Lincoln County | FEMA Hazard Mitigation Grant (75%), MEMA (25%) and City of Brookhaven (5%) General Fund | 2022                    | Flash flooding within the City of Brookhaven has caused flooding of roadways and property. This flooding causes damage to the roadways and can prevent access to emergency vehicles during times of distress. Structures have also flooded. The MEMA and City of Brookhaven funding are linked to this grant application. The City of Brookhaven will continue working to complete these surface drainage improvements, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                               | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>City of Brookhaven Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Police Station and all three fire stations have new generators. The city will continue to seek funding for generators for other critical facilities (city hall, city owned buildings, etc.), so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                        | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|--|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Upgrade all emergency services communications to the 700 MHz system.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | City of Brookhaven Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The City of Brookhaven continues to improve emergency communications and will upgrade all emergency services communications to the 700 MHz system as funding allows (rather than purchasing a satellite phone system), so this action will remain in the plan. |
| ES-4     | <b>New Police Department Building</b> – The City of Brookhaven would like to renovate and repair an existing building to serve as a new PD Building. This would free up space in the current building for the SO and geographically separate these vital agencies to reduce the probability of both being adversely affected by a disaster. | Hurricane or tornado  | High              | City of Brookhaven Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | Completed               | The police department did renovate this building on Hwy 61 South and is currently located there.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|--|---|-------------------------|--|
| ES-5     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the city to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the city where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the citywide system.   | Tornado             | High              | City of Brookhaven/<br>Lincoln County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/City General Fund | 2022                    | In the event of inclement weather, it is essential that residents of the City of Brookhaven receive timely warnings. The jurisdiction is currently working on a siren grant through MEMA for the City of Brookhaven, so this action will remain in the plan. |
| ES-6     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency                    | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                        | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|--|--|-------------------|--|---|-------------------------|--|
| ES-7                                  | <b>Safe Rooms and Community Shelters</b> – The city should construct and/or encourage construction of safe rooms and community shelters.   | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | City of Brookhaven Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |
| <b>Public Education and Awareness</b> |  |  |                   |  |   |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts. | Earthquake   | Moderate          | City of Brookhaven                             | N/A   | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative.                              | Flood  | High              | MEMA Mitigation Bureau                         | N/A   | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.   | Dam Failure         | High              | MDEQ, Dam Safety Division                                     | N/A                             | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.  |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The City of Brookhaven will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

### Pike County Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|-------------------|--|---------------------------|-------------------|--|---|-------------------------|--|
| <b>Prevention</b> |  |                           |                   |  |   |                         |  |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning –</b> Pike County, the Cities of Magnolia and McComb, and the Towns of Summit and Osyka have a Comprehensive Plan. This plan should be reviewed and updated if necessary in light of the Hurricane Katrina and Rita disasters. | Hurricane or other hazard | High              | Pike County Board of Supervisors/ Cities of Magnolia and McComb/ Towns of Summit and Osyka | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Pike County Board of Supervisors/Cities of Magnolia and McComb/Towns of Summit and Osyka recognize that comprehensive land use planning yields many benefits for both the county and cities. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. The City of McComb Comprehensive Plan was updated in 2016, however, the county plan should also be reviewed and update, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-2      | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|------------------------------------|--|---|-------------------|--|---|-------------------------|---|
| <b>Property Protection</b>         |  |   |                   |  |   |                         |   |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Pike County Board of Supervisors/Cities of Magnolia and McComb/Towns of Summit and Osyka should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Pike County Board of Supervisors/ Cities of Magnolia and McComb/ Towns of Summit and Osyka | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Pike County Board of Supervisors/Cities of Magnolia and McComb/Towns of Summit and Osyka recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/city/town government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |
| <b>Natural Resource Protection</b> |  |   |                   |  |   |                         |   |
| NRP-1                              |  |   |                   |  |   |                         |   |
| <b>Structural Projects</b>         |  |   |                   |  |   |                         |   |
| SP-1                               |  |   |                   |  |   |                         |   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department          | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---|-------------------|----------------------------------|---|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city/town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | Pike County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city/town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Pike County will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department          | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|----------------------------------|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Pike County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Pike County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department          | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|----------------------------------|---|-------------------------|--|
| ES-4     | <b>Construct New Emergency Shelter</b><br>– The county should construct a 300 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions.                           | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Pike County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Pike County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/city/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. A regional storm/evacuation shelter is currently being constructed off of Hwy 55, so this action will remain in the plan. |
| ES-5     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system. | Tornado  | High              | Pike County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County General Fund  | 2022                    | Many citizens in Pike County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. A warning system needs to be installed in Pike County, so this action will remain in the plan.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---|---------------------------|-------------------------|--|
| ES-6                                  | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA                | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |
| <b>Public Education and Awareness</b> |   |                     |                   |   |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Pike County Board of Supervisors        | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|---|
| PEA-2    | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP. |
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                           |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.  | Dam Failure         | Moderate          | MDEQ, Dam Safety Division | N/A                       | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Pike County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others</b> – Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.                  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                      | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-7    | <b>Education: Public Outreach –</b> Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan. |

## City of Magnolia Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as cities develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as cities develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                      | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|--|---|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | City of Magnolia Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The City of Magnolia will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                           | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|---|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | City of Magnolia Board of Aldermen and Mayor      | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The City of Magnolia continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the city to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the city where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the city-wide system. | Tornado   | High              | City of Magnolia/Pike County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/City General Fund   | 2022                    | In the event of inclement weather, it is essential that residents of the City of Magnolia receive timely warnings. A warning system needs to be installed in the City of Magnolia, so this action will remain in the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                      | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency      | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The city should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | City of Magnolia Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | City of Magnolia          | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The City of Magnolia will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## City of McComb Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as cities develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as cities develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|--|---|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | City of McComb Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The City of McComb will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                         | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.   | Hurricane or other hazard leading to loss of traditional communications systems | High              | City of McComb Board of Aldermen and Mayor      | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The City of McComb continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the city to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the city where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the citywide system. | Tornado   | High              | City of McComb/Pike County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/City General Fund   | 2022                    | In the event of inclement weather, it is essential that residents of the City of McComb receive timely warnings. A warning system needs to be installed in the City of McComb, so this action will remain in the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency    | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The city should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | City of McComb Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | City of McComb            | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The City of McComb will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Osyka Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                              | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of Osyka<br/>Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Osyka will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                           | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---|-------------------|---|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Osyka<br>Board of Aldermen and Mayor      | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Osyka continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Osyka/Pike<br>County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | 2022                    | In the event of inclement weather, it is essential that residents of the Town of Osyka receive timely warnings. A warning system needs to be installed in the Town of Osyka, so this action will remain in the plan.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency   | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Osyka Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Osyka             | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Osyka will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Summit Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2018                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2018                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                           | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|---|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of Summit Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2018-2019</p>        | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. A generator for the water facility was installed in August of 2017. The Town of Summit will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                         | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|---|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Summit Board of Aldermen and Mayor      | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2018                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Summit continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Summit/Pike County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | Completed               | In the event of inclement weather, it is essential that residents of the Town of Summit receive timely warnings. The warning system in the town has been deemed adequate at this time.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency    | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Summit Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Summit            | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2019                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2018                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2019                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Summit will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018-2019               | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018-2019               | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2019                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Walthall County Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------------|-------------------|---|---|-------------------------|---|
| <b>Prevention</b> |  |                           |                   |   |   |                         |   |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning –</b><br>The Walthall County Board of Supervisors/Town of Tylertown should have a Comprehensive Plan developed to guide long term recovery and development.  | Hurricane or other hazard | High              | Walthall County Board of Supervisors/ Town of Tylertown       | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Walthall County Board of Supervisors/Town of Tylertown recognize that comprehensive land use planning yields many benefits for both the county and town. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. The county and town have not developed a Comprehensive Plan. Therefore, this action will remain in the plan. |
| P-2               | <b>Assessing Vulnerability by Jurisdiction –</b> Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction. | Flood                     | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                   | Description  | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department                                 | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------------------------|--|---|-------------------|---|---|-------------------------|--|
| <b>Property Protection</b> |  |   |                   |   |   |                         |  |
| PP-1                       | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Walthall County Board of Supervisors/Town of Tylertown should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Walthall County Board of Supervisors/ Town of Tylertown | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Walthall County Board of Supervisors/Town of Tylertown recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/town government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                                 | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|------------------------------------|--|--|-------------------|---|---|-------------------------|---|
| PP-2                               | <b>Bury Electric Power Cables</b> – The Walthall County Board of Supervisors/Town of Tylertown should implement a program to bury electric power cables serving critical facilities. | Hurricane, Tornado or other hazard affecting Electric Power distribution | High              | Walthall County Board of Supervisors/ Town of Tylertown | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Electric power cables to critical facilities have not been buried. Therefore, this action will remain in the plan to reduce potential loss of power to those facilities. |
| <b>Natural Resource Protection</b> |  |  |                   |   |   |                         |   |
| NRP-1                              |  |  |                   |   |   |                         |   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                   | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------------------------|--|---------------------|-------------------|--------------------------------------|---|-------------------------|--|
| <b>Structural Projects</b> |  |                     |                   |                                      |   |                         |  |
| SP-1                       | <b>Drainage Improvements (Whitmore Road)</b> – Install a culvert to provide for adequate water flow and raise the road bed.  | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Whitmore Road repeatedly washes out during intense storm events. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan.  |
| SP-2                       | <b>Drainage Improvements (Hinson Road)</b> – Install a culvert to provide for adequate water flow and raise the road bed.    | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Hinson Road repeatedly washes out during intense storm events. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan.    |
| SP-3                       | <b>Drainage Improvements (Tom Woods Road)</b> – Install a culvert to provide for adequate water flow and raise the road bed. | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Tom Woods Road repeatedly washes out during intense storm events. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|--------------------------------------|---|-------------------------|--|
| SP-4     | <b>Drainage Improvements (Ryans Road)</b> – Install a culvert to provide for adequate water flow and raise the road bed.       | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Ryans Road repeatedly washes out during intense storm events. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan.       |
| SP-5     | <b>Drainage Improvements (Dillon Hill Road)</b> – Install a culvert to provide for adequate water flow and raise the road bed. | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Dillon Hill Road repeatedly washes out during intense storm events. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan. |
| SP-6     | <b>Drainage Improvements (Brandon Bay Road)</b> – Install a culvert to provide for adequate water flow and raise the road bed. | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Brandon Bay Road repeatedly washes out during intense storm events. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|--------------------------------------|---|-------------------------|---|
| SP-7     | <b>Drainage Improvements (East Centerville Road)</b> – Install a culvert to provide for adequate water flow and raise the road bed.   | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along East Centerville Road repeatedly washes out during intense storm events. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan.   |
| SP-8     | <b>Drainage Improvements (Settlement Road)</b> – Install a bridge to provide for adequate water flow and raise the road bed.          | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Settlement Road repeatedly washes out during intense storm events because an existing culvert is not able to handle the volume of water. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan.       |
| SP-9     | <b>Drainage Improvements (East Centerville Road)</b> – Install two bridges to provide for adequate water flow and raise the road bed. | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along East Centerville Road repeatedly washes out during intense storm events because an existing culvert is not able to handle the volume of water. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|--------------------------------------|---|-------------------------|---|
| SP-10    | <b>Drainage Improvements (Huey Road)</b> – Install a bridge to provide for adequate water flow and raise the road bed.   | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Huey Road repeatedly washes out during intense storm events because an existing culvert is not able to handle the volume of water. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan.   |
| SP-11    | <b>Drainage Improvements (Howell Road)</b> – Install a bridge to provide for adequate water flow and raise the road bed. | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Howell Road repeatedly washes out during intense storm events because an existing culvert is not able to handle the volume of water. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan. |
| SP-12    | <b>Drainage Improvements (Carter Road)</b> – Install a bridge to provide for adequate water flow and raise the road bed. | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Carter Road repeatedly washes out during intense storm events because an existing culvert is not able to handle the volume of water. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-8 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Walthall County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Walthall County will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|--------------------------------------|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Walthall County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|---|--|-------------------------|---|
| ES-4     | <p><b>Construct New Emergency Shelter</b><br/>                     – The county should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions.</p> | <p>Hurricane, Tornado or other hazard requiring the use of emergency shelters</p> | <p>High</p>       | <p>Walthall County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2022</p>             | <p>The Walthall County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short- term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. Since a new emergency shelter has not been constructed in Walthall County, this action will remain in the plan.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                 | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|---|---|-------------------------|---|
| ES-5     | <b>Purchase Integrated Voice Mail System</b> – The Walthall County Board of Supervisors/Town of Tylertown should purchase an Integrated Voice Mail System for emergency notification of government authorities and citizens during times of natural disasters. | Hurricane, Tornado or other hazard affecting communications | High              | Walthall County Board of Supervisors/ Town of Tylertown | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Walthall County Board of Supervisors/Town of Tylertown understand the need for emergency notification of government authorities and citizens during times of natural disasters. Timely information is critical for government authorities during and in the aftermath of natural disasters to facilitate rescue and recovery operations. The ability to notify citizens of impending natural disasters and to communicate information concerning recovery efforts gives government authorities a powerful tool to manage a disaster and assist the citizenry to the maximum extent possible. This action will remain in the plan to improve emergency notification. |
| ES-6     | <b>Renovate or Construct Emergency Supply Storage and Distribution Facility</b> – The Walthall County Board of Supervisors/Town of Tylertown should renovate or construct adequate facilities for the storage and distribution of emergency supplies.          | Hurricane or other hazard                                   | High              | Walthall County Board of Supervisors/ Town of Tylertown | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | During certain natural disasters which cause long-term electric power outages or other widespread damage, the county may need to distribute emergency supplies to the citizens. The facilities where these supplies are stored and distributed should have adequate space for safe storage and be located in accessible areas for orderly distribution. This action will remain in the plan to improve the storage and distribution of emergency supplies.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|---|--|-------------------------|--|
| ES-7     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system  | Tornado             | High              | Walthall County Board of Supervisors    | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County General Fund | 2022                    | Many citizens in Walthall County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. A warning system needs to be installed in Walthall County, so this action will remain in the plan. |
| ES-8     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA   | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department              | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|--------------------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                                      |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Walthall County Board of Supervisors | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau               | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division            | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Walthall County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Tylertown Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---|---|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | Town of Tylertown Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Tylertown will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                 | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---|-------------------|---|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Tylertown Board of Aldermen and Mayor           | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Tylertown continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Tylertown/ Walthall County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | 2022                    | In the event of inclement weather, it is essential that residents of the Town of Tylertown receive timely warnings. A warning system needs to be installed in the Town of Tylertown, so this action will remain in the plan.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency       | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Tylertown Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Tylertown         | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Tylertown will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

### Wilkinson County Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|-------------------|--|---------------------------|-------------------|--|---|-------------------------|--|
| <b>Prevention</b> |  |                           |                   |  |   |                         |  |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning –</b><br>The Wilkinson County Board of Supervisors/Towns of Woodville, Centreville, and Crosby should have a Comprehensive Plan developed to guide long term recovery and development. | Hurricane or other hazard | High              | Wilkinson County Board of Supervisors/ Towns of Woodville, Centreville, and Crosby | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Wilkinson County Board of Supervisors/Towns of Woodville, Centreville, and Crosby recognize that comprehensive land use planning yields many benefits for both the county and towns. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. Although Woodville has adopted a Town Plan, the county and two other towns have not developed a Comprehensive Plan. Therefore, this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-2      | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.                                   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.                              |
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado hazard risk assessment. | Tornado             | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2018                    | A detailed tornado hazard risk assessment for properties found within local jurisdictions does not currently exist. The county has received the necessary data and is working on developing it to enhance the tornado risk assessment. Therefore, this action will remain in place to improve future vulnerability assessments. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.           | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed wildfire risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.                                  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description   | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|---|---|-------------------|--|---|-------------------------|--|
| <b>Property Protection</b>         |   |   |                   |  |   |                         |  |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Wilkinson County Board of Supervisors/Towns of Woodville, Centreville, and Crosby should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Wilkinson County Board of Supervisors/ Towns of Woodville, Centreville, and Crosby | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Wilkinson County Board of Supervisors/Towns of Woodville, Centreville, and Crosby recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/town government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed and the county is working on obtaining grants to provide the necessary funding. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |
| <b>Natural Resource Protection</b> |   |   |                   |  |   |                         |  |
| NRP-1                              |   |   |                   |  |   |                         |  |
| <b>Structural Projects</b>         |   |   |                   |  |   |                         |  |
| SP-1                               |   |   |                   |  |   |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-8 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                      | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Wilkinson County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>Completed</p>        | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Since 2005 the county has secured 4 generators for locations that include the Courthouse, Health Dept., Welfare Dept. and Sheriff Station.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department               | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---------------------------------------|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Wilkinson County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Wilkinson County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                      | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---|-------------------|--|--|-------------------------|--|
| ES-4     | <p><b>Construct New Emergency Shelter</b><br/>                     – The county should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions.</p> | <p>Hurricane, Tornado or other hazard requiring the use of emergency shelters</p> | <p>High</p>       | <p>Wilkinson County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2022</p>             | <p>The Wilkinson County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short- term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. Since a new emergency shelter has not been constructed in Wilkinson County, this action will remain in the plan</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---|---|-------------------------|---|
| ES-5     | <b>Construct Emergency Operations Center (EOC)</b> – The county should construct or renovate a current county owned building for the purpose of an EOC.   | Hurricane, Tornado or other wind related hazard | High              | Wilkinson County Board of Supervisors/<br>Towns of Woodville, Centreville, and Crosby | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Wilkinson County Board of Supervisors recognizes the need to have modern, safe emergency operations center for county/town employees (firemen, policemen) emergency personnel and volunteers to convene during times of disaster to discuss planning options, rescue operations or any disaster plan of action. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina. Since an EOC has not been constructed in Wilkinson County, this action will remain in the plan. |
| ES-6     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system. | Tornado   | High              | Wilkinson County Board of Supervisors   | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County General Fund  | Completed               | Many citizens in Wilkinson County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. Since 2005 the county has purchased and installed three additional sirens throughout the county.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department               | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---------------------------------------|--|-------------------------|---|
| ES-7     | <b>Improve Emergency Evacuation Routes</b> – Wilkinson County sees the need to improve the condition of its evacuation routes including upgrading bridges where needed. | Radiological        | High              | Wilkinson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation grants, individual county general and special funds | 2022                    | River Bend Nuclear Power Station is located approximately 17 miles south of Wilkinson County in Louisiana. Most of the county is in the 50-mile Ingestion Emergency Planning Zone. Adequate warning systems and timely evacuation are the citizens only defense in the event of a release of contaminants from the facility. Also, it is anticipated that should contaminants be released from River Bend, many Louisiana residents would need to evacuate to or through Wilkinson County. Wilkinson County is currently working on a Dam and Road reconstruction in the Lake Mary area. In 2011, the county received a grant through the Mississippi Development Authority to reconstruct and reopen a bridge in Fort Adams on Pond Rd. In 2012, the county applied for grant funds to rehab eight bridges, one of which is closed, in the Homochitto National Forest through the Federal Hwy Administration’s Public Lands Highways fund. All of these efforts will help reopen roads for efficient evacuation. The county is still working to further improve evacuation routes, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---|---------------------------|-------------------------|--|
| ES-8                                  | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA                | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |
| <b>Public Education and Awareness</b> |   |                     |                   |   |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Wilkinson County Board of Supervisors   | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|---|
| PEA-2    | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.   |
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | MDEQ, Dam Safety Division | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                             |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.  | Dam Failure         | Moderate          | MDEQ, Dam Safety Division | N/A                       | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Wilkinson County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|---|
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan |
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others</b> – Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.                  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                      | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-7    | <p><b>Education: Public Outreach –</b><br/>                     Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan. |

## Town of Centreville Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                         | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---|---|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | Town of Centreville Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Centreville will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---|-------------------|--|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Centreville Board of Aldermen and Mayor            | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Centreville continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Centreville/ Wilkinson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | Completed               | In the event of inclement weather, it is essential that residents of the Town of Centreville receive timely warnings. Since 2005 the county has purchased and installed three additional sirens throughout the county.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---|--|-------------------------|---|
| ES-5     | <b>Improve Emergency Evacuation Routes</b> – The Town of Centreville and Wilkinson County sees the need to improve the condition of the evacuation routes including upgrading bridges where needed. | Radiological        | High              | Town of Centreville/<br>Wilkinson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation grants, individual county general and special funds | 2022                    | River Bend Nuclear Power Station is located approximately 17 miles south of Wilkinson County in Louisiana. Most of the county is in the 50-mile Ingestion Emergency Planning Zone. Adequate warning systems and timely evacuation are the citizens only defense in the event of a release of contaminants from the facility. Also, it is anticipated that should contaminants be released from River Bend, many Louisiana residents would need to evacuate to or through Wilkinson County. Wilkinson County is currently working on a Dam and Road reconstruction in the Lake Mary area. In 2011, the county received a grant through the Mississippi Development Authority to reconstruct and reopen a bridge in Fort Adams on Pond Rd. In 2012, the county applied for grant funds to rehab eight bridges, one of which is closed, in the Homochitto National Forest through the Federal Hwy Administration’s Public Lands Highways fund. All of these efforts will help reopen roads for efficient evacuation. The county is still working to further improve evacuation routes, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                         | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-6     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency         | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-7     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Centreville Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Centreville       | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Centreville will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Crosby Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions.</p> |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|--|---|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | Town of Crosby Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Crosby will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|--|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Crosby Board of Aldermen and Mayor               | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Crosby continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Crosby/<br>Wilkinson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County and/or Town General Fund  | Completed               | In the event of inclement weather, it is essential that residents of the Town of Crosby receive timely warnings. Since 2005 the county has purchased and installed three additional sirens throughout the county.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency    | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Crosby Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Crosby            | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Crosby will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Woodville Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|---|---|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | Town of Woodville Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Woodville will continue to purchase critical facility generators as funding permits, so this action will remain in the plan |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---|-------------------|--|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Woodville Board of Aldermen and Mayor            | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Woodville continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Woodville/ Wilkinson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | Completed               | In the event of inclement weather, it is essential that residents of the Town of Woodville receive timely warnings. Since 2005 the county has purchased and installed three additional sirens throughout the county.   |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                     | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---|--|-------------------------|---|
| ES-5     | <b>Improve Emergency Evacuation Routes</b> – The Town of Woodville and Wilkinson County sees the need to improve the condition of the evacuation routes including upgrading bridges where needed. | Radiological        | High              | Town of Woodville/<br>Wilkinson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation grants, individual county general and special funds | 2022                    | River Bend Nuclear Power Station is located approximately 17 miles south of Wilkinson County in Louisiana. Most of the county is in the 50-mile Ingestion Emergency Planning Zone. Adequate warning systems and timely evacuation are the citizens only defense in the event of a release of contaminants from the facility. Also, it is anticipated that should contaminants be released from River Bend, many Louisiana residents would need to evacuate to or through Wilkinson County. Wilkinson County is currently working on a Dam and Road reconstruction in the Lake Mary area. In 2011, the county received a grant through the Mississippi Development Authority to reconstruct and reopen a bridge in Fort Adams on Pond Rd. In 2012, the county applied for grant funds to rehab eight bridges, one of which is closed, in the Homochitto National Forest through the Federal Hwy Administration’s Public Lands Highways fund. All of these efforts will help reopen roads for efficient evacuation. The county is still working to further improve evacuation routes, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-6     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency       | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-7     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Woodville Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

**SECTION 9: MITIGATION ACTION PLAN**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Woodville         | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Woodville will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**SECTION 9: MITIGATION ACTION PLAN**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

# SECTION 10

## PLAN MAINTENANCE

This section discusses how the MEMA District 7 Mitigation Strategy and Mitigation Action Plan will be implemented and how the Regional Hazard Mitigation Plan will be evaluated and enhanced over time. This section also discusses how the public will continue to be involved in a sustained hazard mitigation planning process. It consists of the following four subsections:

- 10.1 Monitoring and Evaluating the Previous Plan
- 10.2 Implementation and Integration
- 10.3 Monitoring, Evaluation, and Enhancement
- 10.4 Continued Public Involvement

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### **44 CFR Requirement**

#### **44 CFR Part 201.6(c)(4)(i):**

The plan shall include a plan maintenance process that includes a section describing the method and schedule of monitoring, evaluating and updating the mitigation plan within a five-year cycle.

#### **44 CFR Part 201.6(c)(4)(ii):**

The plan maintenance process shall include a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate

### **10.1 MONITORING AND EVALUATING THE PREVIOUS PLAN**

Since the previous hazard mitigation plan was adopted in 2013, each county has worked to ensure that mitigation was integrated into local activities and that the mitigation plan was appropriately implemented. The previous plan outlined a process for monitoring and evaluating the plan throughout the interim period between plan updates.

Each county was ultimately successful in implementing the monitoring and evaluation processes that were outlined in the previous plan as all nine counties held annual meetings to discuss the mitigation plan and the priorities that were outlined in it. Additionally, the plan outlined a process wherein the Task Force that developed the plan during the last update would meet at least twice a year to monitor the progress of implementing the strategies outlined in the plan. Although there were several meetings of this group, the Task Force did not meet as frequently as planned due to challenges in scheduling. Additionally, there was an intent to use reporting forms that could be filled out one month prior to each scheduled meeting date. This was only carried out infrequently and the annual report detailing the Task Force's evaluation of plan progress was also not always carried out. In general, the consensus from the current planning committee is that this may have been too ambitious and that a less ambitious meeting schedule might be more achievable.

As such, revisions were agreed upon to modify the plan monitoring and evaluation process. The RHMC will remain the entity charged with reviewing the plan, but these reviews will take place on an annual

basis rather than a bi-annual basis. These reviews will continue to be mainly focused on the status of mitigation actions/projects. Overall, the review team generally agreed that the plan was on course and that with the modification to the frequency of this RHMC (formerly Task Force) meetings, the monitoring and evaluating process itself would be sufficient to ensure implementation of the plan going forward. Each county will also meet annually with its municipalities in separate meetings to discuss mitigation planning and the emergency management process.

## **10.2 IMPLEMENTATION AND INTEGRATION**

Each agency, department, or other partner participating under the MEMA District 7 Regional Hazard Mitigation Plan is responsible for implementing specific mitigation actions as prescribed in the Mitigation Action Plan. Every proposed action listed in the Mitigation Action Plan is assigned to a specific “lead” agency or department in order to assign responsibility and accountability and increase the likelihood of subsequent implementation.

In addition to the assignment of a local lead department or agency, an implementation time period or a specific implementation date has been assigned in order to assess whether actions are being implemented in a timely fashion. The counties in the MEMA District 7 Region will seek outside funding sources to implement mitigation projects in both the pre-disaster and post-disaster environments. When applicable, potential funding sources have been identified for proposed actions listed in the Mitigation Action Plan.

The participating jurisdictions will integrate this Hazard Mitigation Plan into relevant city and county government decision-making processes or mechanisms, where feasible. This includes integrating the requirements of the Hazard Mitigation Plan into other local planning documents, processes, or mechanisms, such as comprehensive or capital improvement plans, when appropriate. The members of the MEMA District 7 Regional Hazard Mitigation Council (RHMC) will remain charged with ensuring that the goals and mitigation actions of new and updated local planning documents for their agencies or departments are consistent, or do not conflict with, the goals and actions of the Hazard Mitigation Plan, and will not contribute to increased hazard vulnerability in the MEMA District 7 Region.

Since the previous plan was adopted, each county and participating jurisdiction has worked to integrate the hazard mitigation plan into other planning mechanisms where applicable/feasible. Examples of how this integration has occurred have been documented in the Implementation Status discussion provided for each of the mitigation actions found in Section 9. Specific examples of how integration has occurred include:

- Integrating the mitigation plan into reviews and updates of floodplain management ordinances
- Integrating the mitigation plan into reviews and updates of county emergency operations plans
- Integrating the mitigation plan into review and updates of building codes
- Integrating the mitigation plan into the capital improvements plan through identification of mitigation actions that require local funding

Opportunities to further integrate the requirements of this Plan into other local planning mechanisms shall continue to be identified through future meetings of the RHMC, individual county meetings, and

the annual review process described herein. Although it is recognized that there are many possible benefits to integrating components of this Plan into other local planning mechanisms, the development and maintenance of this stand-alone Regional Hazard Mitigation Plan is deemed by the MEMA District 7 RHMC to be the most effective and appropriate method to implement local hazard mitigation actions at this time.

### **10.3 MONITORING, EVALUATION, AND ENHANCEMENT**

Periodic revisions and updates of the Hazard Mitigation Plan are required to ensure that the goals of the Plan are kept current, taking into account potential changes in hazard vulnerability and mitigation priorities. In addition, revisions may be necessary to ensure that the Plan is in full compliance with applicable federal and state regulations. Periodic evaluation of the Plan will also ensure that specific mitigation actions are being reviewed and carried out according to the Mitigation Action Plan.

The MEMA District 7 RHMC shall meet every year to evaluate the progress attained and to revise, where needed, the activities set forth in the Plan. The findings and recommendations of the RHMC shall be shared with interested municipal and county Council members. The RHMC will also meet following any disaster events warranting a reexamination of the mitigation actions being implemented or proposed for future implementation. This will ensure that the Plan is continuously updated to reflect changing conditions and needs within the region. MEMA will be responsible for reconvening the RHMC for these reviews.<sup>1</sup>

#### ***FIVE YEAR PLAN REVIEW***

The Plan will be thoroughly reviewed by the RHMC every five years to determine whether there have been any significant changes in the region that may, in turn, necessitate changes in the types of mitigation actions proposed. New development in identified hazard areas, an increased exposure to hazards, an increase or decrease in capability to address hazards, and changes to federal or state legislation are examples of factors that may affect the necessary content of the Plan.

The plan review provides MEMA District 7 county officials with an opportunity to evaluate those actions that have been successful and to explore the possibility of documenting potential losses avoided due to the implementation of specific mitigation measures. The plan review also provides the opportunity to address mitigation actions that may not have been successfully implemented as assigned. MEMA will be responsible for reconvening the RHMC and helping conduct the five-year review.

During the five-year plan review process, the following questions will be considered as criteria for assessing the effectiveness and appropriateness of the Plan:

- Do the goals address current and expected conditions?
- Has the nature or magnitude of risks changed?
- Are the current resources appropriate for implementing the Plan?

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<sup>1</sup> A sample Mitigation Action Progress Form and Plan Update Evaluation Worksheet (from FEMA's *Local Mitigation Planning Handbook*) are included in Appendix B. These documents can be used to guide the evaluation of mitigation actions and future plan updates.

## **SECTION 10: PLAN MAINTENANCE**

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- Are there implementation problems, such as technical, political, legal or coordination issues with other agencies?
- Have the outcomes occurred as expected?
- Did county departments participate in the plan implementation process as assigned?

Following the five-year review, any revisions deemed necessary will be summarized and implemented according to the reporting procedures and plan amendment process outlined herein. Upon completion of the review and update/amendment process, the MEMA District 7 Regional Hazard Mitigation Plan will be submitted to the State Hazard Mitigation Officer at MEMA for final review and approval in coordination with the Federal Emergency Management Agency (FEMA).

Because the plan update process can take several months to complete, and because Federal funding may be needed to update the plan, it is recommended that the five-year review process begin at the beginning of the third year after the plan was last approved. This will allow the participants in the MEMA District 7 Regional Hazard Mitigation Plan to organize in order to seek Federal funding if necessary and complete required plan update documentation before the plan expires at the end of the fifth year.

### ***DISASTER DECLARATION***

Following a disaster declaration, the MEMA District 7 Regional Hazard Mitigation Plan will be revised as necessary to reflect lessons learned, or to address specific issues and circumstances arising from the event. It will be the responsibility of MEMA to reconvene the RHMC and ensure the appropriate stakeholders are invited to participate in the plan revision and update process following declared disaster events.

### ***REPORTING PROCEDURES***

The results of the five-year review will be summarized by the RHMC in the plan update and will include an evaluation of the effectiveness of the Plan and any required or recommended changes or amendments. The results will also include an evaluation of implementation progress for each of the proposed mitigation actions, identifying reasons for delays or obstacles to their completion along with recommendations as to whether and how to continue to pursue the action.

### ***PLAN AMENDMENT PROCESS***

In general, the RHMC agreed that any minor amendments suggested by a county or participating municipality would be automatically accepted into the plan as long as the amendment only impacted that jurisdiction. However, if the amendment proposed a large-scale change to the structure of the plan or impacted other jurisdictions, the following amendment process would need to be followed.

Upon the initiation of the amendment process, the MEMA District 7 counties will forward information on the proposed change(s) to all interested parties including, but not limited to, all directly affected county departments, residents, and businesses. Information will also be forwarded to MEMA. This information will be disseminated in order to seek input on the proposed amendment(s) for no less than a 45-day review and comment period.

## SECTION 10: PLAN MAINTENANCE

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At the end of the 45-day review and comment period, the proposed amendment(s) and all comments will be forwarded to the RHMC for final consideration. The RHMC will review the proposed amendment along with the comments received from other parties, and if acceptable, the committee will submit a recommendation for the approval and adoption of changes to the Plan.

In determining whether to recommend approval or denial of a Plan amendment request, the following factors will be considered by the RHMC:

- There are errors, inaccuracies, or omissions made in the identification of issues or needs in the Plan.
- New issues or needs have been identified which are not adequately addressed in the Plan.
- There has been a change in information, data, or assumptions from those on which the Plan is based.

Upon receiving the recommendation from the RHMC, and prior to adoption of the Plan Amendment, the participating jurisdictions will hold a public hearing, if deemed necessary. The governing bodies of each participating jurisdiction will review the recommendation from the RHMC (including the factors listed above) and any oral or written comments received at the public hearing. Following that review, the governing bodies will take one of the following actions:

- Adopt the proposed amendments as presented
- Adopt the proposed amendments with modifications
- Refer the amendments request back to the RHMC for further revision
- Defer the amendment request back to the RHMC for further consideration and/or additional hearings

### 10.4 CONTINUED PUBLIC INVOLVEMENT

|   |
|---|
| <b>44 CFR Requirement</b>   |
| <b>44 CFR Part 201.6(c)(4)(iii):</b><br>The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process |

Public participation is an integral component to the mitigation planning process and will continue to be essential as this Plan evolves over time. As described above, significant changes or amendments to the Plan shall require a public hearing prior to any adoption procedures.

Other efforts to involve the public in the maintenance, evaluation, and revision process will be made as necessary. These efforts may include:

- Advertising meetings of the RHMC in local newspapers, public bulletin boards and/or county office buildings
- Designating willing and voluntary citizens and private sector representatives as official members of the RHMC

## SECTION 10: PLAN MAINTENANCE

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- Utilizing local media to update the public on any maintenance and/or periodic review activities taking place
- Utilizing the MEMA District 7 county websites to advertise any maintenance and/or periodic review activities taking place
- Keeping copies of the Plan in public libraries

Overall, the RHMC and participating counties will continue to provide outreach concerning mitigation through TV and other media as well as through outreach events such as local fairs or public events. In this way, the public will have continual interaction with the mitigation process and the efforts taken by local officials to implement mitigation.

# ANNEX A

## ADAMS COUNTY

This annex includes jurisdiction-specific information for Adams County and its participating municipalities. It consists of the following five subsections:

- A.1 Adams County Community Profile
  - A.2 Adams County Risk Assessment
  - A.3 Adams County Vulnerability Assessment
  - A.4 Adams County Capability Assessment
  - A.5 Adams County Mitigation Strategy
- 

### A.1 ADAMS COUNTY COMMUNITY PROFILE

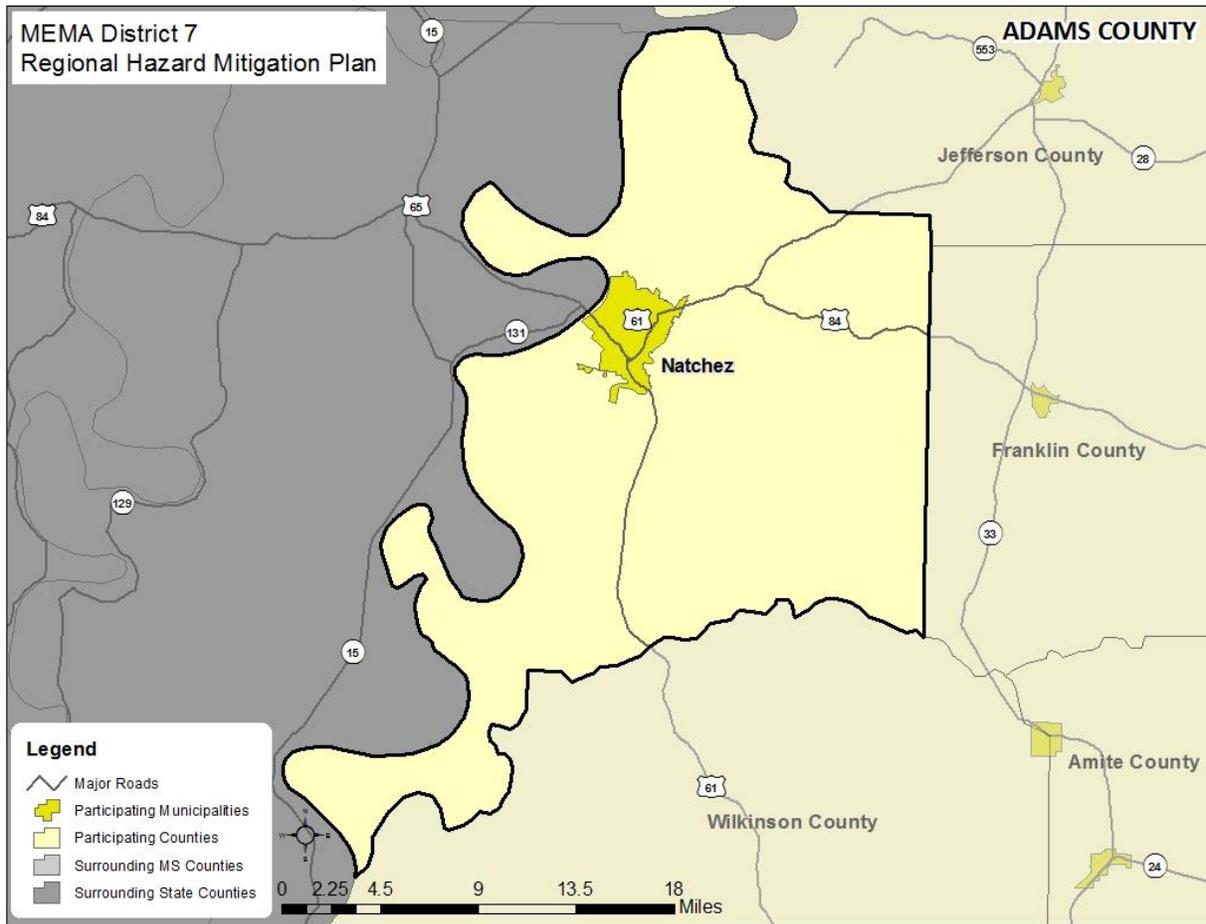
#### A.1.1 Geography and the Environment

Adams County is located in southwestern Mississippi. It comprises one city, City of Natchez, as well as many small unincorporated communities. An orientation map is provided as **Figure A.1**.

The county is located adjacent to the Mississippi River supplying diverse recreational activities. The total area of the county is 488 square miles, 25 square miles of which is water area.

Adams County enjoys four distinct seasons but the climate in the region is generally hot and humid compared to the rest of the United States given its latitude and relative proximity to the Gulf Coast. Precipitation is generally highest in winter months when the temperatures are moderately lower, but the likelihood of precipitation remains relatively constant throughout the year. Summers in the region can become fairly hot with average highs in the nineties and lows in the seventies. The region is also often susceptible to turbulent weather when warm, wet air from the Gulf of Mexico is pushed up into the region to mix with cooler air coming down from across the continent which can result in severe weather conditions. This is particularly true in the spring when seasons are changing and diverse weather patterns interact.

**FIGURE A.1: ADAMS COUNTY ORIENTATION MAP**



### A.1.2 Population and Demographics

According to the 2015 American Community Survey, Adams County has a population of 31,979 people. The county has seen a decrease in population between 2000 and 2015, and the population density is 69 people per square mile. Population counts from the U.S. Census Bureau for 2000 and 2010 and from the American Community Survey for 2015 for the county and participating jurisdictions are presented in **Table A.1**.

**TABLE A.1: POPULATION COUNTS FOR ADAMS COUNTY**

| Jurisdiction | 2000 Census Population | 2010 Census Population | 2015 American Community Survey Estimate | % Change 2000-2015 |
|--------------|------------------------|------------------------|---|--------------------|
| Adams County | 34,340                 | 32,297                 | 31,979                                  | -6.9%              |
| Natchez      | 18,464                 | 15,792                 | 15,474                                  | -16.2%             |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

Based on the 2010 Census, the median age of residents of Adams County is 41.1 years. The racial characteristics of the county are presented in **Table A.2**. Blacks or African Americans make up the majority of the population in the county, accounting for over 55 percent of the population.

**TABLE A.2: DEMOGRAPHICS OF ADAMS COUNTY**

| Jurisdiction | White, Percent | Black or African American, Percent | American Indian or Alaska Native, Percent | Asian, Percent | Native Hawaiian or Other Pacific Islander, Percent | Other Race, Percent | Two or More Races, percent | Persons of Hispanic Origin, Percent* |
|--------------|----------------|------------------------------------|---|----------------|--|---------------------|----------------------------|--------------------------------------|
| Adams County | 40.2%          | 55.5%                              | 0.1%                                      | 0.2%           | 0.0%   | 3.1%                | 0.8%                       | 5.9%                                 |
| Natchez      | 37.8%          | 60.2%                              | 0.0%                                      | 0.2%           | 0.0%   | 0.9%                | 0.9%                       | 1.7%                                 |

\*Hispanics may be of any race, so also are included in applicable race categories  
 Source: 2011-2015 American Community Survey 5-Year Estimates

### A.1.3 Housing

According to the 2010 U.S. Census, there are 14,656 housing units in Adams County, the majority of which are single family homes or mobile homes. Housing information for the county and municipality is presented in **Table A.3**. As shown in the table, the incorporated city has a similar percentage of seasonal housing units compared to the unincorporated county.

**TABLE A.3: HOUSING CHARACTERISTICS OF ADAMS COUNTY**

| Jurisdiction | Housing Units (2000) | Housing Units (2010) | Seasonal Units, Percent (2010) | Median Home Value (2011-2015) |
|--------------|----------------------|----------------------|--------------------------------|-------------------------------|
| Adams County | 15,175               | 14,656               | 2.7%                           | \$85,600                      |
| Natchez      | 8,479                | 7,932                | 2.0%                           | \$97,100                      |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

### A.1.4 Infrastructure

#### TRANSPORTATION

In Adams County, U.S. Highway 61 provides access to the north and south and U.S. Highway 84 provides access to the east and west.

Natchez-Adams County Airport (Hardy-Anders Field) is a general aviation airport located in the northern portion of Adams County.

A major freight rail line operates within Adams County. Natchez Railroad is a Class III Local railway that operates and runs east to west in the county. Business and industries rely on this line along with various other major highway routes as distribution of merchandises.

## **UTILITIES**

Electrical power in Adams County is provided by Southwest Mississippi Electric Power Association as well as Entergy Mississippi Inc.

Water and sewer service is provided by participating jurisdictions and/or community based associations, but unincorporated areas often rely on septic systems and wells in Adams County.

## **COMMUNITY FACILITIES**

There are a number of buildings and community facilities located throughout Adams County. According to the data collected for the vulnerability assessment (Section 6.4.1), there are 8 fire stations, 2 police stations, and 17 schools located within the county.

There are also 1 hospital and 8 medical care facilities located in Adams County. This includes Merit Health Natchez, a 179-bed short term acute facility located in Natchez.

Several educational institutions are found in Adams County. Alcorn State University has a location in Natchez and is a four-year undergraduate institution with several graduate programs. Copiah-Lincoln Community College is a two-year community college that has a location Natchez.

Museums based around the history and culture of the region are prevalent throughout the area. For example, the Natchez Museum of African American History and Culture tells the story of African American culture in the southern United States and is dedicated to exploring the societal contributions of people of African origin and descent.

Recreational opportunities exist throughout Adams County. The Homochitto National Forest comprises almost 200,000 acres of land and is partially located in Adams County. Visitors can camp, hike, hunt, and fish in the forest. In addition, St. Catherine Creek National Wildlife Refuge sits on roughly 25,000 acres and functions as a habitat for migratory waterfowl, birds, and other wildlife. This refuge is located almost completely in Adams County. Another prominent feature of the county is the Natchez Trace Parkway which begins in the City of Natchez and runs northeast to Nashville, Tennessee. This parkway commemorates the Old Natchez Trace which is an historic trail that was followed by Native Americans who were tracing bison along their migratory routes from the grazing pastures of central and western Mississippi to the salt licks of Tennessee.

The Mississippi River, which runs along the western border of the county, has played an integral part in the history of the county. The river acted as a major conduit for trade in the 19<sup>th</sup> century as plantations produced large quantities of cotton that could be easily shipped down to ports such as New Orleans. Today, the river is still an important part of the local economy as products are shipped worldwide out of the Natchez port. Apart from the Mississippi River there are multiple water based refuges, activities, and recreational features focused on local water bodies in the region. For instance, in Adams County, the Old River, Lake St. John, and Lake Concordia all offer excellent boating opportunities. There are also numerous other small lakes, creeks, and other water bodies throughout the region that offer the outstanding outdoor recreational opportunities for which the region is known.

## A.1.5 Land Use

Adams County has a blend of old and new development that contributes to physical, cultural, and economic attributes throughout the region. There is one incorporated municipality located in the county. This area is where the county's population is generally concentrated. The incorporated area is also where many of the businesses, commercial uses, and institutional uses are located. Land uses in the balance of the county generally consist of rural residential development, agricultural uses, and recreational areas. There are multiple county- and regional-based agencies that serve to coordinate growth and promote economic development. Local land use and associated regulations are further discussed in *Section 7: Capability Assessment*.

## A.1.6 Employment and Industry

According to the U.S. Census Bureau's American Community Survey (ACS), in 2015, Adams County had an average annual employment of 25,935 workers and an average unemployment rate of 11.3 percent (compared to 10.3 percent for the state). In 2015, Educational services, and health care and social assistance accounted for 23.3 percent of the county's workforce followed by Retail trade (15.0%) and Arts, entertainment, recreation, and accommodation and food services (10.8%). The average annual median household in 2015 for Adams County was \$28,869 compared to \$39,665 in the State of Mississippi.

## A.2 ADAMS COUNTY RISK ASSESSMENT

This subsection includes hazard profiles for each of the significant hazards identified in Section 4: *Hazard Identification* as they pertain to Adams County. Each hazard profile includes a description of the hazard's location and extent, notable historical occurrences, and the probability of future occurrences. Additional information can be found in Section 5: *Hazard Profiles*.

### ***FLOOD-RELATED HAZARDS***

#### **A.2.1 Dam and Levee Failure**

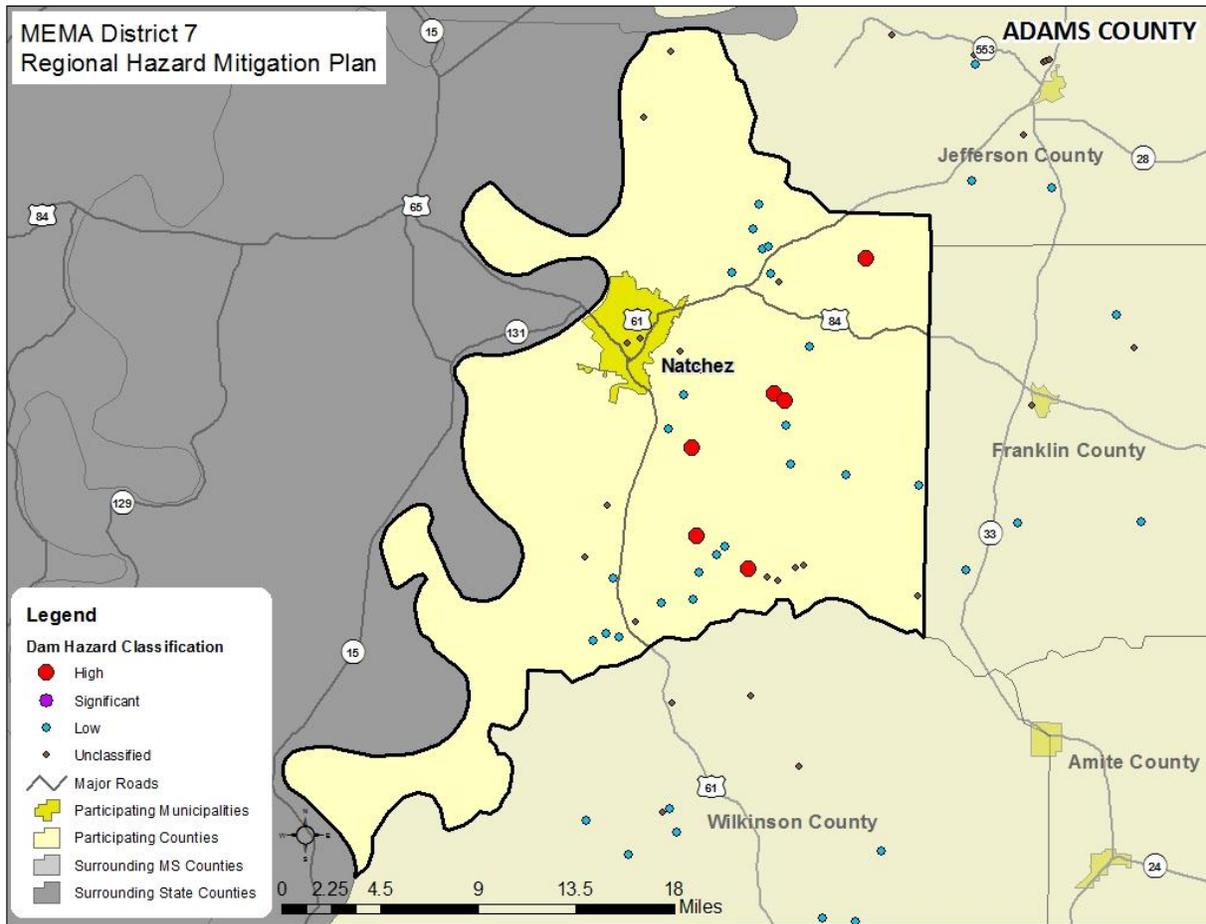
##### ***LOCATION AND SPATIAL EXTENT***

According to the Mississippi Department of Environmental Quality, there are six high hazard dams in Adams County.<sup>1</sup> **Figure A.2** and **Figure A.3** show the location of these high hazard dams as well as mapped inundation areas, and **Table A.4** lists them by name.

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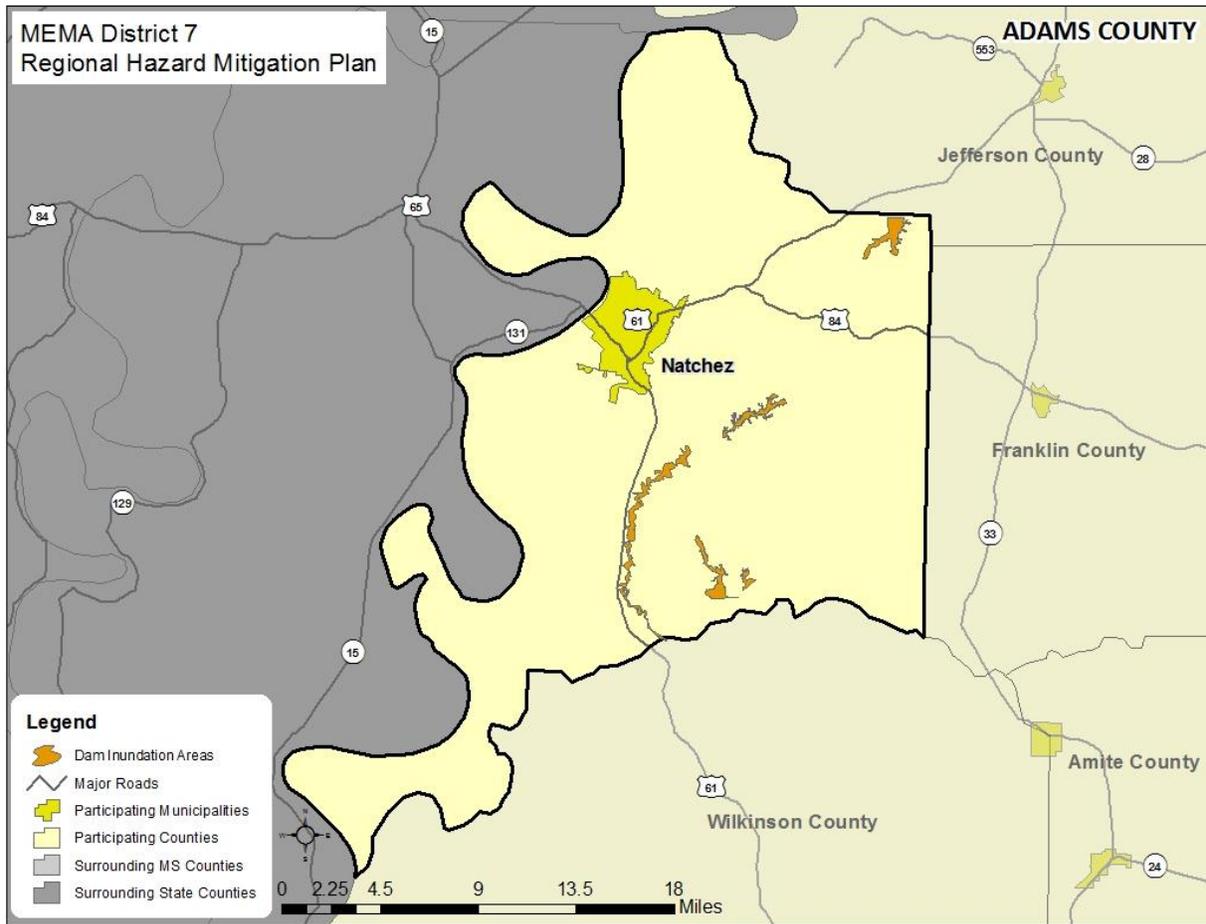
<sup>1</sup> The list of high hazard dams obtained from the Mississippi Department of Environmental Quality was reviewed and amended by local officials to the best of their knowledge.

FIGURE A.2: ADAMS COUNTY HIGH HAZARD DAM LOCATIONS



Source: Mississippi Department of Environmental Quality

**FIGURE A.3: ADAMS COUNTY DAM INUNDATION AREAS**



Source: Mississippi Department of Environmental Quality

**TABLE A.4: ADAMS COUNTY HIGH HAZARD DAMS**

| Dam Name                        | Hazard Potential | Max Storage (ac/ft) | Dam Height (ft) |
|---------------------------------|------------------|---------------------|-----------------|
| <b>Adams County</b>             |                  |                     |                 |
| NATCHEZ STATE PARK DAM          | High             | 5,800               | 64.0            |
| SECOND CREEK WS STR NO. 10B DAM | High             | 1,127               | 40.0            |
| SECOND CREEK WS STR NO. 12 DAM  | High             | 1,630               | 31.0            |
| SECOND CREEK WS STR NO. 6A DAM  | High             | 3,087               | 53.0            |
| SECOND CREEK WS STR NO. 6B DAM  | High             | 4,155               | 52.0            |
| SECOND CREEK WS STR NO. 7 DAM   | High             | 9,925               | 52.0            |

Source: Mississippi Department of Environmental Quality

**HISTORICAL OCCURRENCES**

According to the Mississippi State Hazard Mitigation Plan, there has been one dam failure reported in Adams County. Although major damage was not reported with this event, several breach scenarios in the region could be catastrophic.

Table A.5 below provides a brief description of the one reported dam failure.

**TABLE A.5: ADAMS COUNTY DAM FAILURES (1982-2012)**

| Date       | County | Structure Name | Cause of Failure |
|------------|--------|----------------|------------------|
| April 1983 | Adams  | Robins Lake    | Breached         |

Source: Mississippi Department of Environmental Quality

### **PROBABILITY OF FUTURE OCCURRENCES**

Given the current dam inventory and historic data, a dam breach is possible (between 1 and 10 percent annual probability) in the future. As has been demonstrated in the past, regular monitoring is necessary to prevent these events.

## **A.2.2 Erosion**

### **LOCATION AND SPATIAL EXTENT**

Erosion in Adams County is typically caused by flash flooding events. Unlike coastal areas, areas of concern for erosion in Adams County are primarily rivers/streams and reservoirs. Generally, vegetation also helps to prevent erosion in the area, but in recent years, erosion has become a growing threat to many of the participating counties and jurisdictions.

At this time, there is no regional or state-level data available on localized areas of erosion so it is a challenge to identify particularly prone areas on a wider geographic scale. However, a few areas of concern were reported by members of the hazard mitigation council and other local sources. Locations along the Mississippi River in Adams County are known to be especially at-risk, but there are locations in many areas within the region where erosion is prominent.

For example, in Adams County, in Natchez, there have been several instances where abrupt erosion events caused property damage and loss of life due to the silt-like loess soil in the area. Some notable areas that were identified are along Martin Luther King Jr. Road<sup>2</sup> and along the railroad tracks near the Natchez-Adams County Port.<sup>3</sup>

### **HISTORICAL OCCURRENCES**

Several sources were vetted to identify areas of erosion in Adams County. This includes searching local newspapers, interviewing local officials, and reviewing previous hazard mitigation plans. Although the locations identified above are representative of areas where erosion has taken place in the past, it is also important to note significant events that had large impacts. One major historical erosion occurrence was reported in Natchez in 1980 when a severe and sudden erosion event sent a slide of mud and debris into

<sup>2</sup> Madden, Cain. *County watches erosion near MLK closely*. The Natchez Democrat. February 13, 2017. <http://www.natchezdemocrat.com/2017/02/13/county-watches-erosion-near-mlk-closely/>

<sup>3</sup> Hogan, Vershal. *Riverbank erosion threatens rail line*. The Natchez Democrat. May 1, 2014. <http://www.natchezdemocrat.com/2014/05/01/riverbank-erosion-threatens-rail-line/>

a bar causing more than \$100,000 in damage and two deaths. Retreat in some areas has been estimated at about 30 to 50 feet over the past 120 years.<sup>4</sup>

These incidents have caused major problems as bridges have become damaged in many instances and made unsafe for emergency services vehicles to cross during and after storm events. This delays response times and critical life-safety support. In addition, the shutdown of roads has hurt local communities economically as trade and commerce are temporarily shut down as bridges are repaired. It has also caused disruption to daily activities for local school boards who must re-route buses around affected areas, causing additional fuel resources to be expended and increasing drive times for students.

### **PROBABILITY OF FUTURE OCCURRENCES**

Erosion remains a natural, dynamic, and continuous process for Adams County, and it will continue to occur. The annual probability level assigned for erosion is likely (between 10 and 100 percent annually).

## **A.2.3 Flood**

### **LOCATION AND SPATIAL EXTENT**

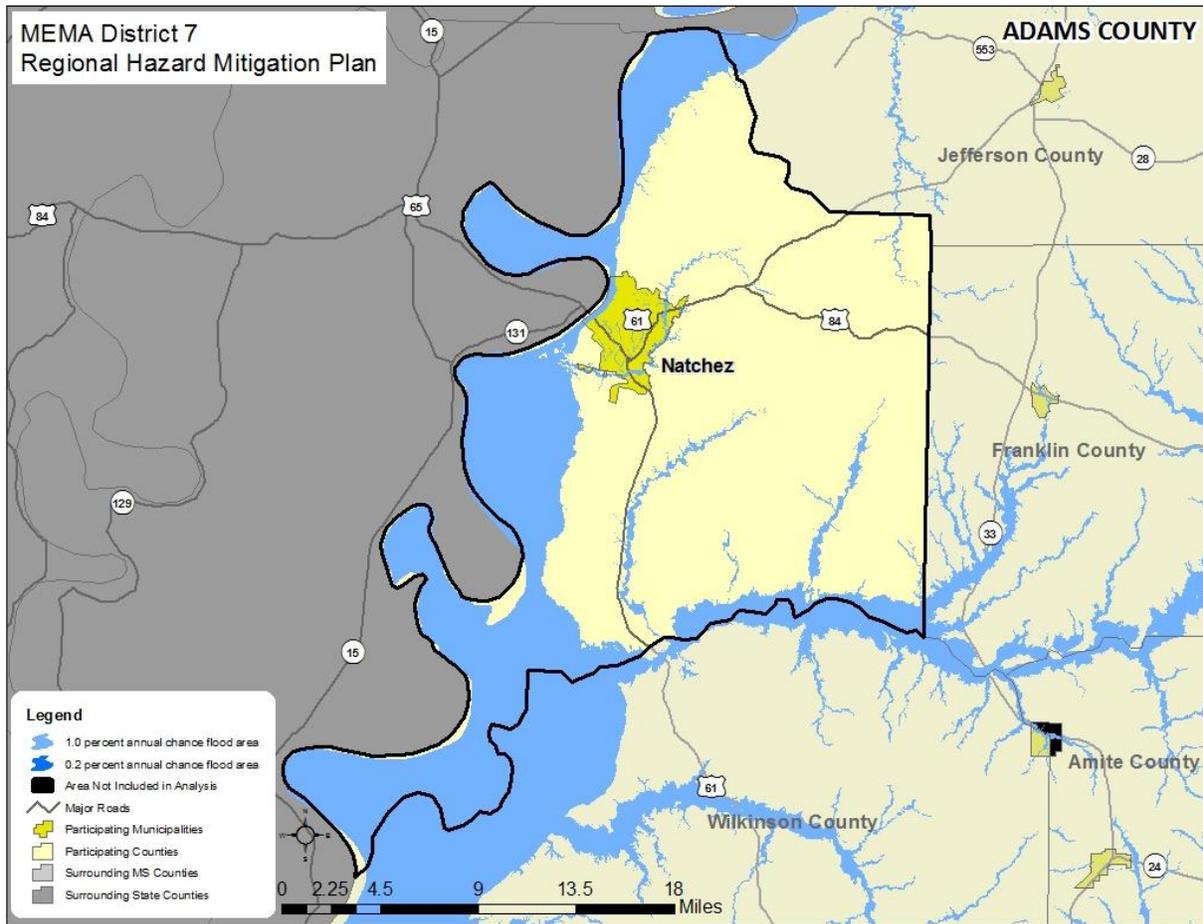
There are areas in Adams County that are susceptible to flood events. Special flood hazard areas in the county were mapped using Geographic Information System (GIS) and FEMA Digital Flood Insurance Rate Maps (DFIRM).<sup>5</sup> This includes Zone A (1-percent annual chance floodplain), Zone AE (1-percent annual chance floodplain with elevations), and Zone X-500 (0.2-percent annual chance floodplain). According to GIS analysis, of the 490 square miles that make up Adams County, there are 169.77 square miles of land in zones A and AE (1-percent annual chance floodplain/100-year floodplain) and 0.04 square miles of land in zone X-500 (0.2 percent annual change floodplain/500-year floodplain).

These flood zone values account for 34.7 percent of the total land area in Adams County. It is important to note that while FEMA digital flood data is recognized as best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Flooding and flood-related losses often do occur outside of delineated special flood hazard areas. **Figure A.4** illustrates the location and extent of currently mapped special flood hazard areas for Adams County based on best available FEMA Digital Flood Insurance Rate Map (DFIRM) data.

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<sup>4</sup> Treadwell, David. *Erosion Imperils Old Mississippi Mansions*. Los Angeles Times. June 9, 1985. [http://articles.latimes.com/1985-06-09/news/mn-9849\\_1\\_erosion-problems](http://articles.latimes.com/1985-06-09/news/mn-9849_1_erosion-problems)

<sup>5</sup> The county-level DFIRM data used for Adams County were updated in 2011.

**FIGURE A.4: SPECIAL FLOOD HAZARD AREAS IN ADAMS COUNTY**

Source: Federal Emergency Management Agency

### **HISTORICAL OCCURRENCES**

Floods were at least partially responsible for nine disaster declarations in Adams County in 1973, 1974, 1979, 1980, 1990, 1991, 2009, 2011, and 2017.<sup>6</sup> Information from the National Climatic Data Center was used to ascertain additional historical flood events. The National Climatic Data Center reported a total of 40 events in Adams County since 1997.<sup>7</sup> A summary of these events is presented in **Table A.6**. These events accounted for almost \$4.5 million (2017 dollars) in property damage.<sup>8</sup> Specific information on flood events, including date, type of flooding, and deaths and injuries, can be found in **Table A.7**.

<sup>6</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>7</sup> These flood events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported. As additional local data becomes available, this hazard profile will be amended.

<sup>8</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE A.6: SUMMARY OF FLOOD OCCURRENCES IN ADAMS COUNTY**

| Location                  | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|---------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Natchez                   | 14                    | 0/0             | \$564,463              | \$28,223                   |
| Unincorporated Area       | 26                    | 0/0             | \$3,932,694            | \$196,635                  |
| <b>ADAMS COUNTY TOTAL</b> | <b>40</b>             | <b>0/0</b>      | <b>\$4,497,157</b>     | <b>\$224,858</b>           |

Source: National Climatic Data Center

**TABLE A.7: HISTORICAL FLOOD EVENTS IN ADAMS COUNTY**

| Location                   | Date       | Type        | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-------------|-----------------|------------------|
| <b>Natchez</b>             |            |             |                 |                  |
| NATCHEZ                    | 4/27/1997  | Flash Flood | 0/0             | \$0              |
| NATCHEZ                    | 2/15/2003  | Flash Flood | 0/0             | \$4,006          |
| NATCHEZ                    | 11/27/2003 | Flash Flood | 0/0             | \$2,651          |
| NATCHEZ                    | 2/5/2004   | Flash Flood | 0/0             | \$131,323        |
| NATCHEZ                    | 5/14/2004  | Flash Flood | 0/0             | \$0              |
| NATCHEZ                    | 8/13/2010  | Heavy Rain  | 0/0             | \$0              |
| NATCHEZ                    | 8/13/2010  | Flash Flood | 0/0             | \$5,600          |
| NATCHEZ                    | 8/18/2010  | Flash Flood | 0/0             | \$123,207        |
| NATCHEZ                    | 3/9/2011   | Flash Flood | 0/0             | \$218,846        |
| NATCHEZ                    | 2/3/2012   | Flash Flood | 0/0             | \$64,444         |
| NATCHEZ                    | 1/10/2013  | Flash Flood | 0/0             | \$0              |
| NATCHEZ                    | 4/6/2014   | Flash Flood | 0/0             | \$0              |
| NATCHEZ                    | 5/28/2014  | Flash Flood | 0/0             | \$10,278         |
| NATCHEZ                    | 3/10/2016  | Flash Flood | 0/0             | \$4,107          |
| <b>Unincorporated Area</b> |            |             |                 |                  |
| ADAMS (ZONE)               | 3/10/1997  | Flood       | 0/0             | \$0              |
| COUNTYWIDE                 | 1/29/1999  | Flash Flood | 0/0             | \$74,414         |
| COUNTYWIDE                 | 4/2/2000   | Flash Flood | 0/0             | \$14,275         |
| COUNTYWIDE                 | 3/1/2001   | Flash Flood | 0/0             | \$0              |
| COUNTYWIDE                 | 3/2/2001   | Flash Flood | 0/0             | \$13,878         |
| COUNTYWIDE                 | 3/2/2001   | Flash Flood | 0/0             | \$41,633         |
| COUNTYWIDE                 | 3/2/2001   | Flash Flood | 0/0             | \$34,694         |
| COUNTYWIDE                 | 9/3/2001   | Flash Flood | 0/0             | \$0              |
| COUNTYWIDE                 | 11/27/2001 | Flash Flood | 0/0             | \$0              |
| COUNTYWIDE                 | 11/28/2001 | Flash Flood | 0/0             | \$0              |
| COUNTYWIDE                 | 9/25/2005  | Flash Flood | 0/0             | \$61,500         |
| SIBLEY                     | 9/2/2008   | Flash Flood | 0/0             | \$2,235,311      |
| KINGSTON                   | 7/26/2010  | Flash Flood | 0/0             | \$3,365          |
| SIBLEY                     | 8/18/2010  | Flash Flood | 0/0             | \$1,120,067      |
| SIBLEY                     | 8/18/2010  | Heavy Rain  | 0/0             | \$0              |
| SIBLEY                     | 8/18/2010  | Heavy Rain  | 0/0             | \$0              |
| SIBLEY                     | 8/18/2010  | Heavy Rain  | 0/0             | \$0              |
| PINE RIDGE                 | 5/9/2011   | Flood       | 0/0             | \$173,142        |
| PINE RIDGE                 | 6/1/2011   | Flood       | 0/0             | \$71,498         |

| Location   | Date      | Type        | Deaths/Injuries | Property Damage* |
|------------|-----------|-------------|-----------------|------------------|
| JOHNSVILLE | 2/3/2012  | Flash Flood | 0/0             | \$7,518          |
| CRANFIELD  | 7/28/2012 | Flash Flood | 0/0             | \$0              |
| CRANFIELD  | 8/10/2012 | Flash Flood | 0/0             | \$0              |
| LINWOOD    | 8/11/2014 | Flash Flood | 0/0             | \$5,140          |
| LINWOOD    | 3/18/2016 | Flash Flood | 0/0             | \$10,268         |
| KINGSTON   | 8/12/2016 | Flash Flood | 0/0             | \$20,305         |
| SIBLEY     | 8/12/2016 | Flash Flood | 0/0             | \$45,687         |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

### HISTORICAL SUMMARY OF INSURED FLOOD LOSSES

According to FEMA flood insurance policy records as of March 31, 2017, there have been 120 flood losses reported in Adams County through the National Flood Insurance Program (NFIP) since 1978, totaling almost \$1.7 million in claims payments. A summary of these figures for the county is provided in **Table A.8**. It should be emphasized that these numbers include only those losses to structures that were insured through the NFIP policies, and for losses in which claims were sought and received. It is likely that many additional instances of flood loss in Adams County were either uninsured, denied claims payment, or not reported.

**TABLE A.8: SUMMARY OF INSURED FLOOD LOSSES IN ADAMS COUNTY**

| Location                  | Number of Policies | Flood Losses | Claims Payments       |
|---------------------------|--------------------|--------------|-----------------------|
| Natchez                   | 33                 | 23           | \$381,250.37          |
| Unincorporated Area       | 30                 | 97           | \$1,367,517.47        |
| <b>ADAMS COUNTY TOTAL</b> | <b>63</b>          | <b>120</b>   | <b>\$1,748,767.84</b> |

Source: National Flood Insurance Program

### REPETITIVE LOSS PROPERTIES

According to the Mississippi Emergency Management Agency, there are 29 non-mitigated repetitive loss properties located in Adams County, which accounted for 72 losses and over \$957,000 in claims payments under the NFIP. The average claim amount for these properties is \$13,294. Of the 29 properties, 17 are single family, 2 are assumed condominium, and 10 are non-residential. Without mitigation, these properties will likely continue to experience flood losses. **Table A.9** presents detailed information on repetitive loss properties and NFIP claims and policies for Adams County.

**TABLE A.9: REPETITIVE LOSS PROPERTIES IN ADAMS COUNTY**

| Location            | Number of Properties | Types of Properties                      | Number of Losses | Building Payments | Content Payments | Total Payments | Average Payment |
|---------------------|----------------------|--|------------------|-------------------|------------------|----------------|-----------------|
| Natchez             | 7                    | 6 single family; 1 other non-residential | 18               | \$180,061.98      | \$61,659.81      | \$241,721.79   | \$13,428.99     |
| Unincorporated Area | 22                   | 11 single family; 2                      | 54               | \$614,450.20      | \$101,011.20     | \$715,461.30   | \$13,249.28     |

|                               |           |  |           |                     |                     |                     |                    |
|-------------------------------|-----------|--|-----------|---------------------|---------------------|---------------------|--------------------|
|                               |           | assumed<br>condo; 9<br>other non-<br>residential |           |                     |                     |                     |                    |
| <b>ADAMS COUNTY<br/>TOTAL</b> | <b>29</b> |  | <b>72</b> | <b>\$794,512.18</b> | <b>\$162,671.01</b> | <b>\$957,183.09</b> | <b>\$13,294.21</b> |

Source: National Flood Insurance Program

**PROBABILITY OF FUTURE OCCURRENCES**

Flood events will remain a threat in Adams County, and the probability of future occurrences will remain highly likely (100 percent annual probability). The probability of future flood events based on magnitude and according to best available data is illustrated in the figure above, which indicates those areas susceptible to the 1-percent annual chance flood (100-year floodplain).

It can be inferred from the floodplain location maps, previous occurrences, and repetitive loss properties that risk varies throughout the county. For example, areas along the western border of the county have more floodplain and thus a higher risk of flood than the rest of the county. Flood is not the greatest hazard of concern but will continue to occur and cause damage. Therefore, mitigation actions may be warranted, particularly for repetitive loss properties.

**FIRE-RELATED HAZARDS**

**A.2.4 Drought**

**LOCATION AND SPATIAL EXTENT**

Drought typically covers a large area and cannot be confined to any geographic or political boundaries. Furthermore, it is assumed that Adams County would be uniformly exposed to drought, making the spatial extent potentially widespread. It is also notable that drought conditions typically do not cause significant damage to the built environment but may exacerbate wildfire conditions.

**HISTORICAL OCCURRENCES**

According to the U.S. Drought Monitor, Adams County had drought levels of Severe or worse in 8 of the last 17 years (January 2000-December 2016). **Table A.10** shows the most severe drought classification for each year, according to U.S. Drought Monitor classifications. It should be noted that the U.S. Drought Monitor also estimates what percentage of the county is in each classification of drought severity. For example, the most severe classification reported may be exceptional but a majority of the county may actually be in a less severe condition.

**TABLE A.10: HISTORICAL DROUGHT OCCURRENCES IN ADAMS COUNTY**

Abnormally Dry (D0) Moderate Drought (D1) Severe Drought (D2) Extreme Drought (D3) Exceptional Drought (D4)

| Year | Adams County |
|------|--------------|
| 2000 | EXCEPTIONAL  |

| Year | Adams County |
|------|--------------|
| 2001 | MODERATE     |
| 2002 | SEVERE       |
| 2003 | MODERATE     |
| 2004 | ABNORMAL     |
| 2005 | MODERATE     |
| 2006 | SEVERE       |
| 2007 | MODERATE     |
| 2008 | SEVERE       |
| 2009 | MODERATE     |
| 2010 | SEVERE       |
| 2011 | EXTREME      |
| 2012 | ABNORMAL     |
| 2013 | MODERATE     |
| 2014 | MODERATE     |
| 2015 | EXTREME      |
| 2016 | EXTREME      |

Source: United States Drought Monitor

Some additional anecdotal information was provided from the National Climatic Data Center on droughts in Adams County.

**Summer to Fall 2006** – During a four and a half month period, from June to the middle of October, abnormally dry conditions prevailed across most of the Jackson, MS County Warning Area (CWA). Widespread drought conditions were reported across the area during this time period. The U.S. Drought Monitor classified the drought as extreme (D3) over Southeast Mississippi. Drought conditions in the region peaked in intensity during early August over this area.

**Summer to Fall 2010** – Very dry conditions continued across central Mississippi during most of October. There were some rains that came late in the month which provided some temporary relief. Rainfall amounts ranged from a half to two inches with locally higher amounts. Most locations were 1 to 3 inches below normal for the month. The dry stretch resulted in severe (D2) drought conditions to expand during the month with even the portions of extreme (D3) drought conditions expanding as well. Crops were put under stress under the warm and dry conditions.

**Fall 2015** – The very dry conditions continued across Central Mississippi in October. The extended dry stretch resulted in an area of Severe (D2) drought developing across the area by October 6th. The drought intensified and Extreme (D3) drought conditions developed by October 13th. Approximately 25 to 50 percent of normal rainfall occurred across this area from August into mid-October. Crops were put under more stress from the dry and hot conditions.

**Fall to Winter 2016** – Dry conditions continued into November, which created continued stress on crops. The drought continued to get worse across the state through the month before some relief came in the form of showers and thunderstorms near the end of November.

**PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that Adams County has a probability level of possible (between 1 and 10 percent annual probability) for future drought events. However, the extent (or magnitude) of drought and the amount of geographic area covered by drought, varies with each year. Historic information indicates that there is a much lower probability for extreme, long-lasting drought conditions.

**A.2.5 Lightning**

**LOCATION AND SPATIAL EXTENT**

Lightning occurs randomly, therefore it is impossible to predict where and with what frequency it will strike. It is assumed that all of Adams County is uniformly exposed to lightning.

**HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, there have been two recorded lightning events in Adams County since 2007.<sup>9</sup> These events resulted in almost \$181,000 (2017 dollars) in damages, as listed in summary **Table A.11**.<sup>10</sup> Detailed information on historical lightning events can be found in **Table A.12**.

It is certain that more than two events have impacted the county. Many of the reported events are those that cause damage, and it should be expected that damages are likely much higher for this hazard than what is reported.

**TABLE A.11: SUMMARY OF LIGHTNING OCCURRENCES IN ADAMS COUNTY**

| Location                  | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|---------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Natchez                   | 1                     | 0/0             | \$176,410              | \$17,641                   |
| Unincorporated Area       | 1                     | 0/0             | \$4,486                | \$641                      |
| <b>ADAMS COUNTY TOTAL</b> | <b>2</b>              | <b>0/0</b>      | <b>\$180,896</b>       | <b>\$18,282</b>            |

Source: National Climatic Data Center

**TABLE A.12: HISTORICAL LIGHTNING OCCURRENCES IN ADAMS COUNTY**

| Location       | Date      | Deaths/Injuries | Property Damage* | Details  |
|----------------|-----------|-----------------|------------------|--|
| <b>Natchez</b> |           |                 |                  |  |
| NATCHEZ        | 8/27/2007 | 0/0             | \$176,410        | Lightning struck a tree and caused it to fall through a home and onto a vehicle. |

<sup>9</sup> These lightning events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is certain that additional lightning events have occurred in Adams County. As additional local data becomes available, this hazard profile will be amended.

<sup>10</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| Location                   | Date     | Deaths/<br>Injuries | Property<br>Damage* | Details   |
|----------------------------|----------|---------------------|---------------------|---|
| <b>Unincorporated Area</b> |          |                     |                     |   |
| JOHNSVILLE                 | 7/8/2010 | 0/0                 | \$4,486             | A home was struck by lightning which caused some electrical damage. |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

**PROBABILITY OF FUTURE OCCURRENCES**

Although there was not a high number of historical lightning events reported in Adams County via NCDC data, it is a regular occurrence accompanied by thunderstorms. In fact, lightning events will assuredly happen on an annual basis, though not all events will cause damage. According to Vaisala’s U.S. National Lightning Detection Network (NLDN), Adams County is located in an area of the country that experienced an average of 12 to 20 lightning flashes per square mile per year between 2007 and 2016. Therefore, the probability of future events is highly likely (100 percent annual probability). It can be expected that future lightning events will continue to threaten life and cause minor property damages throughout the county.

**A.2.6 Wildfire**

**LOCATION AND SPATIAL EXTENT**

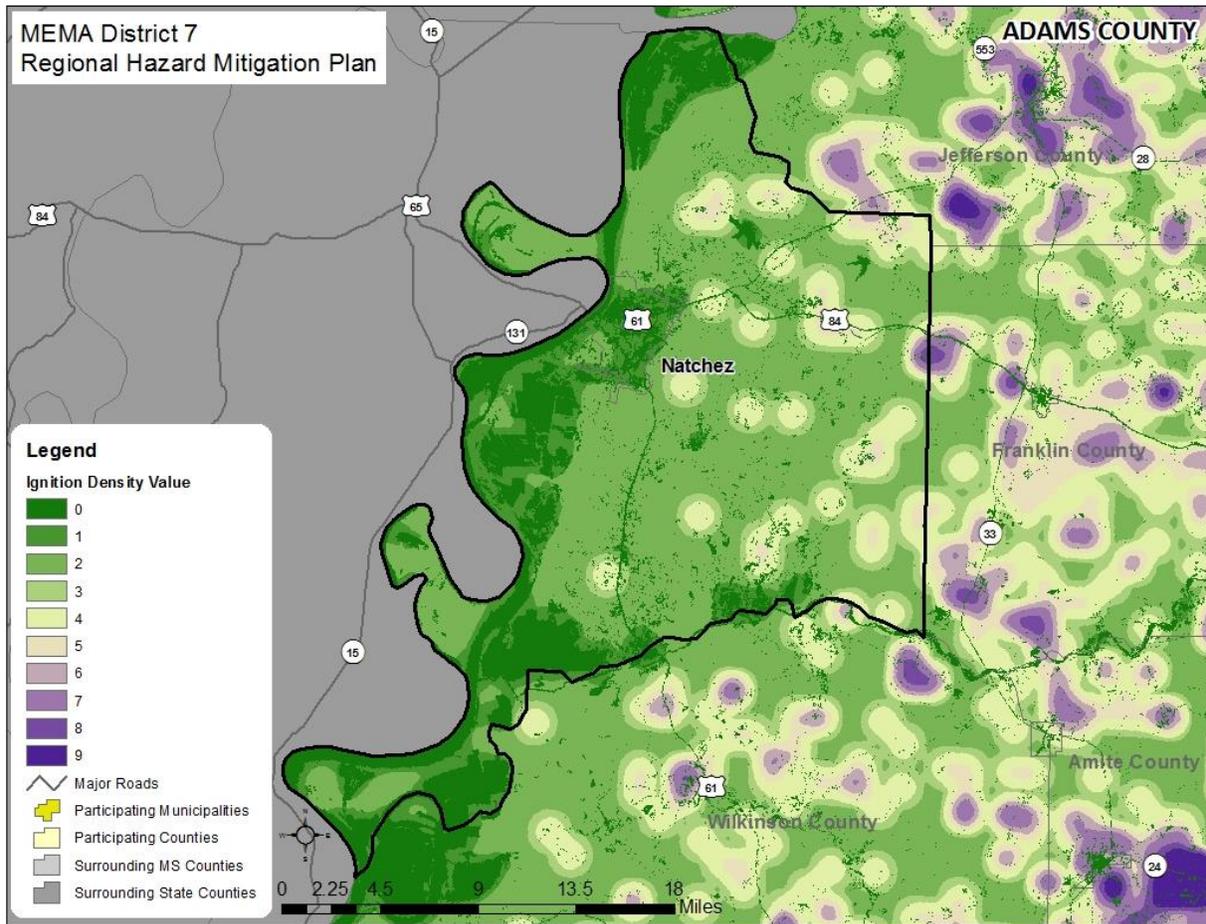
The entire county is at risk to a wildfire occurrence. However, several factors such as drought conditions or high levels of fuel on the forest floor, may make a wildfire more likely. Furthermore, areas in the urban-wildland interface are particularly susceptible to fire hazard as populations abut formerly undeveloped areas. The Wildfire Ignition Density data shown in the figure below give an indication of historic location.

**HISTORICAL OCCURRENCES**

Figure A.5 shows the Wildfire Ignition Density in Adams County based on data from the Southern Wildfire Risk Assessment. This data is based on historical fire ignitions and the likelihood of a wildfire igniting in an area. Occurrence is derived by modeling historic wildfire ignition locations to create an average ignition rate map. This is measured in the number of fires per year per 1,000 acres.<sup>11</sup>

<sup>11</sup> Southern Wildfire Risk Assessment, 2014.

**FIGURE A.5: WILDFIRE IGNITION DENSITY IN ADAMS COUNTY**



Source: Southern Wildfire Risk Assessment

Based on data from the Mississippi Forestry Commission from 2007 to 2016, Adams County experienced an average of 2.2 wildfires annually which burned a combined 51.2 acres per year. The data indicate that most of these fires were small to moderate in size, averaging about 23.3 acres per fire. **Table A.13** provides a summary of wildfire occurrences in Adams County and **Table A.14** lists the number of reported wildfire occurrences in the county between the years 2007 and 2016.

**TABLE A.13: SUMMARY TABLE OF ANNUAL WILDFIRE OCCURRENCES (2007-2016)\***

|   | Adams County |
|---|--------------|
| Average Number of Fires per year        | 2.2          |
| Average Number of Acres Burned per year | 51.2         |
| Average Number of Acres Burned per fire | 23.3         |

\*These values reflect averages over a 10-year period.

Source: Mississippi Forestry Commission

**TABLE A.14: HISTORICAL WILDFIRE OCCURRENCES IN ADAMS COUNTY**

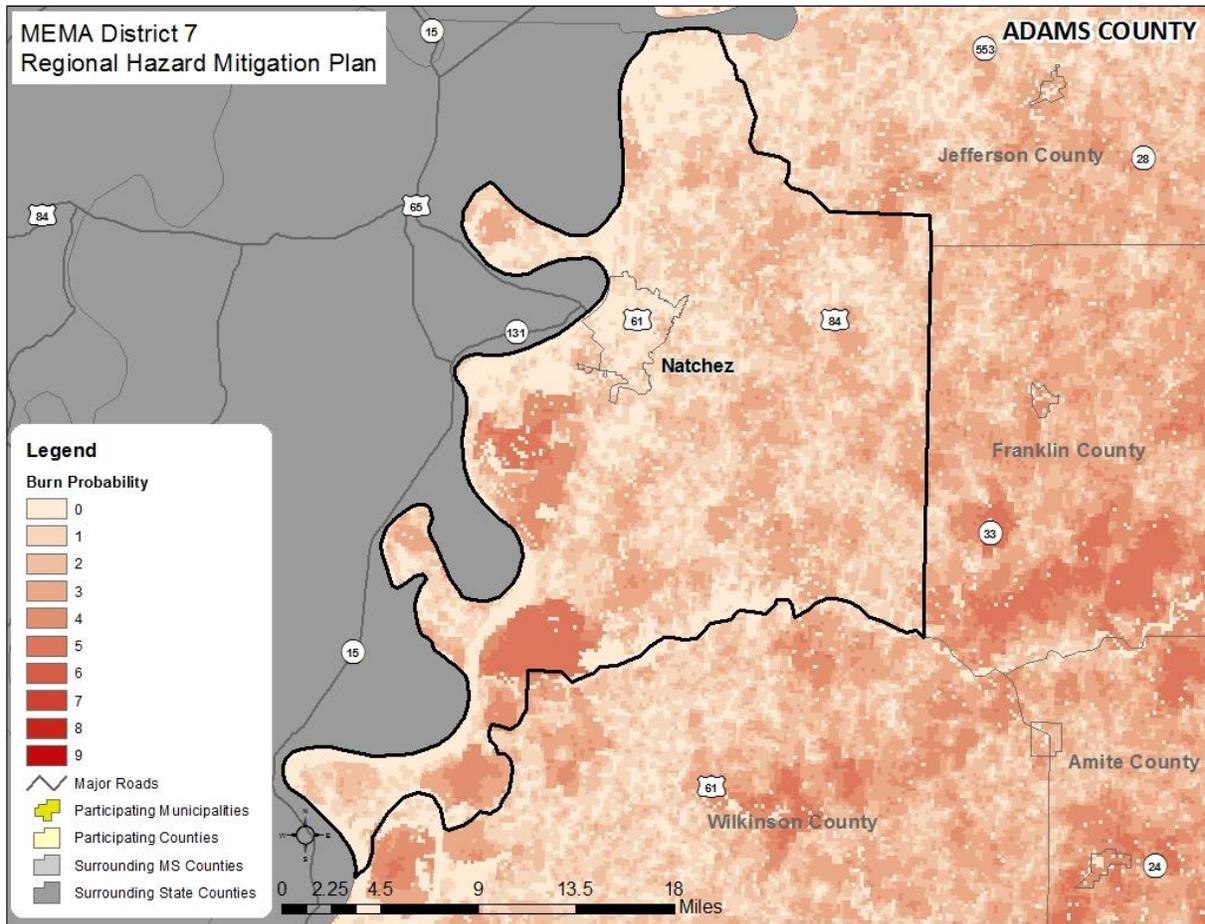
| Year                   | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|------------------------|------|------|------|------|------|------|------|------|------|------|
| <b>Adams County</b>    |      |      |      |      |      |      |      |      |      |      |
| Number of Fires        | 2    | 5    | 1    | 1    | 2    | 1    | 0    | 3    | 3    | 4    |
| Number of Acres Burned | 8    | 249  | 10   | 1    | 3    | 1    | 0    | 79   | 77   | 84   |

Source: Mississippi Forestry Commission

### **PROBABILITY OF FUTURE OCCURRENCES**

Wildfire events will be an ongoing occurrence in Adams County. **Figure A.6** shows that there is some probability a wildfire will occur throughout the county. However, the likelihood of wildfires increases during drought cycles and abnormally dry conditions. Fires are likely to stay small in size but could increase due to local climate and ground conditions. Dry, windy conditions with an accumulation of forest floor fuel (potentially due to ice storms or lack of fire) could create conditions for a large fire that spreads quickly. It should also be noted that some areas do vary somewhat in risk. For example, highly developed areas are less susceptible unless they are located near the urban-wildland boundary. The risk will also vary due to assets. Areas in the urban-wildland interface will have much more property at risk, resulting in increased vulnerability and need to mitigate compared to rural, mainly forested areas. The probability assigned to Adams County for future wildfire events is possible (between 1 and 10 percent annual probability).

**FIGURE A.6: BURN PROBABILITY IN ADAMS COUNTY**



Source: Southern Wildfire Risk Assessment

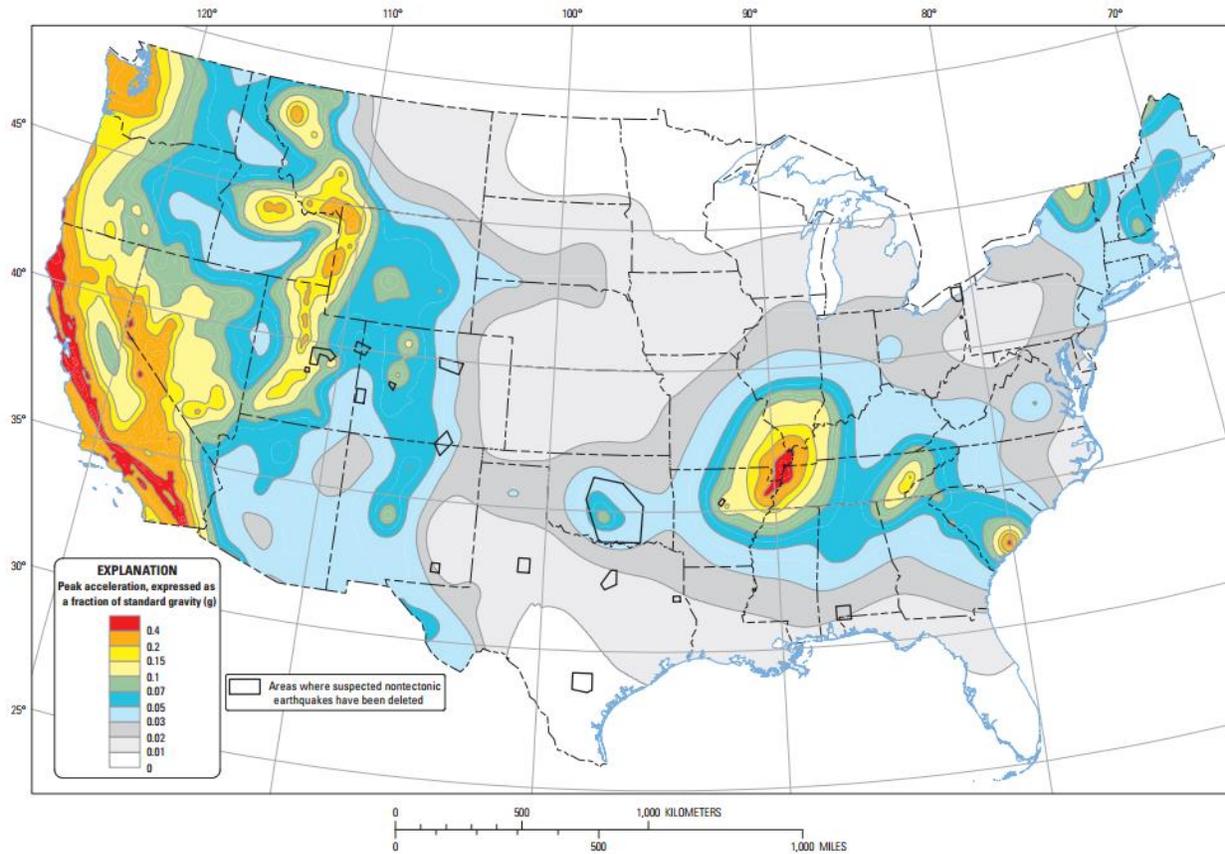
## **GEOLOGIC HAZARDS**

### **A.2.7 Earthquake**

#### **LOCATION AND SPATIAL EXTENT**

Figure A.7 shows the intensity level associated with Adams County, based on the national USGS map of peak acceleration with 10 percent probability of exceedance in 50 years. It is the probability that ground motion will reach a certain level during an earthquake. The data show peak horizontal ground acceleration (the fastest measured change in speed, for a particle at ground level that is moving horizontally due to an earthquake) with a 10 percent probability of exceedance in 50 years. The map was compiled by the U.S. Geological Survey (USGS) Geologic Hazards Team, which conducts global investigations of earthquake, geomagnetic, and landslide hazards. According to this map, Adams County lies within an approximate zone of level “0.01” to “0.03” ground acceleration. This indicates that the county exists within an area of low seismic risk.

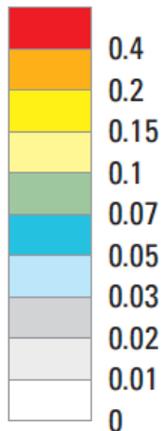
**FIGURE A.7: PEAK ACCELERATION WITH 10 PERCENT PROBABILITY OF EXCEEDANCE IN 50 YEARS**



**Ten-percent probability of exceedance in 50 years map of peak ground acceleration**

**EXPLANATION**

Peak acceleration, expressed as a fraction of standard gravity (g)



Areas where suspected nontectonic earthquakes have been deleted

Source: United States Geological Survey, 2014

The primary source of potential damage to Adams County from an earthquake is the New Madrid Seismic Zone (NMSZ). Historically, a series of earthquakes in 1811 and 1812 demonstrated that this fault zone can produce high magnitude seismic events, sometimes on the scale of a 7.5-8.0 on the Richter scale. The biggest challenge with earthquakes that occur in this area of seismic activity is predicting the recurrence of earthquakes emanating from this zone. Although the magnitude of earthquakes from the NMSZ can be large, they occur very irregularly and fairly infrequently. This makes it extremely difficult to project when they will occur.

It should also be noted that the State of Mississippi Hazard Mitigation Plan identifies certain areas of concern for liquefaction and lists the counties and corresponding zones within those counties that have the highest liquefaction potential. Adams County does not have any identified liquefaction potential risk.

**HISTORICAL OCCURRENCES**

At least two earthquakes are known to have affected Adams County since 1811. The strongest of these measured a VI on the Modified Mercalli Intensity (MMI) scale. **Table A.15** provides a summary of earthquake events reported by the National Centers for Environmental Information (formerly National Geophysical Data Center) between 1638 and 1985, and **Figure A.8** presents a map showing earthquakes whose epicenters have occurred near the county between 1985 and 2015 (no earthquakes occurred within the county’s boundaries during this period). **Table A.16** presents a detailed occurrence of each event including the date, distance for the epicenter, magnitude and Modified Mercalli Intensity (if known).<sup>12</sup>

**TABLE A.15: SUMMARY OF SEISMIC ACTIVITY IN ADAMS COUNTY**

| Location                  | Number of Occurrences | Greatest MMI Reported | Greatest Richter Scale Reported |
|---------------------------|-----------------------|-----------------------|---------------------------------|
| Natchez                   | 2                     | VI                    | 7.2                             |
| Unincorporated Area       | 0                     | --                    | --                              |
| <b>ADAMS COUNTY TOTAL</b> | <b>2</b>              | <b>VI (strong)</b>    | <b>7.2</b>                      |

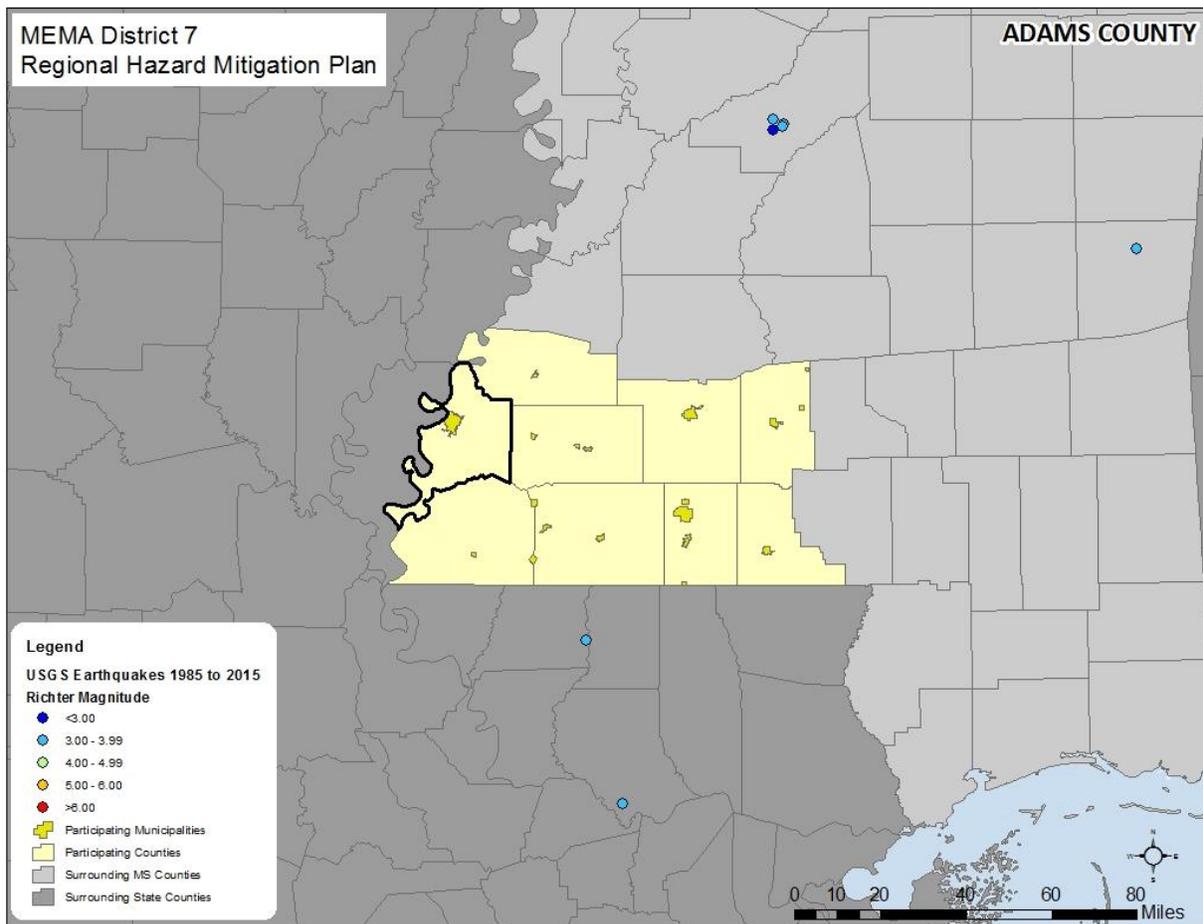
Source: National Centers for Environmental Information

**TABLE A.16: SIGNIFICANT SEISMIC EVENTS IN ADAMS COUNTY (1638 -1985)**

| Location                   | Date       | Epicentral Distance | Magnitude | MMI |
|----------------------------|------------|---------------------|-----------|-----|
| <b>Natchez</b>             |            |                     |           |     |
| NATCHEZ                    | 12/16/1811 | 584.0 km            | 7.2       | VI  |
| NATCHEZ                    | 9/1/1886   | 1,082.0 km          | Unknown   | II  |
| <b>Unincorporated Area</b> |            |                     |           |     |
| None reported              | --         | --                  | --        | --  |

Source: National Centers for Environmental Information

<sup>12</sup> Due to reporting mechanisms, not all earthquakes events were recorded during this time. Furthermore, some are missing data, such as the epicenter location, due to a lack of widely used technology. In these instances, a value of “unknown” is reported.

**FIGURE A.8: HISTORIC EARTHQUAKES WITH EPICENTERS NEAR ADAMS COUNTY (1985-2015)**

Source: United States Geological Survey

### **PROBABILITY OF FUTURE OCCURRENCES**

The probability of significant, damaging earthquake events affecting Adams County is unlikely. However, it is certainly possible that future earthquakes resulting in light or moderate perceived shaking and damages will affect the county much more frequently. The annual probability level for the county is estimated to be less than 1 percent (unlikely).

## **WIND-RELATED HAZARDS**

### **A.2.8 Extreme Heat**

#### **LOCATION AND SPATIAL EXTENT**

Heat waves typically impact a large area and cannot be confined to any geographic or political boundaries. Therefore, the entire county is considered to be equally susceptible to extreme heat.

## **HISTORICAL OCCURRENCES**

The National Climatic Data Center was used to determine historical heat wave occurrences in the county.

**Summer of 2000 Heat Wave** – Hot temperatures persisted from July to September across the South and Plains. Known as the Summer of 2000 Heat Wave, high temperatures commonly peaked over 100 degrees.

**August 2005** – A "HOT" stretch of weather occurred during the middle to later part of August 2005. This "Heat Wave" covered a large portion of the south and lasted for a period of about 10 days. Each of these days had high temperatures consistently between 95 and 100 degrees, with 1 or 2 of these days actually reaching 100 degrees or more. Additionally, overnight lows remained warm with lower and middle 70s recorded. This is the first time since August 2000 where 100 degree temperatures were reached in this area as well as having such an extended period of "HOT" weather.

**July 2006** – A small "heat wave" gripped the region during the middle of July with high temperature ranging from the upper 90s to around 100 degrees for five days with overnight lows only reaching the middle 70s. The hottest temperatures during this period occurred from the Mississippi Delta, across northern Mississippi and then down to the Jackson Metro and toward Meridian. This area peaked between 100 and 102 degrees for at least two days during the hot five day stretch.

**August 2007** – During the first half of August, a heat wave took hold of the region and brought some of the warmest temperatures since the summer of 2000. This heat wave began around August 5th and lasted until the 16th. Between August 10th and 15th, the entire area reached 100 degrees or higher. Twenty-three record highs were also set during this time. As the temperature soared each day, high relative humidities resulted in heat index values between 105 and 112 degrees.

**August 2010** – A four day stretch of extreme temperatures occurred across the region to start off the month of August. High pressure was firmly entrenched across the southeast and allowed temperatures to soar into the triple digits across much of the region. Across the NWS Jackson, MS forecast area, 19 record highs were set between August 1st and 4th. On August 2nd, the 2nd warmest average temperature was recorded. The low was 78 and the high 105, this resulted in an average temperature of 91.5 degrees. Additionally, relatively high humidity levels made conditions even more oppressive, with heat index readings surpassing 110 degrees in many areas. This extreme heat resulted in 3 fatalities across the forecast area.

## **PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that all of Adams County has a probability level of likely (between 10 and 100 percent annual probability) for future heat wave events.

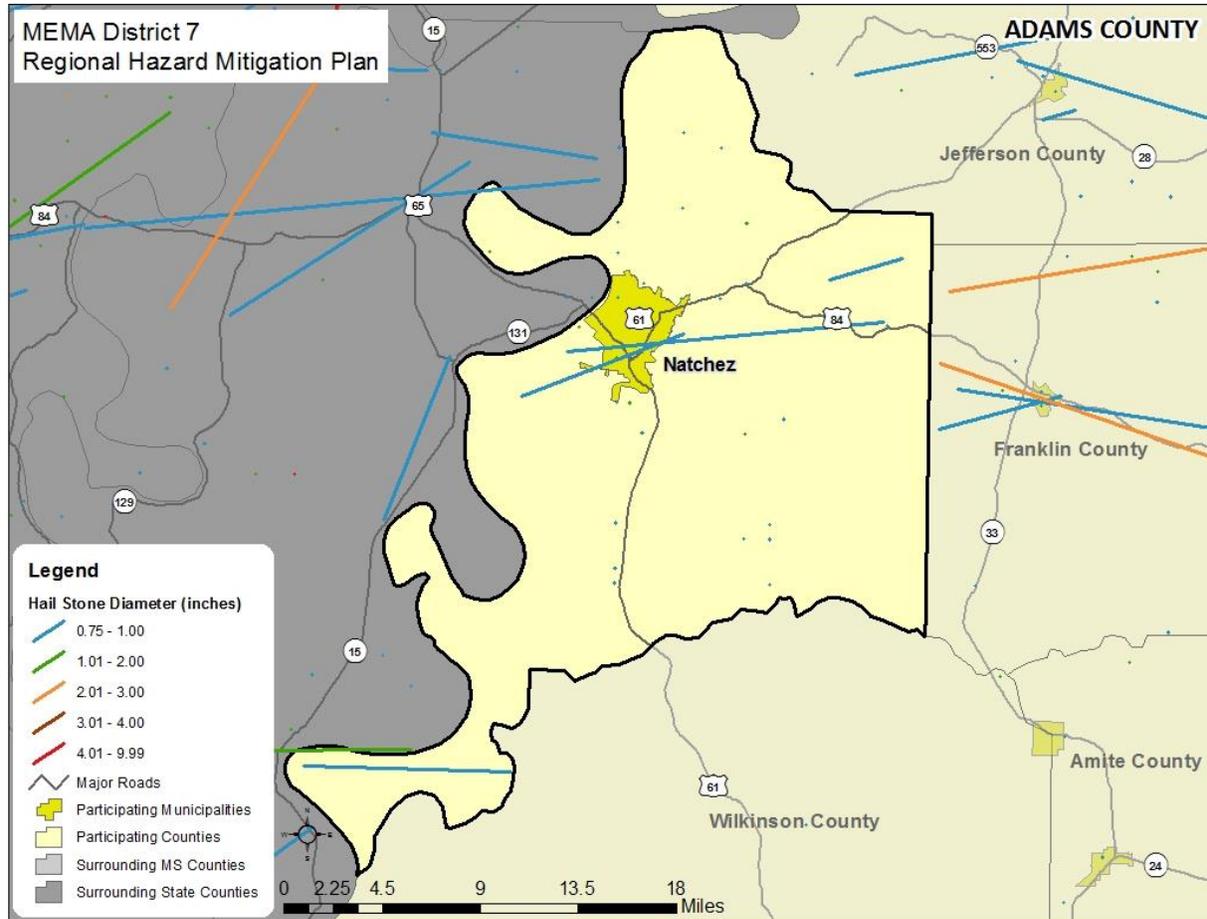
### **A.2.9 Hailstorm**

#### **LOCATION AND SPATIAL EXTENT**

Hailstorms frequently accompany thunderstorms, so their locations and spatial extents coincide. It is assumed that Adams County is uniformly exposed to severe thunderstorms; therefore, all areas of the

county are equally exposed to hail which may be produced by such storms. With that in mind, **Figure A.9** shows the location of hail events that have impacted the county between 1955 and 2015.

**FIGURE A.9: HAILSTORM TRACKS IN ADAMS COUNTY**



Source: National Weather Service Storm Prediction Center

**HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, 62 recorded hailstorm events have affected Adams County since 1961.<sup>13</sup> **Table A.17** is a summary of the hail events in Adams County. **Table A.18** provides detailed information about each event that occurred in the county. In all, hail occurrences resulted in approximately \$292,000 (2017 dollars) in property damages.<sup>14</sup> Hail ranged in diameter from 0.75 inches to 2.75 inches. It should be noted that hail is notorious for causing substantial damage to cars, roofs, and

<sup>13</sup> These hail events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017. It is likely that additional hail events have affected Adams County. As additional local data becomes available, this hazard profile will be amended.

<sup>14</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

other areas of the built environment that may not be reported to the National Climatic Data Center. Therefore, it is likely that damages are greater than the reported value.

**TABLE A.17: SUMMARY OF HAIL OCCURRENCES IN ADAMS COUNTY**

| Location                  | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|---------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Natchez                   | 17                    | 0/0             | \$174,314              | \$7,263                    |
| Unincorporated Area       | 45                    | 0/0             | \$117,621              | \$2,100                    |
| <b>ADAMS COUNTY TOTAL</b> | <b>62</b>             | <b>0/0</b>      | <b>\$291,935</b>       | <b>\$9,363</b>             |

Source: National Climatic Data Center

**TABLE A.18: HISTORICAL HAIL OCCURRENCES IN ADAMS COUNTY**

| Location                   | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-----------|-----------------|------------------|
| <b>Natchez</b>             |            |           |                 |                  |
| Natchez                    | 3/25/1993  | 1.75 in.  | 0/0             | \$85,141         |
| Natchez                    | 1/27/1995  | 1.75 in.  | 0/0             | \$0              |
| Natchez                    | 4/22/1995  | 0.75 in.  | 0/0             | \$0              |
| NATCHEZ                    | 1/8/1997   | 1.25 in.  | 0/0             | \$0              |
| NATCHEZ                    | 6/22/1998  | 1.00 in.  | 0/0             | \$0              |
| NATCHEZ                    | 6/22/1998  | 1.75 in.  | 0/0             | \$30,003         |
| NATCHEZ                    | 3/10/2000  | 1.00 in.  | 0/0             | \$0              |
| NATCHEZ                    | 4/23/2000  | 0.75 in.  | 0/0             | \$0              |
| NATCHEZ                    | 7/17/2000  | 0.75 in.  | 0/0             | \$0              |
| NATCHEZ                    | 5/9/2001   | 0.75 in.  | 0/0             | \$0              |
| NATCHEZ                    | 5/24/2001  | 1.75 in.  | 0/0             | \$48,162         |
| NATCHEZ                    | 5/24/2001  | 1.00 in.  | 0/0             | \$11,008         |
| NATCHEZ                    | 12/13/2001 | 0.75 in.  | 0/0             | \$0              |
| NATCHEZ                    | 12/24/2002 | 0.88 in.  | 0/0             | \$0              |
| NATCHEZ                    | 11/23/2004 | 0.75 in.  | 0/0             | \$0              |
| NATCHEZ                    | 4/8/2014   | 0.75 in.  | 0/0             | \$0              |
| NATCHEZ                    | 1/21/2016  | 0.88 in.  | 0/0             | \$0              |
| <b>Unincorporated Area</b> |            |           |                 |                  |
| ADAMS CO.                  | 3/27/1961  | 1.75 in.  | 0/0             | \$0              |
| ADAMS CO.                  | 4/13/1966  | 0.75 in.  | 0/0             | \$0              |
| ADAMS CO.                  | 4/18/1980  | 1.75 in.  | 0/0             | \$0              |
| ADAMS CO.                  | 4/6/1983   | 2.75 in.  | 0/0             | \$0              |
| ADAMS CO.                  | 4/6/1983   | 1.75 in.  | 0/0             | \$0              |
| ADAMS CO.                  | 4/5/1985   | 1.75 in.  | 0/0             | \$0              |
| ADAMS CO.                  | 5/4/1987   | 0.75 in.  | 0/0             | \$0              |
| ADAMS CO.                  | 7/25/1987  | 0.75 in.  | 0/0             | \$0              |
| ADAMS CO.                  | 4/14/1991  | 1.00 in.  | 0/0             | \$0              |
| ADAMS CO.                  | 4/14/1991  | 1.75 in.  | 0/0             | \$0              |
| ADAMS CO.                  | 4/28/1991  | 0.75 in.  | 0/0             | \$0              |
| ADAMS CO.                  | 5/28/1991  | 1.75 in.  | 0/0             | \$0              |
| ADAMS CO.                  | 5/28/1991  | 1.75 in.  | 0/0             | \$0              |

| Location                | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|-------------------------|------------|-----------|-----------------|------------------|
| ADAMS CO.               | 6/5/1991   | 1.75 in.  | 0/0             | \$0              |
| Sibley                  | 4/15/1994  | 1.75 in.  | 0/0             | \$0              |
| ADAMS CO.               | 3/5/1995   | 1.00 in.  | 0/0             | \$0              |
| Pine Ridge              | 4/22/1995  | 1.75 in.  | 0/0             | \$0              |
| Pine Ridge              | 10/27/1995 | 0.75 in.  | 0/0             | \$0              |
| SIBLEY                  | 4/14/1996  | 1.00 in.  | 0/0             | \$0              |
| FENWICK                 | 5/3/1998   | 0.75 in.  | 0/0             | \$0              |
| WASHINGTON              | 1/22/1999  | 1.50 in.  | 0/0             | \$0              |
| KINGSTON                | 2/27/1999  | 1.00 in.  | 0/0             | \$0              |
| WASHINGTON              | 3/2/1999   | 1.75 in.  | 0/0             | \$37,049         |
| COUNTYWIDE              | 5/24/2001  | 1.00 in.  | 0/0             | \$41,281         |
| SIBLEY                  | 5/11/2003  | 1.75 in.  | 0/0             | \$26,651         |
| WASHINGTON              | 11/24/2004 | 0.75 in.  | 0/0             | \$0              |
| PINE RIDGE              | 2/22/2005  | 1.00 in.  | 0/0             | \$0              |
| SIBLEY                  | 3/22/2005  | 0.75 in.  | 0/0             | \$0              |
| KINGSTON                | 4/6/2005   | 0.75 in.  | 0/0             | \$0              |
| SIBLEY                  | 12/4/2005  | 0.88 in.  | 0/0             | \$0              |
| PINE RIDGE              | 5/10/2006  | 1.00 in.  | 0/0             | \$0              |
| KINGSTON                | 5/11/2007  | 0.75 in.  | 0/0             | \$0              |
| KIENSTRA                | 2/26/2008  | 1.00 in.  | 0/0             | \$0              |
| LEESDALE                | 4/11/2008  | 1.00 in.  | 0/0             | \$0              |
| CARTHAGE                | 3/25/2009  | 0.75 in.  | 0/0             | \$0              |
| STANTON                 | 3/31/2009  | 0.75 in.  | 0/0             | \$0              |
| CARTHAGE                | 5/3/2009   | 1.00 in.  | 0/0             | \$0              |
| SIBLEY                  | 9/28/2011  | 0.75 in.  | 0/0             | \$0              |
| KINGSTON                | 7/5/2012   | 0.88 in.  | 0/0             | \$2,135          |
| SIBLEY                  | 2/22/2013  | 0.88 in.  | 0/0             | \$0              |
| CRANFIELD               | 2/22/2013  | 1.00 in.  | 0/0             | \$0              |
| KINGSTON                | 2/22/2013  | 1.00 in.  | 0/0             | \$0              |
| (HEZ)HARDY FLD<br>NATCH | 3/18/2013  | 1.75 in.  | 0/0             | \$10,505         |
| SIBLEY                  | 3/18/2013  | 1.00 in.  | 0/0             | \$0              |
| LINWOOD                 | 7/2/2014   | 1.50 in.  | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

### **PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that the probability of future hail occurrences is highly likely (100 percent annual probability). Since hail is an atmospheric hazard, it is assumed that Adams County has equal exposure to this hazard. It can be expected that future hail events will continue to cause minor damage to property and vehicles throughout the county.

## A.2.10 Hurricane and Tropical Storm

### ***LOCATION AND SPATIAL EXTENT***

Hurricanes and tropical storms threaten the entire Atlantic and Gulf seaboard of the United States. While coastal areas are most directly exposed to the brunt of landfalling storms, their impact is often felt hundreds of miles inland and they can affect Adams County. All areas in Adams County are equally susceptible to hurricane and tropical storms.

### ***HISTORICAL OCCURRENCES***

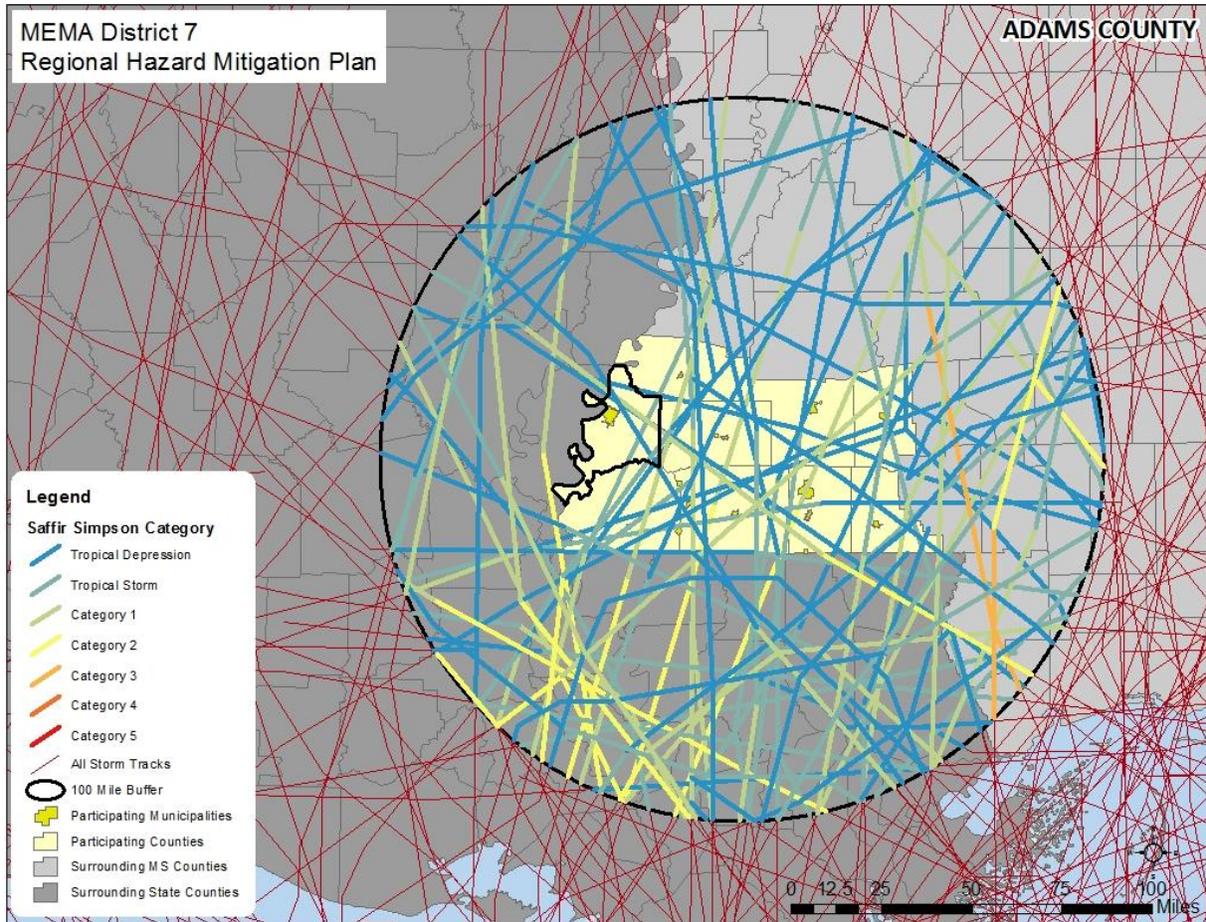
According to the National Hurricane Center's historical storm track records, 86 hurricane or tropical storm/depression tracks have passed within 100 miles of the MEMA District 7 Region since 1854.<sup>15</sup> This includes: 35 hurricanes, 21 tropical storms, and 30 tropical depressions.

A total of 61 tracks passed directly through the region as shown in **Figure A.10**. **Table A.19** provides the date of occurrence, name (if applicable), maximum wind speed (as recorded within 100 miles of the MEMA District 7 Region) and category of the storm based on the Saffir-Simpson Scale for each event.

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<sup>15</sup> These storm track statistics include tropical depressions, tropical storms, and hurricanes. Lesser events may still cause significant local impact in terms of rainfall and high winds.

**FIGURE A.10: HISTORICAL HURRICANE STORM TRACKS WITHIN 100 MILES OF THE MEMA DISTRICT 7 REGION**



Source: National Oceanic and Atmospheric Administration; National Hurricane Center

**TABLE A.19: HISTORICAL STORM TRACKS WITHIN 100 MILES OF THE MEMA 7 DISTRICT REGION (1850–2016)**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/21/1854          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/5/1855           | NOT NAMED  | Not Available              | Tropical Depression |
| 8/11/1856          | UNNAMED    | 85.03                      | Category 2          |
| 10/2/1860          | UNNAMED    | 89.03                      | Category 2          |
| 8/18/1861          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/16/1862          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/30/1863          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/5/1869           | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/12/1872          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/18/1875          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/1/1879           | UNNAMED    | 89.03                      | Category 2          |
| 10/7/1879          | UNNAMED    | 58.6                       | Tropical Storm      |

**ANNEX A: ADAMS COUNTY**

| <b>Date of Occurrence</b> | <b>Storm Name</b> | <b>Maximum Wind Speed (knots)</b> | <b>Storm Category</b> |
|---------------------------|-------------------|-----------------------------------|-----------------------|
| 10/7/1879                 | NOT NAMED         | Not Available                     | Tropical Depression   |
| 8/3/1881                  | NOT NAMED         | Not Available                     | Tropical Depression   |
| 6/15/1886                 | UNNAMED           | 69.67                             | Category 1            |
| 8/20/1888                 | UNNAMED           | 81.90                             | Category 1            |
| 8/27/1890                 | UNNAMED           | 42.69                             | Tropical Storm        |
| 9/7/1893                  | UNNAMED           | 78.78                             | Category 1            |
| 8/8/1894                  | UNNAMED           | 17.56                             | Tropical Depression   |
| 9/20/1898                 | UNNAMED           | 42.69                             | Tropical Storm        |
| 9/29/1905                 | UNNAMED           | 42.69                             | Tropical Storm        |
| 10/9/1905                 | UNNAMED           | 42.69                             | Tropical Storm        |
| 8/2/1908                  | UNNAMED           | 17.56                             | Tropical Depression   |
| 9/21/1909                 | UNNAMED           | 92.89                             | Category 2            |
| 8/12/1911                 | UNNAMED           | 50.35                             | Tropical Storm        |
| 6/13/1912                 | UNNAMED           | 64.34                             | Category 1            |
| 7/17/1912                 | UNNAMED           | 0.87                              | Tropical Depression   |
| 9/18/1914                 | UNNAMED           | 32.60                             | Tropical Depression   |
| 9/29/1915                 | UNNAMED           | 95.53                             | Category 2            |
| 7/6/1916                  | UNNAMED           | 85.03                             | Category 2            |
| 9/22/1920                 | UNNAMED           | 87.29                             | Category 2            |
| 10/16/1923                | UNNAMED           | 78.78                             | Category 1            |
| 8/26/1926                 | UNNAMED           | 78.78                             | Category 1            |
| 9/21/1926                 | UNNAMED           | 58.60                             | Tropical Storm        |
| 7/15/1931                 | UNNAMED           | 50.35                             | Tropical Storm        |
| 9/19/1932                 | UNNAMED           | 64.34                             | Category 1            |
| 10/16/1932                | UNNAMED           | 58.6                              | Tropical Storm        |
| 7/26/1933                 | UNNAMED           | 17.56                             | Tropical Depression   |
| 6/16/1934                 | UNNAMED           | 87.29                             | Category 2            |
| 7/27/1936                 | UNNAMED           | 42.69                             | Tropical Storm        |
| 8/23/1936                 | UNNAMED           | 4.99                              | Tropical Depression   |
| 10/3/1937                 | UNNAMED           | 32.6                              | Tropical Depression   |
| 9/24/1940                 | UNNAMED           | 32.6                              | Tropical Depression   |
| 9/6/1945                  | UNNAMED           | 17.56                             | Tropical Depression   |
| 9/8/1947                  | UNNAMED           | 32.6                              | Tropical Depression   |
| 9/19/1947                 | UNNAMED           | 91.63                             | Category 2            |
| 9/4/1948                  | UNNAMED           | 69.67                             | Category 1            |
| 9/4/1949                  | UNNAMED           | 58.6                              | Tropical Storm        |
| 8/1/1955                  | BRENDA            | 64.34                             | Category 1            |
| 8/27/1955                 | UNNAMED           | 50.35                             | Tropical Storm        |
| 6/13/1956                 | UNNAMED           | 58.60                             | Tropical Storm        |
| 9/18/1957                 | ESTHER            | 64.34                             | Category 1            |
| 5/31/1959                 | ARLENE            | 64.34                             | Category 1            |
| 10/4/1964                 | HILDA             | 91.63                             | Category 2            |
| 9/10/1965                 | BETSY             | 89.03                             | Category 2            |
| 8/18/1969                 | CAMILLE           | 99.88                             | Category 3            |
| 8/9/1971                  | UNNAMED           | 4.99                              | Tropical Depression   |
| 9/1/1971                  | UNNAMED           | 4.99                              | Tropical Depression   |

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/5/1971           | FERN       | 4.99                       | Tropical Depression |
| 9/16/1971          | EDITH      | 87.29                      | Category 2          |
| 7/29/1975          | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1977           | BABE       | 58.60                      | Tropical Storm      |
| 7/11/1979          | BOB        | 73.83                      | Category 1          |
| 7/20/1980          | UNNAMED    | 0.87                       | Tropical Depression |
| 8/15/1985          | DANNY      | 78.78                      | Category 1          |
| 9/2/1985           | ELENA      | 92.89                      | Category 2          |
| 10/29/1985         | JUAN       | 73.83                      | Category 1          |
| 8/11/1987          | UNNAMED    | 4.99                       | Tropical Depression |
| 8/9/1988           | BERYL      | 50.35                      | Tropical Storm      |
| 9/10/1988          | FLORENCE   | 69.67                      | Category 1          |
| 8/26/1992          | ANDREW     | 85.03                      | Category 2          |
| 9/20/1998          | HERMINE    | 32.60                      | Tropical Depression |
| 6/11/2001          | ALLISON    | 42.69                      | Tropical Storm      |
| 8/5/2002           | BERTHA     | 32.60                      | Tropical Depression |
| 9/26/2002          | ISIDORE    | 64.34                      | Category 1          |
| 10/3/2002          | LILI       | 69.67                      | Category 1          |
| 6/30/2003          | BILL       | 58.60                      | Tropical Storm      |
| 10/10/2004         | MATTHEW    | 17.56                      | Tropical Depression |
| 8/29/2005          | KATRINA    | 94.63                      | Category 3          |
| 9/13/2007          | HUMBERTO   | 32.60                      | Tropical Depression |
| 8/24/2008          | FAY        | 17.56                      | Tropical Depression |
| 9/1/2008           | GUSTAV     | 87.29                      | Category 2          |
| 7/25/2010          | BONNIE     | 0.87                       | Tropical Depression |
| 8/17/2010          | FIVE       | 4.99                       | Tropical Depression |
| 9/4/2011           | LEE        | 32.60                      | Tropical Depression |
| 8/29/2012          | ISAAC      | 69.67                      | Category 1          |

Source: National Hurricane Center

Federal records indicate that five disaster declarations were made in 1965 (Hurricane Betsy), 2004 (Hurricane Ivan), 2005 (Hurricane Katrina), 2008 (Hurricane Gustav), and 2012 (Hurricane Isaac) in Adams County.<sup>16</sup> Hurricane and tropical storm events can cause substantial damage in the area due to high winds and flooding.

The National Climatic Data Center also reported five hurricane or tropical storm events in Adams County since 2002.<sup>17</sup> These storms are listed in **Table A.20** and are generally representative of storms with the greatest impact on the county over that time period.

<sup>16</sup> A complete listing of historical disaster declarations can be found in Section 4: Hazard Identification.

<sup>17</sup> These hurricane events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported.

**TABLE A.20: HISTORICAL HURRICANE/TROPICAL STORM OCCURRENCES IN ADAMS COUNTY**

| Date of Occurrence | Storm Name        | Deaths/Injuries | Property Damage (2017) <sup>18</sup> |
|--------------------|-------------------|-----------------|--------------------------------------|
| 10/3/2002          | Hurricane Lili    | 0/0             | \$0                                  |
| 8/29/2005          | Hurricane Katrina | 0/2             | \$124,503,05                         |
| 9/24/2005          | Hurricane Rita    | 0/0             | \$73,800                             |
| 9/1/2008           | Hurricane Gustav  | 0/0             | \$2,235,311                          |
| 8/29/2012          | Hurricane Isaac   | 0/1             | \$265,350                            |

Source: National Climatic Data Center

Flooding and high winds from hurricanes and tropical storms can cause damage throughout the county. Anecdotes are available from NCDC for the major storms that have impacted the county as found below:

#### **Hurricane Katrina – August 29, 2005**

The damage from Hurricane Katrina was devastating and widespread. Damage occurred across all of the Jackson forecast area which includes 9 parishes in Northeast Louisiana, 2 counties in Southeast Arkansas and about 2/3 of Central and Southern Mississippi. As widespread as the damage was, the more concentrated and most significant damage occurred across Southeast and East-Central Mississippi. For other areas, especially those west of Natchez to Yazoo City to Grenada line, damage to trees and power lines was significant and scattered across the landscape. As you move toward Central Mississippi and along Interstate 55 the damage and impacts increase. This portion of the state sustained widespread damage to trees and power lines.

#### **Hurricane Gustav – September 1, 2008**

As the center of Gustav crossed much of southern Louisiana, tropical storm force winds extended into southern Mississippi and portions of east central Louisiana. Sustained winds were between 35 and 45 mph with higher gusts between 70 and 100 mph occurred. Tree and power line damage was extensive across these areas which resulted in widespread power outages, some of which lasted for 3 to 5 days. As Gustav slowed across central Louisiana, the outer rainbands continued to rotate across much of southern and central Mississippi. This kept those portions of Mississippi in the region which was favorable for tornadoes. Over 3 days, 26 tornadoes were confirmed, all of which were in the EF0 to EF1 range.

#### **Hurricane Isaac – August 29, 2012**

Isaac moved very slowly to the north and northwest over the course of August 29th, which made for prolonged impacts. Forward motion of about 5 mph lead to tremendous flooding issues for both Louisiana and portions of Mississippi south of I-20. Around noon on August 29th, Isaac was downgraded to a Tropical Storm, but this was not much relief to the many residents who were being inundated with rain and wind. The worst of the wind was felt generally along and south of an axis from Marion County to Adams County. Numerous trees were down in Adams County, leaving many without power for several days. Eighty percent of the roads were blocked in Franklin County due to downed trees.

<sup>18</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

### **PROBABILITY OF FUTURE OCCURRENCES**

Given the inland location of the county, Adams County will not be susceptible to many of the sub-hazards that are often associated with hurricanes and tropical storms such as storm surge. Although the probability of experiencing major impacts is somewhat less than coastal areas because of this, hurricanes and tropical storms remain a real threat to Adams County due to induced events like flooding and high wind. Based on historical evidence, the probability level of future occurrence is likely (between 10 and 100 percent annual probability). Given the regional nature of the hazard, all areas in the county are equally exposed to this hazard. However, when the county is impacted, the damage could be significant, threatening lives and property throughout the planning area.

### **HURRICANE EVACUATIONS**

As discussed above, the MEMA District 7 Region has been directly impacted by a number of hurricane and tropical storm events historically. However, it should be noted that the region is also susceptible to indirect effects from hurricanes and tropical storms, particularly in the form of evacuations from coastal counties. The counties within MEMA District 7 are located far enough inland that they are often the primary recipients of evacuees from counties that will be (or have been) impacted by major storm events.

For example, during Hurricane Katrina in 2005, thousands of evacuees made their way to counties in southwest Mississippi to take temporary refuge from the storm. Due to the severe and devastating effects of the storm, temporary sheltering within these counties was extended much longer than originally anticipated and in some cases, the evacuees ended up staying for weeks or months. This additional population caused a major strain on resources within these relatively rural counties, as local communities with limited resources had an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people.

Caring for all of these evacuees was especially challenging for counties in the MEMA District 7 Region because most had been impacted themselves by the storm and were attempting to help their own citizens recover from the storm. Undoubtedly, recovering from a major disaster while simultaneously attempting to help evacuees from surrounding counties poses a number of difficulties for emergency management personnel and other local officials.

Based on Hurricane Katrina and other major hurricane events that have impacted the Gulf Coast in the past, it is likely that many of the MEMA District 7 counties will be receiver counties when it comes to evacuees. Many of these evacuees will likely come from locations in Louisiana, including New Orleans. Indeed, the State of Louisiana evacuation plan indicates that one of the primary evacuation routes from the City of New Orleans will direct evacuees north along Interstate 55, sending people through Pike County and Lincoln County (**Figure A.11**). Depending on the severity of the event, officials in Louisiana may even change Interstate 55 over to a contraflow traffic pattern to enable quicker evacuations.



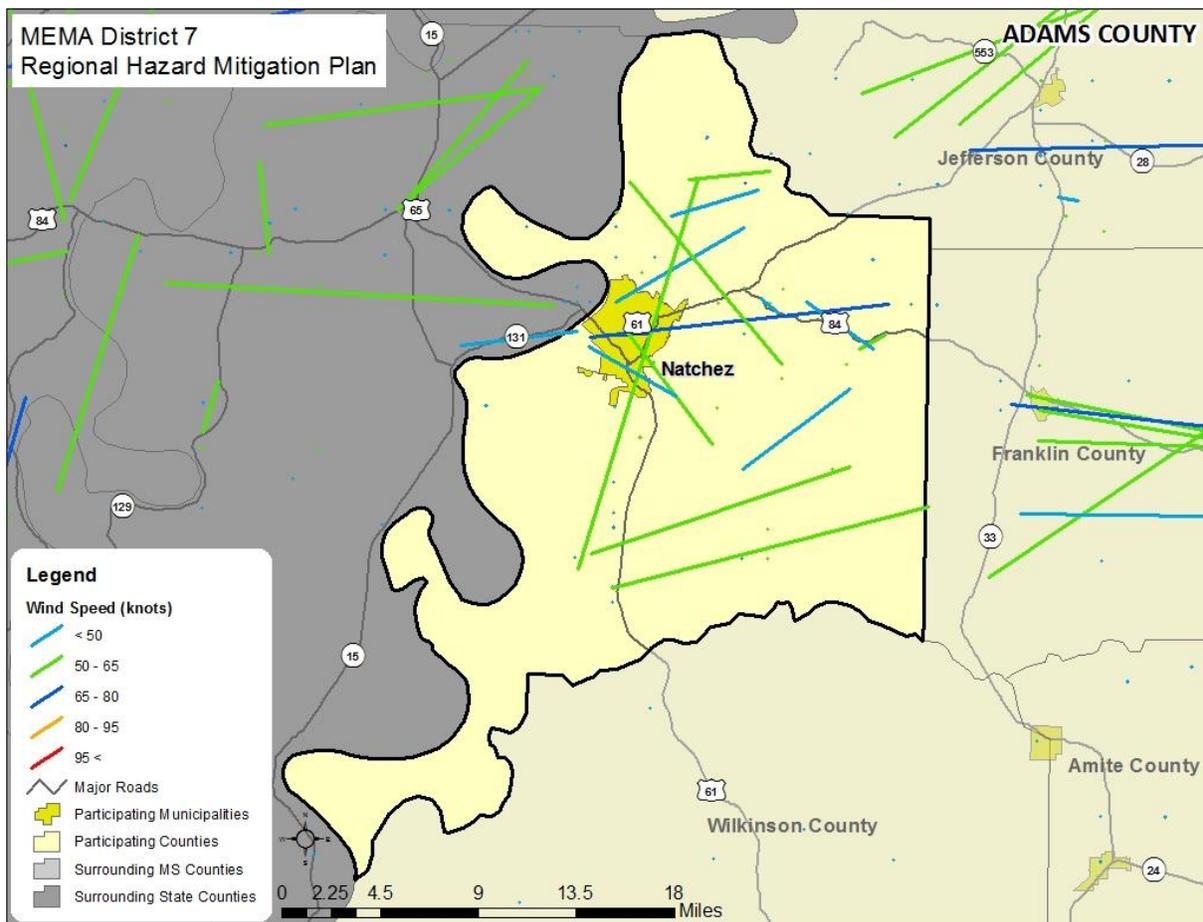
may not be directly impacted by the storm. As in past storms, it is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future storm events.

### A.2.11 Severe Thunderstorm/High Wind

#### LOCATION AND SPATIAL EXTENT

A thunderstorm event is an atmospheric hazard, and thus has no geographic boundaries. It is typically a widespread event that can occur in all regions of the United States. However, thunderstorms are most common in the central and southern states because atmospheric conditions in those regions are favorable for generating these powerful storms. It is assumed that Adams County has uniform exposure to an event and the spatial extent of an impact could be large. With that in mind, **Figure A.12** shows the location of wind events that have impacted the county between 1955 and 2015.

**FIGURE A.12: SEVERE THUNDERSTORM TRACKS IN ADAMS COUNTY**



Source: National Weather Service Storm Prediction Center

**HISTORICAL OCCURRENCES**

Severe storms were at least partially responsible for six disaster declarations in Adams County in 1979, 1980, 1990, 1991, 2009, and 2017.<sup>19</sup> According to NCDC, there have been 199 reported thunderstorm and high wind events since 1957 in Adams County.<sup>20</sup> These events caused over \$50.8 million (2017 dollars) in damages.<sup>21</sup> There were also reports of eight injuries. **Table A.21** summarizes this information. **Table A.22** presents detailed thunderstorm and high wind event reports including date, magnitude, and associated damages for each event.

**TABLE A.21: SUMMARY OF THUNDERSTORM/HIGH WIND OCCURRENCES IN ADAMS COUNTY**

| Location                  | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|---------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Natchez                   | 75                    | 0/1             | \$49,238,385           | \$2,051,599                |
| Unincorporated Area       | 124                   | 0/7             | \$1,571,218            | \$26,187                   |
| <b>ADAMS COUNTY TOTAL</b> | <b>199</b>            | <b>0/8</b>      | <b>\$50,809,603</b>    | <b>\$2,077,786</b>         |

Source: National Climatic Data Center

**TABLE A.22: HISTORICAL THUNDERSTORM/HIGH WIND OCCURRENCES IN ADAMS COUNTY**

| Location       | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------------|------------|-------------------|------------|-----------------|------------------|
| <b>Natchez</b> |            |                   |            |                 |                  |
| Natchez        | 4/7/1993   | Thunderstorm Wind | 0 kts.     | 0/0             | \$8,490          |
| Natchez        | 4/7/1993   | Thunderstorm Wind | 0 kts.     | 0/0             | \$849            |
| Natchez        | 1/6/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$48,807         |
| Natchez        | 3/7/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$40,377         |
| Natchez        | 4/20/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$3,220          |
| NATCHEZ        | 2/21/1997  | Thunderstorm Wind | --         | 0/0             | \$3,064          |
| NATCHEZ        | 4/22/1997  | Thunderstorm Wind | --         | 0/0             | \$1,526          |
| NATCHEZ        | 4/26/1997  | Thunderstorm Wind | --         | 0/0             | \$4,579          |
| NATCHEZ        | 10/23/1997 | Thunderstorm Wind | --         | 0/0             | \$7,566          |
| NATCHEZ        | 10/23/1997 | Thunderstorm Wind | --         | 0/0             | \$7,566          |
| NATCHEZ        | 2/26/1998  | Thunderstorm Wind | 70 kts.    | 0/4             | \$45,310,191     |
| NATCHEZ        | 3/2/1999   | Thunderstorm Wind | 61 kts.    | 0/0             | \$0              |
| NATCHEZ        | 3/2/1999   | Thunderstorm Wind | --         | 0/0             | \$29,639         |
| NATCHEZ        | 6/6/1999   | Thunderstorm Wind | --         | 0/0             | \$4,414          |
| NATCHEZ        | 4/3/2000   | Thunderstorm Wind | --         | 0/0             | \$7,137          |
| NATCHEZ        | 4/15/2001  | Thunderstorm Wind | --         | 0/0             | \$8,294          |
| NATCHEZ        | 5/21/2001  | Thunderstorm Wind | --         | 0/0             | \$2,752          |

<sup>19</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>20</sup> These thunderstorm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017 and these high wind events are only inclusive of those reported by NCDC from 1996 through February 2017. It is likely that additional thunderstorm and high wind events have occurred in Adams County. As additional local data becomes available, this hazard profile will be amended.

<sup>21</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**ANNEX A: ADAMS COUNTY**

| Location | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------|------------|-------------------|------------|-----------------|------------------|
| NATCHEZ  | 5/24/2001  | Thunderstorm Wind | --         | 0/0             | \$2,752          |
| NATCHEZ  | 5/24/2001  | Thunderstorm Wind | --         | 0/0             | \$1,376          |
| NATCHEZ  | 7/12/2001  | Thunderstorm Wind | 50 kts. M  | 0/0             | \$0              |
| NATCHEZ  | 7/12/2001  | Thunderstorm Wind | --         | 0/0             | \$13,776         |
| NATCHEZ  | 10/11/2001 | Thunderstorm Wind | --         | 0/0             | \$13,761         |
| NATCHEZ  | 10/13/2001 | Thunderstorm Wind | --         | 0/0             | \$13,761         |
| NATCHEZ  | 3/26/2002  | Thunderstorm Wind | --         | 0/0             | \$1,368          |
| NATCHEZ  | 3/18/2003  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$6,637          |
| NATCHEZ  | 6/2/2003   | Thunderstorm Wind | 50 kts. ES | 0/0             | \$13,311         |
| NATCHEZ  | 7/23/2003  | Thunderstorm Wind | 50 kts. ES | 0/0             | \$6,648          |
| NATCHEZ  | 8/21/2003  | Thunderstorm Wind | 50 kts. ES | 0/0             | \$2,649          |
| NATCHEZ  | 8/28/2003  | Thunderstorm Wind | 50 kts. ES | 0/0             | \$6,623          |
| NATCHEZ  | 11/27/2003 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,325          |
| NATCHEZ  | 1/25/2004  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,641          |
| NATCHEZ  | 2/5/2004   | Thunderstorm Wind | 53 kts. EG | 0/0             | \$2,626          |
| NATCHEZ  | 6/2/2004   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| NATCHEZ  | 6/27/2004  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| NATCHEZ  | 6/27/2004  | Thunderstorm Wind | 53 kts. EG | 0/3             | \$32,225         |
| NATCHEZ  | 8/5/2004   | Thunderstorm Wind | 58 kts. EG | 0/0             | \$3,871          |
| NATCHEZ  | 11/23/2004 | Thunderstorm Wind | 51 kts. EG | 0/0             | \$0              |
| NATCHEZ  | 11/24/2004 | Thunderstorm Wind | 65 kts. EG | 0/0             | \$6,401          |
| NATCHEZ  | 11/24/2004 | Thunderstorm Wind | 58 kts. EG | 0/0             | \$1,280          |
| NATCHEZ  | 7/2/2005   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$18,771         |
| NATCHEZ  | 9/24/2005  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$73,800         |
| NATCHEZ  | 9/24/2005  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$270,600        |
| NATCHEZ  | 9/25/2005  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$98,400         |
| NATCHEZ  | 11/15/2005 | Thunderstorm Wind | 53 kts. EG | 0/0             | \$30,937         |
| NATCHEZ  | 3/9/2006   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| NATCHEZ  | 7/19/2006  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$90,119         |
| NATCHEZ  | 8/5/2006   | Thunderstorm Wind | 52 kts. EG | 0/0             | \$17,989         |
| NATCHEZ  | 10/19/2006 | Thunderstorm Wind | 55 kts. EG | 0/0             | \$2,423          |
| NATCHEZ  | 11/15/2006 | Thunderstorm Wind | 53 kts. EG | 0/0             | \$0              |
| NATCHEZ  | 6/19/2007  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$23,472         |
| NATCHEZ  | 9/13/2007  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$8,210          |
| NATCHEZ  | 6/20/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| NATCHEZ  | 12/9/2008  | Thunderstorm Wind | 78 kts. EG | 0/0             | \$290,784        |
| NATCHEZ  | 5/3/2009   | Thunderstorm Wind | 78 kts. EG | 0/0             | \$2,286,810      |
| NATCHEZ  | 9/20/2010  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$55,971         |
| NATCHEZ  | 2/1/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,210          |
| NATCHEZ  | 4/4/2011   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$8,698          |
| NATCHEZ  | 4/15/2011  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$3,262          |
| NATCHEZ  | 6/3/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,416          |
| NATCHEZ  | 2/15/2012  | Thunderstorm Wind | 43 kts. EG | 0/0             | \$1,074          |
| NATCHEZ  | 5/7/2012   | Thunderstorm Wind | 52 kts. EG | 0/0             | \$26,600         |
| NATCHEZ  | 8/10/2012  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$10,614         |
| NATCHEZ  | 8/10/2012  | Thunderstorm Wind | 65 kts. EG | 0/0             | \$53,070         |

**ANNEX A: ADAMS COUNTY**

| Location                   | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-------------------|------------|-----------------|------------------|
| NATCHEZ                    | 12/20/2012 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$4,260          |
| NATCHEZ                    | 12/25/2012 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,195          |
| NATCHEZ                    | 1/10/2013  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$26,546         |
| NATCHEZ                    | 3/28/2014  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$1,035          |
| NATCHEZ                    | 3/28/2014  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$25,871         |
| NATCHEZ                    | 8/11/2014  | Thunderstorm Wind | 43 kts. EG | 0/0             | \$1,028          |
| NATCHEZ                    | 8/17/2014  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,028          |
| NATCHEZ                    | 12/23/2014 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,207          |
| NATCHEZ                    | 11/17/2015 | Thunderstorm Wind | 52 kts. EG | 0/0             | \$5,151          |
| NATCHEZ                    | 12/28/2015 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,169          |
| NATCHEZ                    | 3/17/2016  | Thunderstorm Wind | 58 kts. EG | 0/0             | \$154,026        |
| NATCHEZ                    | 3/17/2016  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$5,134          |
| <b>Unincorporated Area</b> |            |                   |            |                 |                  |
| ADAMS CO.                  | 4/4/1957   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 5/26/1957  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 8/26/1960  | Thunderstorm Wind | 65 kts.    | 0/0             | \$0              |
| ADAMS CO.                  | 3/5/1961   | Thunderstorm Wind | 50 kts.    | 0/0             | \$0              |
| ADAMS CO.                  | 5/26/1968  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 5/26/1968  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 2/4/1971   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 5/12/1971  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 7/26/1972  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 3/24/1973  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 4/26/1973  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 12/4/1973  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 5/26/1974  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 4/30/1975  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 8/28/1975  | Thunderstorm Wind | 50 kts.    | 0/0             | \$0              |
| ADAMS CO.                  | 3/29/1976  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 3/30/1976  | Thunderstorm Wind | 75 kts.    | 0/0             | \$0              |
| ADAMS CO.                  | 8/21/1976  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 9/1/1976   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 12/3/1978  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 6/19/1980  | Thunderstorm Wind | 60 kts.    | 0/0             | \$0              |
| ADAMS CO.                  | 7/7/1980   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 1/31/1983  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 6/7/1985   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 7/29/1987  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 11/16/1987 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 12/27/1988 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 6/2/1989   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 7/2/1989   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 7/17/1989  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 2/15/1990  | Thunderstorm Wind | 64 kts.    | 0/0             | \$0              |
| ADAMS CO.                  | 8/23/1990  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.                  | 3/1/1991   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |

**ANNEX A: ADAMS COUNTY**

| Location                | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|-------------------------|------------|-------------------|------------|-----------------|------------------|
| ADAMS CO.               | 5/4/1991   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.               | 5/5/1991   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.               | 11/19/1991 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.               | 3/5/1992   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| ADAMS CO.               | 12/15/1992 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| Kingston                | 3/25/1993  | Thunderstorm Wind | 0 kts.     | 0/0             | \$851            |
| Kingston                | 4/20/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$3,220          |
| ADAMS (ZONE)            | 4/13/1996  | High Wind         | 45 kts.    | 0/0             | \$0              |
| KINGSTON                | 11/7/1996  | Thunderstorm Wind | 62 kts.    | 0/1             | \$154,177        |
| ADAMS (ZONE)            | 2/13/1997  | High Wind         | 40 kts.    | 0/0             | \$3,064          |
| ADAMS (ZONE)            | 4/26/1997  | High Wind         | --         | 0/0             | \$3,053          |
| COUNTYWIDE              | 6/5/1998   | Thunderstorm Wind | 52 kts.    | 0/0             | \$45,004         |
| COUNTYWIDE              | 3/2/1999   | Thunderstorm Wind | --         | 0/0             | \$44,459         |
| COUNTYWIDE              | 3/13/1999  | Thunderstorm Wind | --         | 0/0             | \$7,410          |
| KINGSTON                | 4/23/2000  | Thunderstorm Wind | --         | 0/0             | \$7,137          |
| COUNTYWIDE              | 7/17/2000  | Thunderstorm Wind | --         | 0/0             | \$5,660          |
| SIBLEY                  | 11/8/2000  | Thunderstorm Wind | --         | 0/0             | \$2,809          |
| ADAMS (ZONE)            | 12/16/2000 | High Wind         | --         | 0/0             | \$7,027          |
| KINGSTON                | 3/12/2001  | Thunderstorm Wind | --         | 0/0             | \$20,816         |
| WASHINGTON              | 12/24/2002 | Thunderstorm Wind | 60 kts. EG | 0/0             | \$6,759          |
| SIBLEY                  | 6/12/2003  | Thunderstorm Wind | 55 kts. ES | 0/0             | \$26,622         |
| SIBLEY                  | 6/12/2003  | Thunderstorm Wind | 50 kts. ES | 0/0             | \$1,331          |
| COUNTYWIDE              | 6/13/2003  | Thunderstorm Wind | 55 kts. ES | 0/0             | \$13,311         |
| KINGSTON                | 7/13/2003  | Thunderstorm Wind | 52 kts. ES | 0/0             | \$6,648          |
| CRANFIELD               | 8/5/2004   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$2,581          |
| WASHINGTON              | 11/24/2004 | Thunderstorm Wind | 62 kts. EG | 0/0             | \$6,401          |
| KINGSTON                | 4/6/2005   | Thunderstorm Wind | 62 kts. EG | 0/0             | \$188,482        |
| KINGSTON                | 7/2/2005   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$6,257          |
| STANTON                 | 9/25/2005  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| CRANFIELD               | 9/25/2005  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| ADAMS (ZONE)            | 3/9/2006   | Strong Wind       | 37 kts. MG | 0/0             | \$1,224          |
| WASHINGTON              | 10/16/2006 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| FENWICK                 | 10/16/2006 | Thunderstorm Wind | 53 kts. EG | 0/0             | \$18,176         |
| ADAMS (ZONE)            | 2/24/2007  | Strong Wind       | 37 kts. EG | 0/0             | \$2,403          |
| PINE RIDGE              | 4/14/2007  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$15,380         |
| CRANFIELD               | 12/20/2007 | Thunderstorm Wind | 60 kts. EG | 0/0             | \$23,284         |
| (HEZ)HARDY FLD<br>NATCH | 2/12/2008  | Thunderstorm Wind | 57 kts. MG | 0/0             | \$0              |
| ADAMS (ZONE)            | 3/18/2008  | Strong Wind       | 42 kts. MG | 0/0             | \$57,258         |
| ADAMS (ZONE)            | 3/18/2008  | Strong Wind       | 40 kts. MG | 0/0             | \$57,258         |
| SIBLEY                  | 3/19/2008  | Thunderstorm Wind | 57 kts. EG | 0/0             | \$11,452         |
| FOSTER                  | 3/19/2008  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$37,790         |
| WASHINGTON              | 6/20/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| PINE RIDGE              | 8/2/2008   | Thunderstorm Wind | 60 kts. EG | 0/0             | \$167,416        |
| SIBLEY                  | 3/25/2009  | Thunderstorm Wind | 62 kts. EG | 0/0             | \$57,479         |
| PINE RIDGE              | 3/27/2009  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$2,299          |

**ANNEX A: ADAMS COUNTY**

| Location             | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------------------|------------|-------------------|------------|-----------------|------------------|
| KINGSTON             | 4/12/2009  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| SIBLEY               | 5/3/2009   | Thunderstorm Wind | 65 kts. EG | 0/0             | \$91,472         |
| SIBLEY               | 5/27/2009  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| SIBLEY               | 10/2/2009  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| ADAMS (ZONE)         | 10/2/2009  | Strong Wind       | 42 kts. EG | 0/0             | \$452            |
| (HEZ)HARDY FLD NATCH | 6/20/2010  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$11,219         |
| CRANFIELD            | 6/28/2010  | Thunderstorm Wind | 50 kts. EG | 0/0             |                  |
| STANTON              | 8/22/2010  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$11,201         |
| SIBLEY               | 9/20/2010  | Thunderstorm Wind | 43 kts. EG | 0/0             | \$560            |
| FENWICK              | 10/20/2010 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$22,360         |
| PINE RIDGE           | 4/4/2011   | Thunderstorm Wind | 65 kts. EG | 0/0             | \$119,595        |
| SIBLEY               | 6/3/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,416          |
| CRANFIELD            | 6/21/2011  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,250          |
| ADAMS (ZONE)         | 9/3/2011   | Strong Wind       | 35 kts. EG | 0/0             | \$10,777         |
| PINE RIDGE           | 2/3/2012   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$7,518          |
| KINGSTON             | 2/3/2012   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,148          |
| ADAMS (ZONE)         | 2/23/2012  | Strong Wind       | 45 kts. EG | 0/0             | \$80,555         |
| CRANFIELD            | 4/2/2012   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$10,628         |
| (HEZ)HARDY FLD NATCH | 4/3/2012   | Thunderstorm Wind | 42 kts. EG | 0/0             | \$1,063          |
| ADAMS (ZONE)         | 5/30/2012  | Strong Wind       | 36 kts. EG | 0/0             | \$532            |
| CARTHAGE             | 5/31/2012  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,128          |
| JOHNSVILLE           | 6/11/2012  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$10,656         |
| JOHNSVILLE           | 7/28/2012  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,337          |
| STANTON              | 8/10/2012  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$10,614         |
| STANTON              | 8/10/2012  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$10,614         |
| CRANFIELD            | 12/10/2012 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,065          |
| KINGSTON             | 12/25/2012 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,195          |
| CRANFIELD            | 2/21/2013  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,053          |
| ADAMS (ZONE)         | 3/4/2013   | Strong Wind       | 43 kts. EG | 0/0             | \$10,505         |
| ADAMS (ZONE)         | 12/21/2013 | Strong Wind       | 43 kts. EG | 0/0             | \$20,985         |
| ADAMS (ZONE)         | 3/2/2014   | Strong Wind       | 39 kts. EG | 0/0             | \$517            |
| FOSTER               | 3/28/2014  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$5,174          |
| WASHINGTON           | 4/8/2014   | Thunderstorm Wind | 55 kts. MG | 0/0             | \$1,031          |
| ADAMS (ZONE)         | 4/14/2014  | Strong Wind       | 43 kts. EG | 0/0             | \$6,189          |
| JOHNSVILLE           | 5/17/2015  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$10,283         |
| (HEZ)HARDY FLD NATCH | 5/24/2015  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$6,170          |
| (HEZ)HARDY FLD NATCH | 5/25/2015  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$7,198          |
| JOHNSVILLE           | 5/25/2015  | Thunderstorm Wind | 48 kts. EG | 0/0             | \$3,085          |
| JOHNSVILLE           | 7/5/2015   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,049          |
| SIBLEY               | 1/21/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,064          |
| CRANFIELD            | 1/21/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,161          |
| FOSTER               | 1/21/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,161          |
| LINWOOD              | 3/17/2016  | Thunderstorm Wind | 54 kts. EG | 0/0             | \$15,403         |

| Location     | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|--------------|------------|-------------------|------------|-----------------|------------------|
| ADAMS (ZONE) | 12/17/2016 | Strong Wind       | 43 kts. EG | 0/0             | \$20,256         |
| SIBLEY       | 1/2/2017   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$7,049          |
| JOHNSVILLE   | 1/2/2017   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,035          |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

†E = estimated; EG = estimated gust; ES = estimated sustained; M = measured; MG = measured gust; MS = measured sustained

Source: National Climatic Data Center

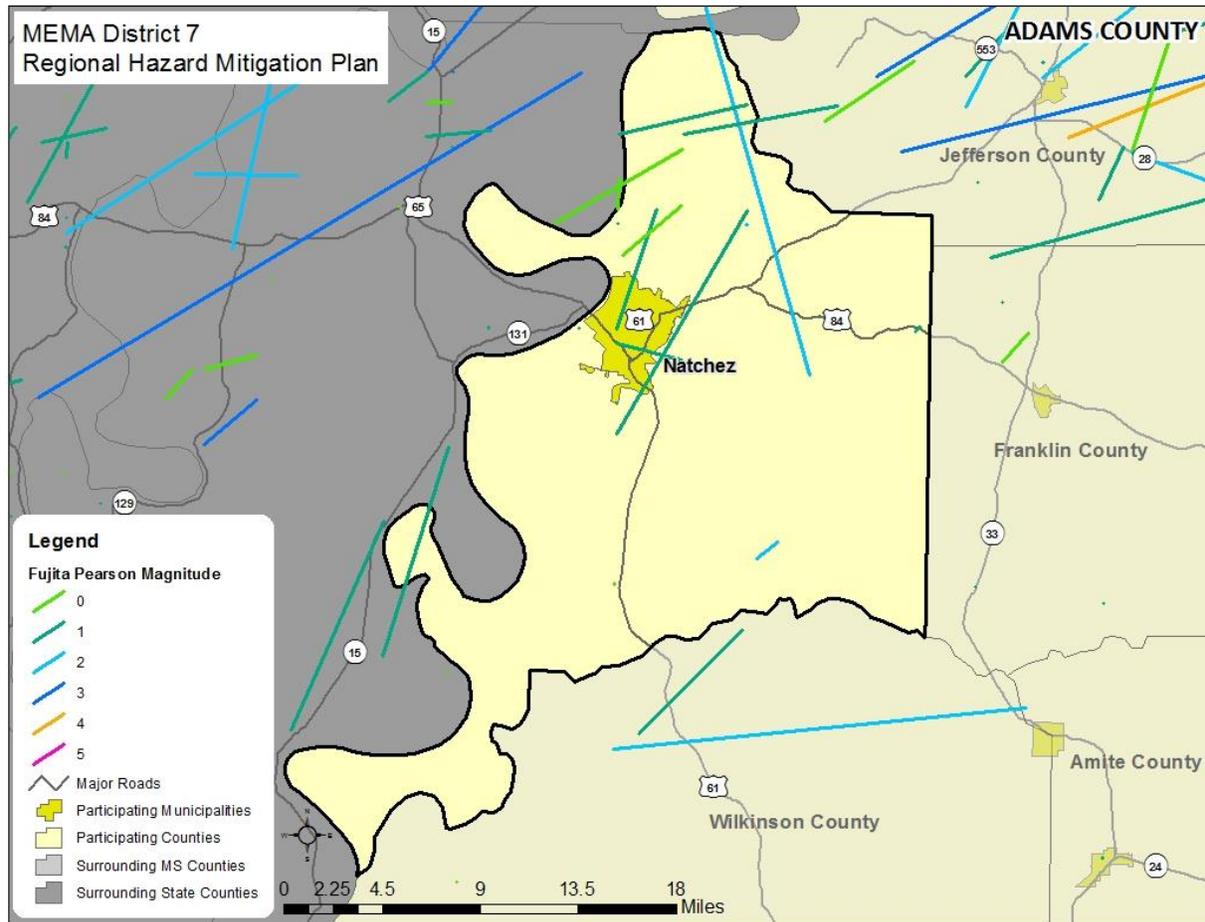
**PROBABILITY OF FUTURE OCCURRENCES**

Given the high number of previous events, it is certain that thunderstorm events, including straight-line wind events, will occur in the future. This results in a probability level of highly likely (100 percent annual probability) for the entire county.

**A.2.12 Tornado**

**LOCATION AND SPATIAL EXTENT**

Tornadoes occur throughout the state of Mississippi, and thus in Adams County. Tornadoes typically impact a relatively small area, but damage may be extensive. Event locations are completely random and it is not possible to predict specific areas that are more susceptible to tornado strikes over time. Therefore, it is assumed that Adams County is uniformly exposed to this hazard. With that in mind, **Figure A.13** shows tornado track data for many of the major tornado events that have impacted the county between 1950 and 2015. While no definitive pattern emerges from this data, some areas that have been impacted in the past may be potentially more susceptible in the future.

**FIGURE A.13: HISTORICAL TORNADO TRACKS IN ADAMS COUNTY**

Source: National Weather Service Storm Prediction Center

### **HISTORICAL OCCURRENCES**

Tornadoes were at least partially responsible for five disaster declarations in Adams County in 1973, 1979, 1980, 1990, 2009, and 2017.<sup>22</sup> According to the National Climatic Data Center, there have been a total of 16 recorded tornado events in Adams County since 1950 (**Table A.23**), resulting in almost \$10.4 million (2017 dollars) in property damages.<sup>23</sup> <sup>24</sup> In addition, 44 injuries were reported. The magnitude of these tornadoes ranges from F0 to F2, although an F5 event is possible. Detailed information on historic tornado events can be found in **Table A.24**.

<sup>22</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>23</sup> These tornado events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1950 through February 2017. It is likely that additional tornadoes have occurred in Adams County. As additional local data becomes available, this hazard profile will be amended.

<sup>24</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE A.23: SUMMARY OF TORNADO OCCURRENCES IN ADAMS COUNTY**

| Location                  | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|---------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Natchez                   | 3                     | 0/0             | \$3,060,792            | \$255,066                  |
| Unincorporated Area       | 13                    | 0/44            | \$7,293,493            | \$108,858                  |
| <b>ADAMS COUNTY TOTAL</b> | <b>16</b>             | <b>0/44</b>     | <b>\$10,354,285</b>    | <b>\$363,924</b>           |

Source: National Climatic Data Center

**TABLE A.24: HISTORICAL TORNADO IMPACTS IN ADAMS COUNTY**

| Location                   | Date       | Magnitude | Deaths/Injuries | Property Damage* | Details   |
|----------------------------|------------|-----------|-----------------|------------------|---|
| <b>Natchez</b>             |            |           |                 |                  |   |
| NATCHEZ                    | 3/26/2005  | F1        | 0/0             | \$151,800        | --  |
| NATCHEZ                    | 12/9/2008  | EF1       | 0/0             | \$2,907,843      | The tornado track started just south of the city limits of Natchez, tracked northeast across the southeast side of the city, and then moved into unincorporated areas east of the city. Numerous hardwood and softwood trees were snapped and uprooted along the path. Around 50 homes were damaged, mostly from trees falling on them. Six commercial buildings were damaged, mainly roof damage. One power pole was snapped and power lines were down in several locations along the path. Maximum winds were around 110 mph. |
| NATCHEZ                    | 3/27/2009  | EF0       | 0/0             | \$1,150          | This tornado touched down along Cemetery Road and tracked northeast toward the Pine Ridge Community. Several trees and large limbs were blown down along the track, along with a street sign. Tornado was visually spotted by storm spotters.   |
| <b>Unincorporated Area</b> |            |           |                 |                  |   |
| ADAMS CO.                  | 5/1/1950   | --        | 0               | \$257,937        | --  |
| ADAMS CO.                  | 1/10/1975  | F1        | 0               | \$1,173,340      | --  |
| ADAMS CO.                  | 5/7/1975   | F1        | 0               | \$114,908        | --  |
| ADAMS CO.                  | 6/10/1975  | F1        | 0               | \$11,405         | --  |
| ADAMS CO.                  | 6/29/1976  | F2        | 0               | \$107,625        | --  |
| ADAMS CO.                  | 4/3/1982   | F2        | 0/40            | \$644            | --  |
| ADAMS CO.                  | 3/17/1987  | F1        | 0/4             | \$5,453,256      | --  |
| ADAMS CO.                  | 11/16/1987 | F1        | 0               | \$5,297          | --  |
| Sibley                     | 4/20/1995  | F0        | 0               | \$4,829          | Several trees were blown down by this weak tornado.   |
| PINE RIDGE                 | 3/26/2005  | F1        | 0               | \$31,625         | --  |

| Location   | Date      | Magnitude | Deaths/<br>Injuries | Property<br>Damage* | Details  |
|------------|-----------|-----------|---------------------|---------------------|--|
| PINE RIDGE | 5/10/2006 | F0        | 0                   | \$0                 | This is the continuation of the tornado that moved across the Mississippi River from Concordia Parish. This tornado was observed crossing the river and a story was written in the newspaper about the event. The tornado remained over a rural area where no access existed to perform a storm survey. This was the second tornado to occur from supercell 3. |
| KINGSTON   | 9/20/2013 | EF2       | 0                   | \$130,539           | Two homes were damaged along Kingston Road. Both homes lost good portions of their roofs. Other housing materials were then found downstream in the field beyond the homes. Maximum sustained winds were 115 mph.  |
| LEESDALE   | 9/20/2013 | EF1       | 0                   | \$2,089             | This tornado briefly touched down near Highway 84 and Ratcliffe Farm Road. A couple dozen trees were snapped and uprooted with several trees down across the CN railroad track. Maximum sustained winds were 100 mph.  |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.  
 Source: National Climatic Data Center

**PROBABILITY OF FUTURE OCCURRENCES**

According to historical information, tornado events pose a significant threat to Adams County. The probability of future tornado occurrences affecting Adams County is likely (between 10 and 100 percent annual probability).

**A.2.13 Winter Storm and Freeze**

**LOCATION AND SPATIAL EXTENT**

Nearly the entire continental United States is susceptible to winter storm and freeze events. Some ice and winter storms may be large enough to affect several states, while others might affect limited, localized areas. The degree of exposure typically depends on the normal expected severity of local winter weather. Adams County is not accustomed to severe winter weather conditions and seldom receives severe winter weather, even during the winter months. Events tend to be mild in nature; however, this creates a situation where even relatively small accumulations of snow, ice, or other wintry precipitation can lead to losses and damage due to the fact that these events are not commonplace. Given the atmospheric nature of the hazard, the entire county has uniform exposure to a winter storm.

**HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, there have been a total of 10 recorded winter storm events in Adams County since 1996 (Table A.25).<sup>25</sup> These events resulted in more than \$1.4 million (2017

<sup>25</sup> These ice and winter storm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional winter storm conditions have affected Adams County.

dollars) in damages.<sup>26</sup> Detailed information on the recorded winter storm events can be found in **Table A.26**.

**TABLE A.25: SUMMARY OF WINTER STORM EVENTS IN ADAMS COUNTY**

| Location     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|--------------|-----------------------|-----------------|------------------------|----------------------------|
| Adams County | 10                    | 0/0             | \$1,446,154            | \$68,864                   |

Source: National Climatic Data Center

**TABLE A.26: HISTORICAL WINTER STORM IMPACTS IN ADAMS COUNTY**

| Location                   | Date       | Type       | Deaths/Injuries | Property Damage* |
|----------------------------|------------|------------|-----------------|------------------|
| <b>Natchez</b>             |            |            |                 |                  |
| None reported              | --         | --         | --              | --               |
| <b>Unincorporated Area</b> |            |            |                 |                  |
| ADAMS (ZONE)               | 2/1/1996   | Ice Storm  | 0/0             | \$157,859        |
| ADAMS (ZONE)               | 1/19/2008  | Heavy Snow | 0/0             | \$0              |
| ADAMS (ZONE)               | 12/11/2008 | Ice Storm  | 0/0             | \$0              |
| ADAMS (ZONE)               | 12/4/2009  | Heavy Snow | 0/0             | \$0              |
| ADAMS (ZONE)               | 2/11/2010  | Heavy Snow | 0/0             | \$676,911        |
| ADAMS (ZONE)               | 1/9/2011   | Ice Storm  | 0/0             | \$16,655         |
| ADAMS (ZONE)               | 2/3/2011   | Ice Storm  | 0/0             | \$441,959        |
| ADAMS (ZONE)               | 1/28/2014  | Heavy Snow | 0/0             | \$0              |
| ADAMS (ZONE)               | 2/11/2014  | Ice Storm  | 0/0             | \$52,075         |
| ADAMS (ZONE)               | 1/6/2017   | Sleet      | 0/0             | \$100,694        |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

There have been several severe winter weather events in Adams County. The text below describes two of the major events and associated impacts on the county. Similar impacts can be expected with severe winter weather.

### February 2010

Heavy snow affected a large portion of the region, especially locations across central and southern Mississippi, on Thursday night and Friday, February 11th and 12th. The heavy snow was a result of a low pressure system that tracked eastward across the northern Gulf of Mexico, and a vigorous upper level disturbance that moved across the region while a cold air mass was in place. Light precipitation overspread the region late Thursday afternoon into the evening before becoming heavy Thursday night into early Friday morning. The snow tapered off from west to east during the midday hours Friday.

### February 2011

An ice storm developed across the area on February 3rd into the early morning hours of the 4th. While this icing event was not devastating, the impact to travel was a major issue across the region. Thousands

<sup>26</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

of accidents occurred from slick roads. As a result of the accidents, three fatalities occurred along with a handful of injuries. Overall, most areas received 0.25 to 0.5 inches of ice accumulation from freezing rain. Additionally, some areas had a mix of precipitation with sleet accumulating. Some snow did occur, but those were just across select areas and the accumulation was mainly one inch or less.

Winter storms throughout the planning area have several negative externalities including hypothermia, cost of snow and debris cleanup, business and government service interruption, traffic accidents, and power outages. Furthermore, citizens may resort to using inappropriate heating devices that could to fire or an accumulation of toxic fumes.

### ***PROBABILITY OF FUTURE OCCURRENCES***

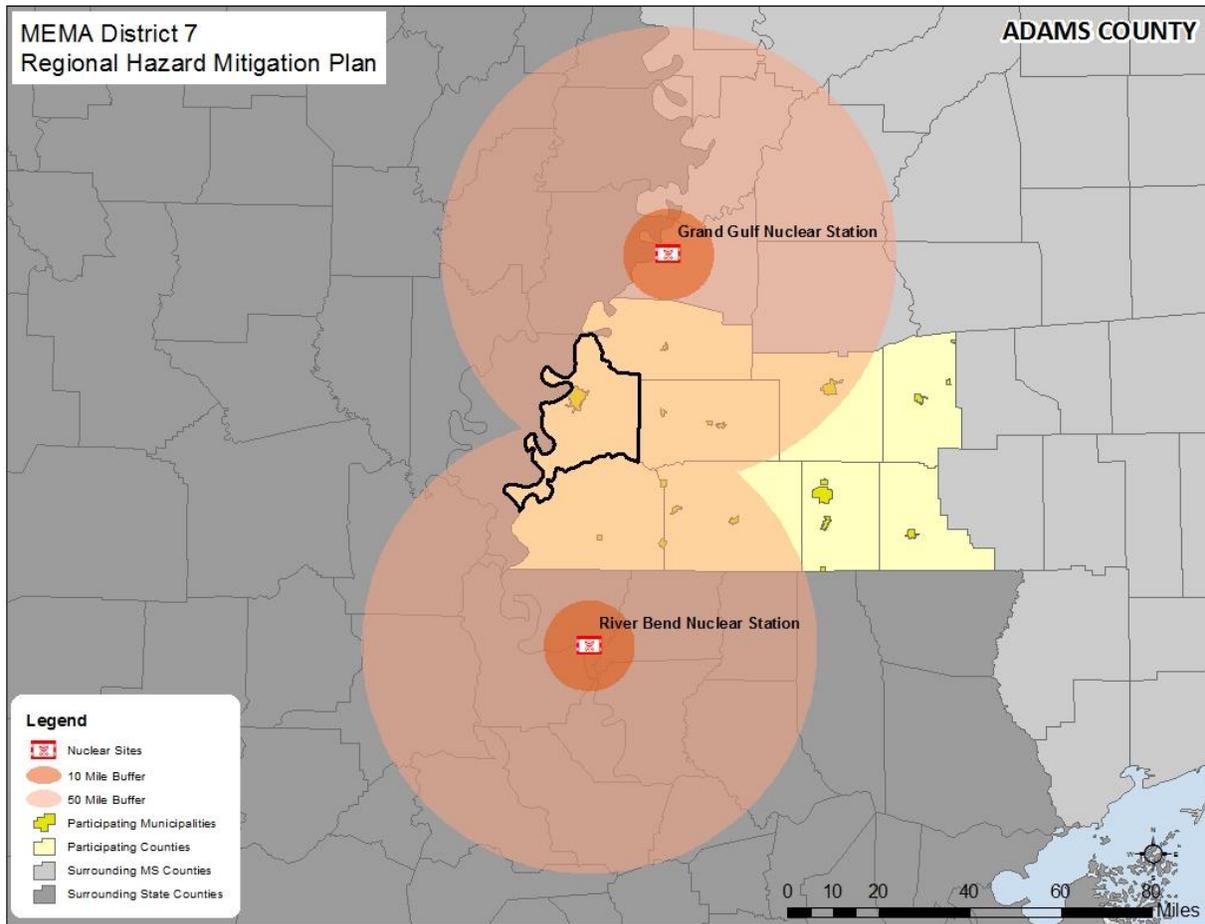
Winter storm events will continue to occur in Adams County. Based on historical information, the probability is likely (between 10 and 100 percent annual probability).

## ***HUMAN-CAUSED HAZARDS***

### **A.2.14 Radiological Event**

#### ***LOCATION AND SPATIAL EXTENT***

The Grand Gulf Nuclear Station and River Bend Nuclear Station are both located within a 50-mile radius of the MEMA District 7 Region. The Nuclear Regulatory Commission defines two emergency planning zones around nuclear plants. Areas located within 10 miles of the station are considered to be within the zone of highest risk to a nuclear incident and this radius is the designated evacuation radius recommended by the Nuclear Regulatory Commission. Within the 10-mile zone, the primary concern is exposure to and inhalation of radioactive contamination. No part of Adams County is located in the 10-mile radius of a nuclear station. The most concerning effects in the secondary 50-mile zone are related to ingestion of food and liquids that may have been contaminated. All of Adams County is located within this 50-mile radius. The 50-mile zone is still considered to be at risk from a nuclear incident, though the impacts may be less severe than in the 10-mile zone (**Figure A.14**).

**FIGURE A.14: NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN ADAMS COUNTY**

Source: International Atomic Energy Agency

### **HISTORICAL OCCURRENCES**

Although there have been no major nuclear events at either the Grand Gulf or River Bend Nuclear Stations, there is some possibility that one could occur as there have been incidents in the past in the United States at other facilities and at facilities around the world. Additionally, a list of minor events/notifications was acquired from reports collected by the Nuclear Regulatory Commission (NRC). The NRC classifies events using the scale found in **Table A.27**. A list of events at Grand Gulf Nuclear Station can be found in **Table A.28** and a list of events at River Bend Nuclear Station can be found in **Table A.29**. It is noteworthy that all of the events were minor in magnitude and many were insignificant enough that they did not register on the classification scale.

**TABLE A.27: NUCLEAR REGULATORY COMMISSION EMERGENCY CLASSIFICATION SCALE FOR EVENTS OCCURRING AT NUCLEAR POWER PLANTS**

| Classification                       | Description   |
|--------------------------------------|---|
| Notification of Unusual Event (NOUE) | Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. [Note: This term is sometimes shortened to Unusual Event (UE). The terms Notification of Unusual Event, NOUE and Unusual Event are used interchangeably.]  |
| Alert                                | Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) protective action guides (PAGs)  |
| Site Area Emergency                  | Site Area Emergency (SAE) – Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile action that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary. |
| General Emergency                    | Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile action that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.  |

Source: Nuclear Regulatory Commission

**TABLE A.28: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT GRAND GULF NUCLEAR STATION**

| Date      | Retrieved From*                  | Classification | Plant             | Description  |
|-----------|----------------------------------|----------------|-------------------|--|
| 8/29/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST         |
| 10/1/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF NUCLEAR STATION SECURITY OFFICER LOCKOUT                  |
| 9/29/2016 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF EXTENDED PLANT SHUTDOWN TO ADDRESS OPERATIONS PERFORMANCE |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lsearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

**TABLE A.29: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT  
RIVER BEND NUCLEAR STATION**

| Date       | Retrieved From*                  | Classification                               | Plant             | Description   |
|------------|----------------------------------|--|-------------------|---|
| 11/26/1985 | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | ECCS Initiation: Improper restoration of a level transmitter causes HPSC injection    |
| 11/27/1985 | Licensee Event Report            | Alert  | River Bend Unit 1 | Failure to Perform Surveillance Tests   |
| 3/5/1992   | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | REACTOR SCRAM CAUSED BY A GENERATOR TRIP DUE TO HIGH WINDS CAUSING TRANSFORMER DAMAGE |
| 9/15/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE IVAN  |
| 10/4/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | Shutdown Greater than 72 Hours  |
| 9/23/2005  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | NRC ENTERS MONITORING MODE DUE TO HURRICANE RITA                                      |
| 5/23/2007  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REACTOR SHUTDOWN DUE TO UNEXPECTED CHANGE IN RECIRCULATION FLOW                       |
| 9/2/2008   | Preliminary Notification Reports | Notification of Unusual Event/Not Applicable | River Bend Unit 1 | NRC RESPONSE TO HURRICANE GUSTAV  |
| 5/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | AUGMENTED INSPECTION TEAM ONSITE AT RIVER BEND STATION                                |
| 8/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST                          |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lersearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

### **PROBABILITY OF FUTURE OCCURRENCES**

A nuclear event is a very rare occurrence in the United States due to the intense regulation of the industry. There have been minor incidents in the past, but it is considered unlikely (less than 1 percent annual probability).

### **RADIOLOGICAL EVACUATIONS**

Similar to the hurricane evacuations discussed above, in many ways the MEMA District 7 Region would potentially be impacted to a greater degree by evacuations caused by a radiological event than by the event itself. Since the region is not directly located within the 10-mile evacuation area but neighboring counties are located within this zone, it is highly likely that populations from those neighboring counties will be evacuated to the counties within the MEMA District 7 Region.

Due to the severe and long-term effects of a major radiological event, temporary sheltering will be an initial concern, but the greater challenge may be in the long-term. As has happened with historical radiological accidents in other locations, the danger in the impacted area will likely extend for a very long period after the event and evacuees may be unable to return to their homes for months or years. This additional influx of population will cause a major strain on resources within these relatively rural counties in the short-term, as local communities with limited resources will have an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people. In the long-term, there may be challenges for local officials as existing infrastructure will likely be inadequate to handle larger populations.

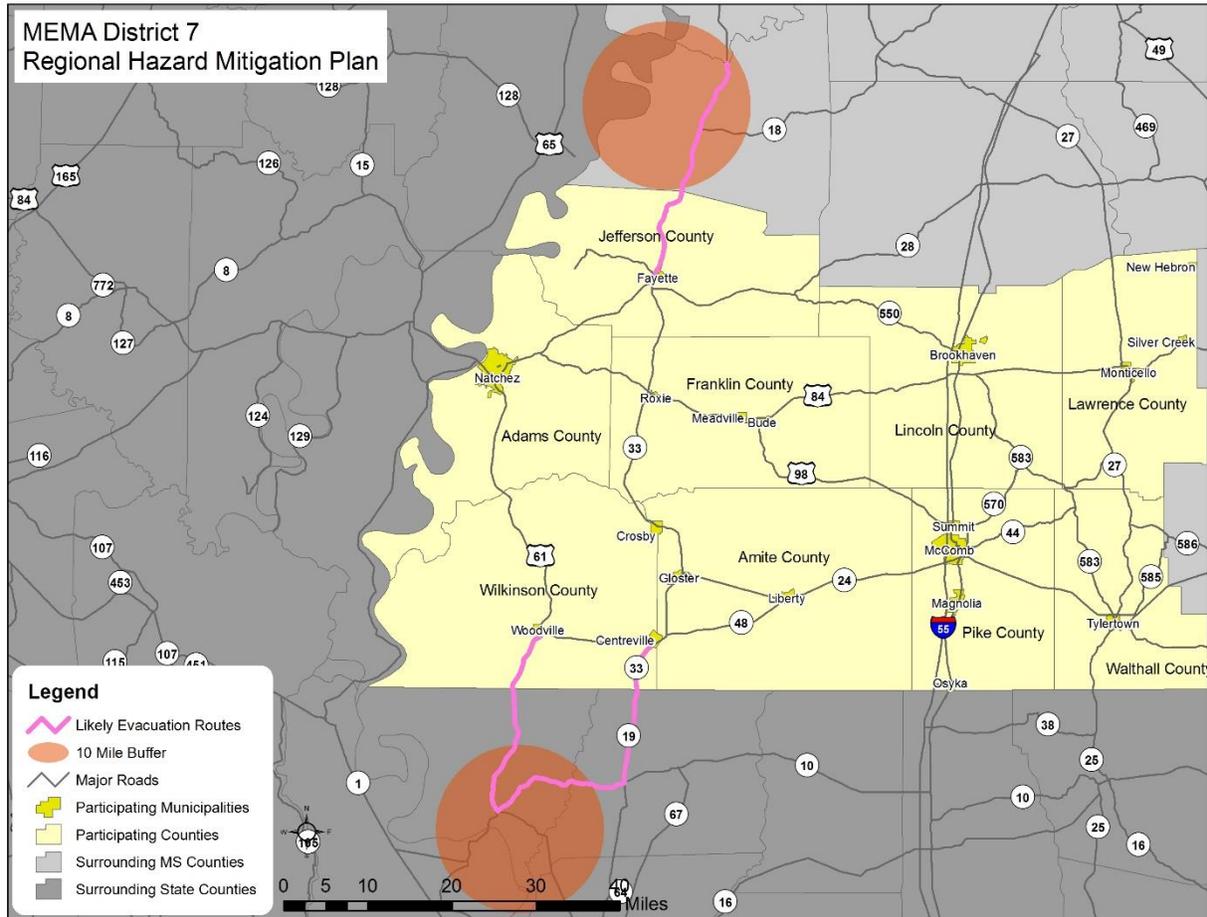
Although there have not been any major radiological events in the region historically, hurricane evacuations (discussed above) provide a similar scenario in terms of what the region might expect. However, one additional concern that officials will need to consider in a radiological event is that evacuees may be contaminated by radioactivity. According to the Centers for Disease Control, radioactive contamination can occur when radioactive materials are released into the environment and become deposited into the air, water, surfaces, soil, plants, buildings, people or animals. This contamination can then be spread when people touch other people, surfaces, or objects. Therefore, when people evacuate a contaminated zone, they pose a potential risk of spreading the contamination to others if they are not properly treated. Local officials in MEMA District 7 may need to be prepared to set up decontamination centers along major evacuation routes to ensure that the contamination is not spread. It is also important for citizens to understand the steps they can take to reduce the risk of spreading contamination such as evacuating quickly after an event and following decontamination instructions as directed by local officials.<sup>27</sup>

Based on the locations of the 10-mile evacuation areas near the region, many of these evacuees will likely come from Claiborne County to the north and West Feliciana and East Feliciana Parishes to the south. The main roads for these evacuees will probably be U.S. Highway 61 and Mississippi State Highway 33 since these are the primary and most direct roads into and out of the aforementioned evacuation counties and into MEMA District 7 (**Figure A.15**). Depending on the severity of the event, officials may even change these roads over to a contraflow traffic pattern to enable quicker evacuations.

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<sup>27</sup> Centers for Disease Control and Prevention. *Emergency Preparedness and Response: Contamination vs. Exposure*. Retrieved on September 1, 2017 from <https://emergency.cdc.gov/radiation/contamination.asp>

**FIGURE A.15: LIKELY EVACUATION ROUTES FOR A RADIOLOGICAL EVENT IN THE MEMA DISTRICT 7 REGION**



Source: International Atomic Energy Agency

As a result of the potential for an influx of evacuees during a radiological event, it is critical for local officials in MEMA District 7 to prepare for evacuations. It is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future events.

### A.2.15 Conclusions on Hazard Risk

The hazard profiles presented in this subsection were developed using best available data and result in what may be considered principally a qualitative assessment as recommended by FEMA in its “How-to” guidance document titled *Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA Publication 386-2). It relies heavily on historical and anecdotal data, stakeholder input, and professional and experienced judgment regarding observed and/or anticipated hazard impacts. It also carefully considers the findings in other relevant plans, studies, and technical reports.

**HAZARD EXTENT**

**Table A.30** describes the extent of each natural hazard identified for Adams County. The extent of a hazard is defined as its severity or magnitude, as it relates to the planning area.

**TABLE A.30: EXTENT OF ADAMS COUNTY HAZARDS**

| Flood-related Hazards |  |             |  |                                     |                                 |  |   |    |
|-----------------------|--|-------------|--|-------------------------------------|---------------------------------|--|---|----|
| Dam and Levee Failure | Dam Failure extent is defined using the Mississippi Department of Environmental Quality classifications which include Low, Significant, and High. Six dams are classified as high-hazard in Adams County.  |             |  |                                     |                                 |  |   |    |
| Erosion               | The extent of erosion can be defined by the measurable rate of erosion that occurs. There are no official erosion rate records in Adams County but local estimates are around 0.25 to 0.50 feet per year. Some areas of erosion have been identified by local coordinators.  |             |  |                                     |                                 |  |   |    |
| Flood                 | Flood extent can be measured by the amount of land and property in the floodplain as well as flood height and velocity. The amount of land in the floodplain accounts for 34.7 percent of the total land area in Adams County.   |             |  |                                     |                                 |  |   |    |
|                       | Flood depth and velocity are recorded via United States Geological Survey stream gages throughout the region. While a gage does not exist for each participating jurisdiction, there is one at or near many areas. The greatest peak discharge recorded for the county was on the Homochitto River near Doloroso. Water reached a discharge of 134,000 cubic feet per second (recorded on May 19, 1953). The highest stream gage height was on the Mississippi River at Natchez with a height that was recorded at 61.95 feet, or 4.95 feet above the major flood stage (recorded on May 19, 2011). Additional peak discharge readings, historic crest heights, and the corresponding flood categories (where available) are in the table below. |             |  |                                     |                                 |  |   |    |
|                       | <b>Location/<br/>Jurisdiction</b>  | <b>Date</b> | <b>Maximum<br/>Historic<br/>Crest (ft)</b> | <b>Peak<br/>Discharge<br/>(cfs)</b> | <b>Flood Categories</b>         |  |   |    |
|                       |  |             |  | <b>Action<br/>Stage<br/>(ft)</b>    | <b>Flood<br/>Stage<br/>(ft)</b> | <b>Moderate<br/>Flood<br/>Stage (ft)</b> | <b>Major<br/>Flood<br/>Stage<br/>(ft)</b> |    |
|                       | <b>Adams County</b>  |             |  |                                     |                                 |  |   |    |
|                       | St.<br>Catherine<br>Creek near<br>Natchez  | 5/17/1953   | 33.80                                      | 31,000                              | NA                              | NA                                       | NA  | NA |
|                       | Spanish<br>Bayou at<br>Natchez   | 10/12/1970  | 15.12                                      | 1,990                               | NA                              | NA                                       | NA  | NA |
|                       | Homochitto<br>River near<br>Kingston   | 4/2/1947    | 26.39                                      | 45,400                              | NA                              | NA                                       | NA  | NA |
|                       | Second<br>Creek at<br>Sibley   | 5/3/1953    | 13.70                                      | 22,500                              | NA                              | NA                                       | NA  | NA |
|                       | Homochitto<br>River near<br>Doloroso   | 5/19/1953   | 33.00                                      | 134,000*                            | NA                              | NA                                       | NA  | NA |

|                              |           |       |    |    |    |    |    |
|------------------------------|-----------|-------|----|----|----|----|----|
| Mississippi River at Natchez | 5/19/2011 | 61.95 | NA | 38 | 48 | 51 | 57 |
|------------------------------|-----------|-------|----|----|----|----|----|

NA= Data not available for this particular gage  
 \*Occurred on a different date than Maximum Historic Crest

**Fire-related Hazards**

|           |  |
|-----------|--|
| Drought   | Drought extent is defined by the U.S. Drought Monitor Classifications which include Abnormally Dry, Moderate Drought, Severe Drought, Extreme Drought, and Exceptional Drought. According to the U.S. Drought Monitor Classifications, the most severe drought condition is Exceptional. Adams County has received this ranking once over the 17-year reporting period.  |
| Lightning | According to the Vaisala’s flash density map, Adams County is located in an area that experiences 12 to 20 lightning flashes per square mile per year. It should be noted that future lightning occurrences may exceed these figures.  |
| Wildfire  | Wildfire data was provided by the Mississippi Forestry Commission and is reported annually by county from 2007-2016. The greatest number of fires to occur in Adams County in any year was 5 in 2008. The greatest number of acres to burn in the county in a single year occurred in 2008 when 249 acres were burned. Although this data lists the extent that has occurred, larger and more frequent wildfires are possible throughout the county. |

**Geologic Hazards**

|            |  |
|------------|--|
| Earthquake | Earthquake extent can be measured by the Richter Scale or the Modified Mercalli Intensity (MMI) scale. According to data provided by the National Centers for Environmental Information, the greatest earthquake to impact Adams County had a MMI of VI (strong) and a Richter Scale magnitude of 7.2 (reported on December 16, 1811). |
|------------|--|

**Wind-related Hazards**

|                                |  |
|--------------------------------|--|
| Extreme Heat                   | The extent of extreme heat can be measured by the record high temperature recorded. Official long term temperature records are not kept for any areas in Adams County. However, the highest recorded temperature in the region was 106°F in 2007 with heat index values recorded above 115°F.  |
| Hailstorm                      | Hail extent can be defined by the size of the hail stone. The largest hail stone reported in Adams County was 2.75 inches (reported on April 6, 1983). It should be noted that future events may exceed this.  |
| Hurricane and Tropical Storm   | Hurricane extent is defined by the Saffir-Simpson Scale which classifies hurricanes into Category 1 through Category 5. The greatest classification of hurricane to impact the MEMA District 7 Region was a Category 3 storm. This occurred in 1969 with Hurricane Camille and in 2005 with Hurricane Katrina. The storm track of both storms passed just to the east of the region, but due to the size of these storms, their impact was felt across the region. |
| Severe Thunderstorm/ High Wind | Thunderstorm extent is defined by the number of thunder events and wind speeds reported. According to a 67-year history from the National Climatic Data Center, the strongest recorded wind event in Adams County was last reported on May 3, 2009 at 78 knots (approximately 90 mph). It should be noted that future events may exceed these historical occurrences.  |
| Tornado                        | Tornado hazard extent is measured by tornado occurrences in the US provided by FEMA as well as the Fujita/Enhanced Fujita Scale. The greatest magnitude reported in Adams County was an F2 (last reported on April 3, 1982).   |
| Winter Storm and Freeze        | The extent of winter storms can be measured by the amount of snowfall received (in inches). Official long term snow records are not kept for any areas in Adams County. However, reports from NCDC of the greatest snowfall in the county has been 6 inches (reported on February 11, 2010).   |

**Human-caused Hazards****Radiological Event**

Although there is no history of a nuclear accident at either the Grand Gulf Nuclear Station or River Bend Nuclear Station, other events across the globe and in the United States in particular indicate that an event is possible. Since several national and international events were Level 7 events on the INES, the potential for a Level 7 event at these stations is possible.

**PRIORITY RISK INDEX RESULTS**

In order to draw some meaningful planning conclusions on hazard risk for Adams County, the results of the hazard profiling process were used to generate countywide hazard classifications according to a “Priority Risk Index” (PRI). More information on the PRI and how it was calculated can be found in Section 5.17.2.

**Table A.31** summarizes the degree of risk assigned to each category for all initially identified hazards based on the application of the PRI. Assigned risk levels were based on the detailed hazard profiles developed for this subsection, as well as input from the Regional Hazard Mitigation Council. The results were then used in calculating PRI values and making final determinations for the risk assessment.

**TABLE A.31: SUMMARY OF PRI RESULTS FOR ADAMS COUNTY**

| Hazard                        | Category/Degree of Risk |              |                |                    |                    |            |
|-------------------------------|-------------------------|--------------|----------------|--------------------|--------------------|------------|
|                               | Probability             | Impact       | Spatial Extent | Warning Time       | Duration           | PRI Score  |
| <b>Flood-related Hazards</b>  |                         |              |                |                    |                    |            |
| Dam Failure and Levee Failure | Possible                | Critical     | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>2.6</b> |
| Erosion                       | Likely                  | Limited      | Small          | More than 24 hours | More than 1 week   | <b>2.4</b> |
| Flood                         | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 24 hours | <b>3.2</b> |
| <b>Fire-related Hazards</b>   |                         |              |                |                    |                    |            |
| Drought                       | Possible                | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.5</b> |
| Lightning                     | Highly Likely           | Limited      | Small          | 6 to 12 hours      | Less than 6 hours  | <b>2.6</b> |
| Wildfire                      | Possible                | Limited      | Small          | Less than 6 hours  | Less than 1 week   | <b>2.3</b> |
| <b>Geologic Hazards</b>       |                         |              |                |                    |                    |            |
| Earthquake                    | Unlikely                | Minor        | Small          | Less than 6 hours  | Less than 6 hours  | <b>1.5</b> |
| <b>Wind-related Hazards</b>   |                         |              |                |                    |                    |            |
| Extreme Heat                  | Likely                  | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.8</b> |
| Hailstorm                     | Highly Likely           | Limited      | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>2.8</b> |
| Hurricane and Tropical Storm  | Likely                  | Catastrophic | Large          | More than 24 hours | Less than 1 week   | <b>3.3</b> |
| Severe Thunderstorm/High Wind | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>3.1</b> |
| Tornado                       | Likely                  | Catastrophic | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>3.2</b> |
| Winter Storm and Freeze       | Likely                  | Minor        | Moderate       | More than 24 hours | Less than 1 week   | <b>2.2</b> |
| <b>Human-caused Hazards</b>   |                         |              |                |                    |                    |            |
| Radiological Event            | Unlikely                | Critical     | Moderate       | More than 24 hours | Less than 1 week   | <b>2.2</b> |

## A.2.16 Final Determinations on Hazard Risk

The conclusions drawn from the hazard profiling process for Adams County, including the PRI results and input from the Regional Hazard Mitigation Council, resulted in the classification of risk for each identified hazard according to three categories: High Risk, Moderate Risk, and Low Risk (**Table A.32**). For purposes of these classifications, risk is expressed in relative terms according to the estimated impact that a hazard will have on human life and property throughout all of Adams County. A more quantitative analysis to estimate potential dollar losses for each hazard has been performed separately, and is described in Section 6: *Vulnerability Assessment* and below in Section A.3. It should be noted that although some hazards are classified below as posing low risk, their occurrence of varying or unprecedented magnitudes is still possible in some cases and their assigned classification will continue to be evaluated during future plan updates. In most cases, the hazards of greatest concern did not change much since the last plan update, indicating that the priorities remained relatively stable and there were few changes in priorities.

**TABLE A.32: CONCLUSIONS ON HAZARD RISK FOR ADAMS COUNTY**

|                      |   |
|----------------------|---|
| <b>HIGH RISK</b>     | Hurricane and Tropical Storm<br>Tornado<br>Flood<br>Severe Thunderstorm/High Wind     |
| <b>MODERATE RISK</b> | Extreme Heat<br>Hailstorm<br>Dam and Levee Failure<br>Lightning<br>Drought<br>Erosion |
| <b>LOW RISK</b>      | Wildfire<br>Winter Storm and Freeze<br>Radiological Event<br>Earthquake               |

## A.3 ADAMS COUNTY VULNERABILITY ASSESSMENT

This subsection identifies and quantifies the vulnerability of Adams County to the significant hazards previously identified. This includes identifying and characterizing an inventory of assets in the county and assessing the potential impact and expected amount of damages caused to these assets by each identified hazard event. More information on the methodology and data sources used to conduct this assessment can be found in Section 6: *Vulnerability Assessment*.

### A.3.1 Asset Inventory

**Table A.33** lists the estimated number of improved properties and the total value of improvements for Adams County and its participating jurisdictions (study area of vulnerability assessment). Because digital parcel data was not available for most communities, data obtained from Hazus-MH 4.0 inventory was utilized to complete the analysis.

**TABLE A.33: IMPROVED PROPERTY IN ADAMS COUNTY**

| Location                  | Counts of Improved Property | Total Value of Improvements |
|---------------------------|-----------------------------|-----------------------------|
| Natchez                   | 8,332                       | \$2,068,891                 |
| Unincorporated Area       | 6,329                       | \$3,127,854,109             |
| <b>ADAMS COUNTY TOTAL</b> | <b>14,661</b>               | <b>\$3,129,923,000</b>      |

Source: Hazus-MH 4.0

**Table A.34** lists the fire stations, police stations, medical care facilities, emergency operation centers, schools, government/public buildings, transportation infrastructure, and private facilities located in Adams County according to previous plan data and Hazus-MH 4.0 data that was reviewed and updated by local officials.

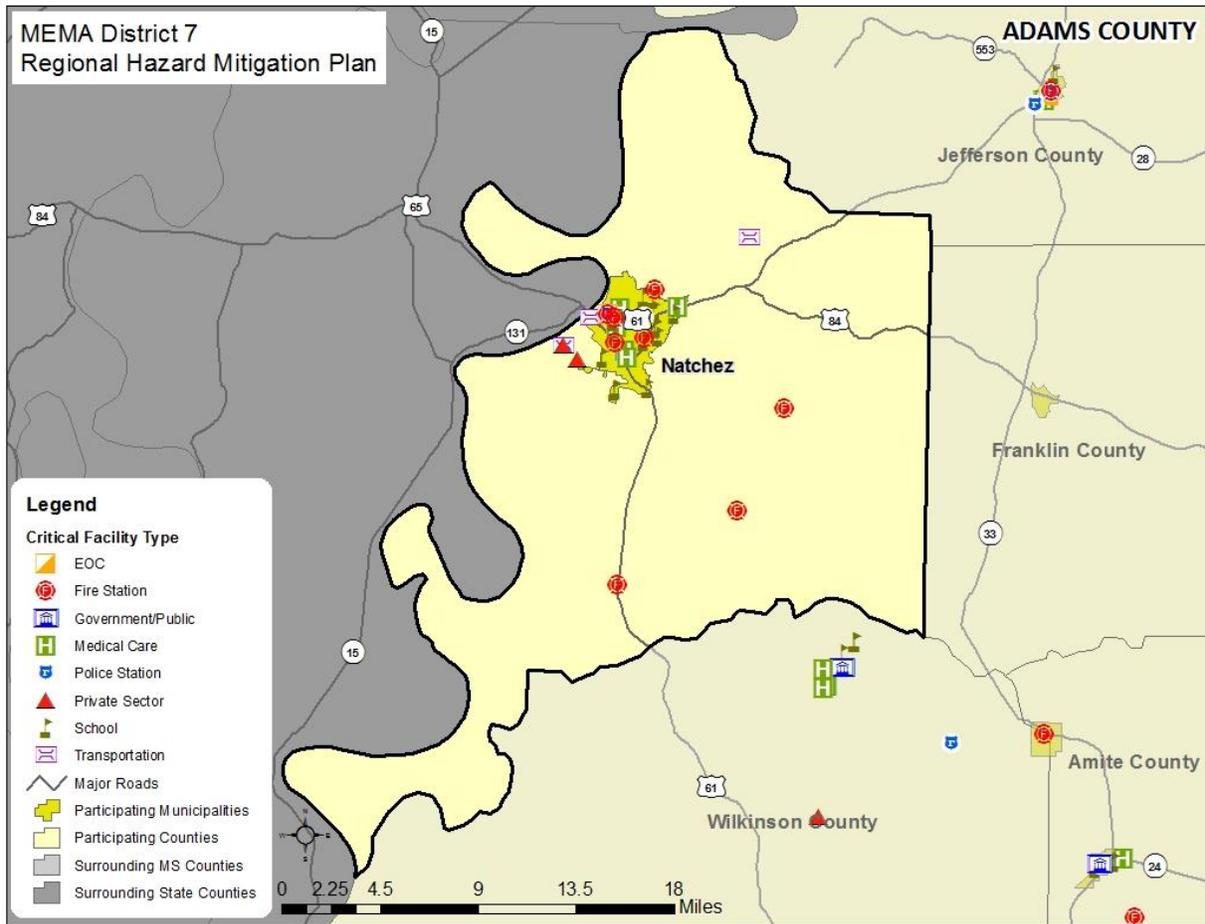
In addition, **Figure A.16** shows the locations of critical facilities in Adams County. **Table A.45**, at the end of this subsection, shows a complete list of the critical facilities by name, as well as the hazards that affect each facility. As noted previously, this list is not all-inclusive and only includes information provided through Hazus which was updated, as best as possible, with local knowledge.

**TABLE A.34: CRITICAL FACILITY INVENTORY IN ADAMS COUNTY**

| Location                  | Fire Stations | Police Stations | Medical Care | EOC      | Schools   | Gov't/<br>Public | Trans    | Private Sector |
|---------------------------|---------------|-----------------|--------------|----------|-----------|------------------|----------|----------------|
| Natchez                   | 5             | 2               | 9            | 1        | 15        | 1                | 0        | 0              |
| Unincorporated Area       | 3             | 0               | 0            | 0        | 2         | 0                | 3        | 2              |
| <b>ADAMS COUNTY TOTAL</b> | <b>8</b>      | <b>2</b>        | <b>9</b>     | <b>1</b> | <b>17</b> | <b>1</b>         | <b>3</b> | <b>2</b>       |

Source: Hazus-MH 4.0; Local Officials

**FIGURE A.16: CRITICAL FACILITY LOCATIONS IN ADAMS COUNTY**



Source: Hazus-MH 4.0; Local Officials

### A.3.2 Social Vulnerability

In addition to identifying those assets potentially at risk to identified hazards, it is important to identify and assess those particular segments of the resident population in Adams County that are potentially at risk to these hazards.

**Table A.35** lists the population by jurisdiction according to U.S. Census, American Community Survey 2015 population estimates. The total population in Adams County according to Census data was 31,979 persons. Additional population estimates are presented above in Section A.1.

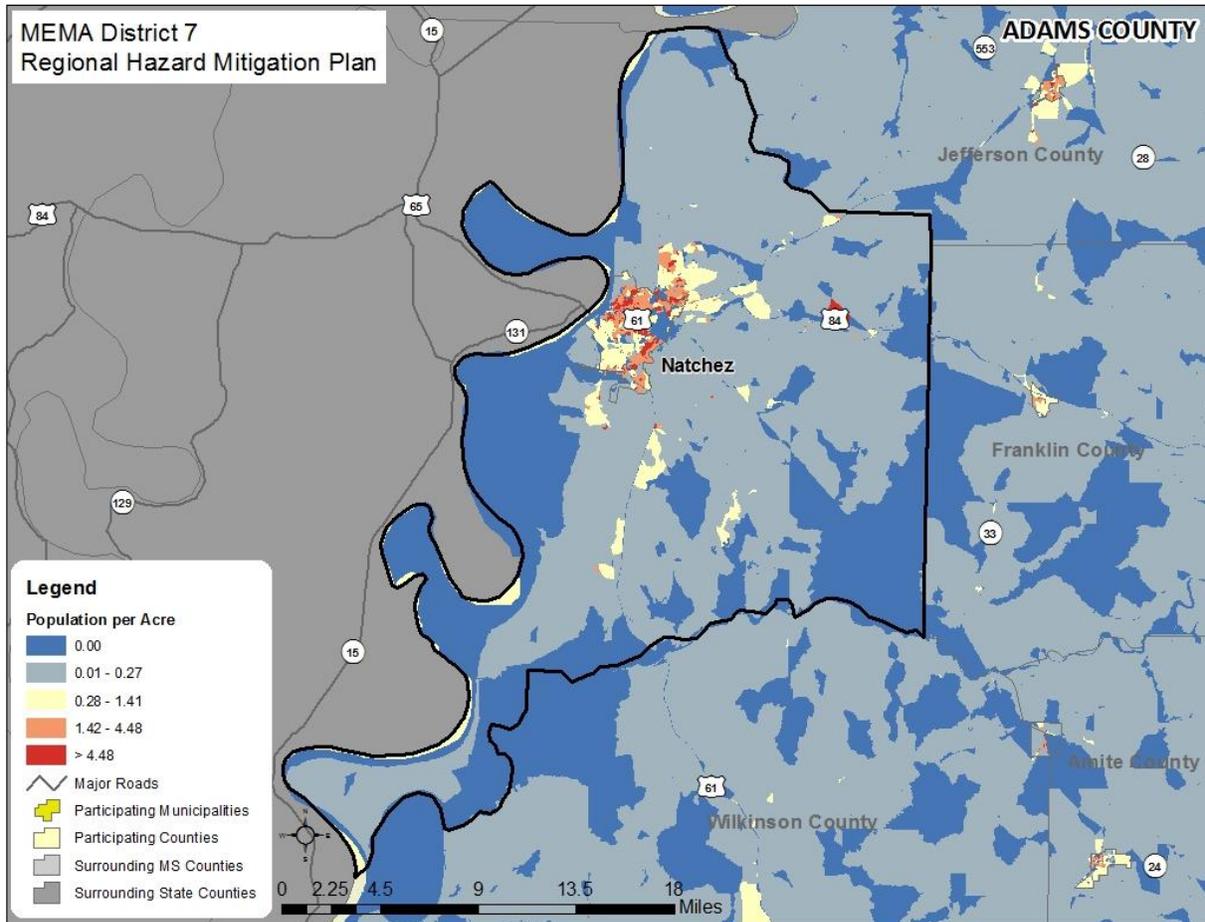
**TABLE A.35: TOTAL POPULATION IN ADAMS COUNTY**

| Location                  | Total 2015 Population |
|---------------------------|-----------------------|
| Natchez                   | 15,474                |
| Unincorporated Area       | 16,505                |
| <b>ADAMS COUNTY TOTAL</b> | <b>31,979</b>         |

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

In addition, **Figure A.17** illustrates the population density per acre by census block as it was reported by the U.S. Census Bureau in 2010. As can be seen in the figure, the population is spread out with concentrations in municipal areas such as Natchez.

**FIGURE A.17: POPULATION DENSITY IN ADAMS COUNTY**



Source: United States Census Bureau, 2010 Census

### A.3.3 Development Trends and Changes in Vulnerability

Since the previous hazard mitigation plan was approved, Adams County has experienced limited growth and development. **Table A.36** shows the number of building units constructed since 2010 according to the U.S. Census American Community Survey.

**TABLE A.36: BUILDING COUNTS FOR ADAMS COUNTY**

| Location                  | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|---------------------------|----------------------------|---------------------------|----------------------------------|
| Natchez                   | 7,833                      | 0                         | 0.00%                            |
| Unincorporated Area       | 6,789                      | 81                        | 1.19%                            |
| <b>ADAMS COUNTY TOTAL</b> | <b>14,622</b>              | <b>81</b>                 | <b>0.55%</b>                     |

| Location | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|----------|----------------------------|---------------------------|----------------------------------|
|----------|----------------------------|---------------------------|----------------------------------|

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

**Table A.37** shows population growth estimates for the county from 2010 to 2015 based on the U.S. Census American Community Survey.

**TABLE A.37: POPULATION GROWTH FOR ADAMS COUNTY**

| Location                  | Population Estimates |               |               |               |               |               | % Change 2010-2015 |
|---------------------------|----------------------|---------------|---------------|---------------|---------------|---------------|--------------------|
|                           | 2010                 | 2011          | 2012          | 2013          | 2014          | 2015          |                    |
| Natchez                   | 16,279               | 16,025        | 15,847        | 15,711        | 15,563        | 15,474        | -4.95%             |
| Unincorporated Area       | 16,380               | 16,406        | 16,544        | 16,597        | 16,626        | 16,505        | 0.76%              |
| <b>ADAMS COUNTY TOTAL</b> | <b>32,659</b>        | <b>32,431</b> | <b>32,391</b> | <b>32,308</b> | <b>32,189</b> | <b>31,979</b> | <b>-2.08%</b>      |

Source: United States Census Bureau, 2006-2010, 2007-2011, 2008-2012, 2009-2013, and 2010-2014, and 2011-2015 American Community Survey 5-Year Estimates

Based on the data above, there has been a low rate of residential development and population growth in the county since 2010, and the county has actually experienced a population decline. However, it is notable that the unincorporated area has experienced a slightly higher rate of growth and development compared to Natchez, resulting in an increased number of people and structures that are vulnerable to the potential impacts of the identified hazards. Therefore, development and population growth have impacted the county's vulnerability since the previous local hazard mitigation plan was approved and there has been a slight increase in the overall vulnerability as well as a larger increase in certain areas and communities.

It is also important to note that as development increases in the future, greater populations and more structures and infrastructure will be exposed to potential hazards if development occurs in the floodplains or other high risk areas.

### A.3.4 Vulnerability Assessment Results

As noted in Section 6: *Vulnerability Assessment*, only hazards with a specific geographic boundary, available modeling tool, or sufficient historical data allow for further analysis. Those results, specific to Adams County, are presented here. All other hazards are assumed to impact the entire planning region (drought, extreme heat, hailstorm, lightning, severe thunderstorm/high wind, tornado, and winter storm) or, due to lack of data, analysis would not lead to credible results (erosion). The total county exposure, and thus risk to these hazards, was presented in **Table A.33**.

The hazards to be further analyzed in this subsection include: dam/levee failure, flood, wildfire, earthquake, hurricane and tropical storm winds, and radiological event.

The annualized loss estimate for all hazards is presented near the end of this subsection in **Table A.44**.

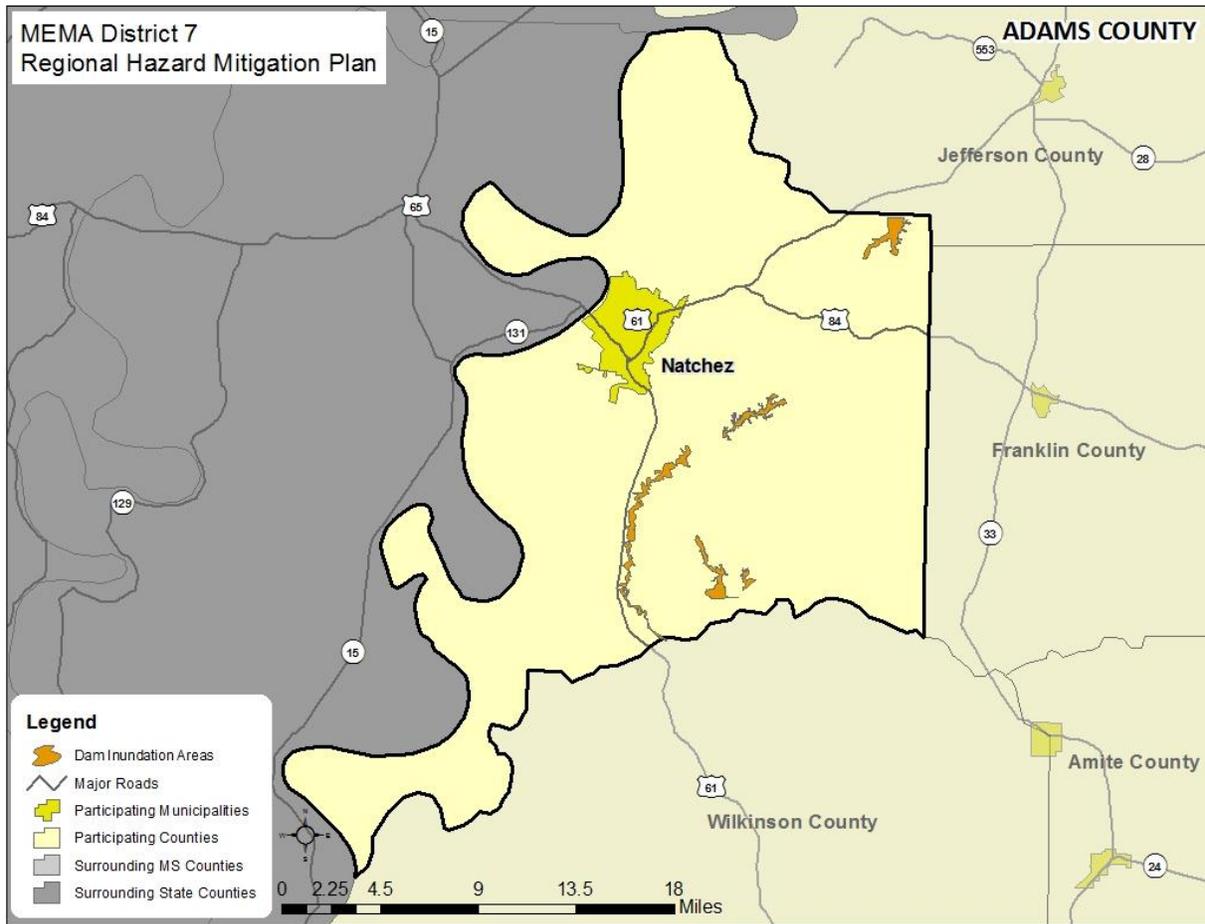
### **DAM/LEVEE FAILURE**

In order to assess risk to a dam or levee failure, a GIS-based analysis was used to estimate exposure to one of the areas delineated by the Mississippi Department of Environmental Quality as a potential inundation area in the event of a failure. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified inundation area. As mentioned previously, this type of inundation mapping has not been completed for every dam/levee in the region, so the results of this analysis likely underestimate the overall vulnerability to a dam or levee failure. However, the analysis is still useful as a sort of baseline minimum of property that is potentially at-risk. The identified inundation areas can be found in **Figure A.18**.

Due to a lack of digital parcel data in most counties, it was determined that an analysis using the inventory from Hazus-MH 4.0 would be used. It should be noted that this data will merely be an estimation and may not reflect actual counts or values located in dam inundation areas. Indeed, in almost all cases, this data likely overestimates the amount of property in the identified risk zones.

**Table A.38** presents the potential at-risk property. Both the number of buildings and the approximate improved value are presented.

**FIGURE A.18: DAM INUNDATION AREAS IN ADAMS COUNTY**



Source: Mississippi Department of Environmental Quality

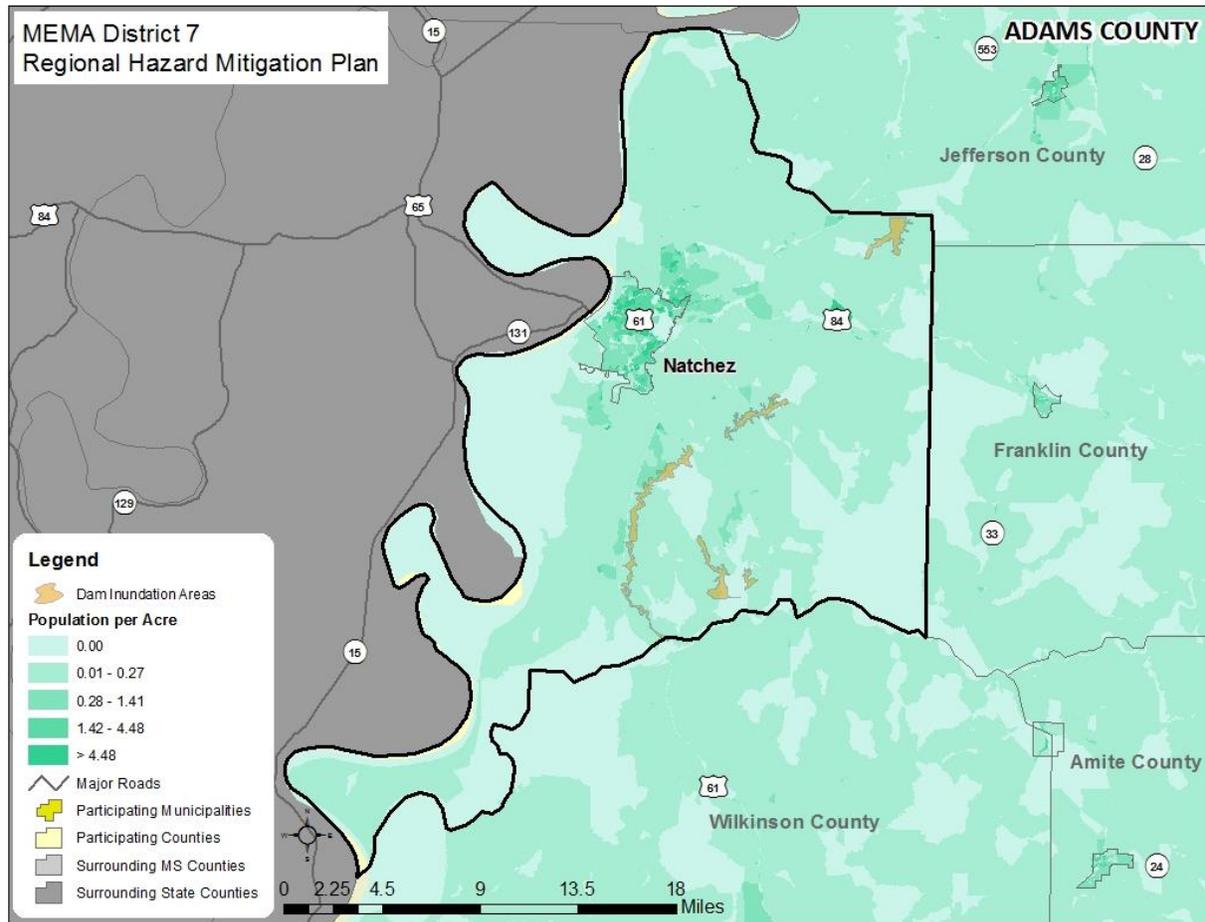
**TABLE A.38: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE DAM/LEEVE FAILURE HAZARD**

| Location                  | Dam Inundation Area            |                        |
|---------------------------|--------------------------------|------------------------|
|                           | Approx. Number of Improvements | Approx. Improved Value |
| Natchez                   | 0                              | \$0                    |
| Unincorporated Area       | 745                            | \$121,632,000          |
| <b>ADAMS COUNTY TOTAL</b> | <b>745</b>                     | <b>\$121,632,000</b>   |

Source: Mississippi Department of Environmental Quality; Hazus 4.0

**Social Vulnerability**

Figure A.19 is presented to gain a better understanding of at-risk population by evaluating census block level population data against dam inundation areas. There are several areas of concern in the county, although it should be noted that most of the population of the county is not at risk to a dam/levee failure.

**FIGURE A.19: POPULATION DENSITY NEAR DAM INUNDATION AREAS IN ADAMS COUNTY**

Source: Mississippi Department of Environmental Quality; United States Census Bureau, 2010 Census

### Critical Facilities

There are no critical facilities located within the identified dam inundation areas. Although there are no facilities located in the identified areas, this does not indicate that there is no risk to a dam/levee failure, especially considering not all dams have delineated inundation areas. A list of specific critical facilities and their associated risk can be found in **Table A.45** at the end of this section.

In conclusion, a dam/levee failure has the potential to impact many existing and future buildings, facilities, and populations in Adams County, though structures located near or in the dam inundation areas are at highest risk. Specific vulnerabilities for Adams County assets will be greatly dependent on their individual design and the mitigation measures in place where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates if data becomes available.

### FLOOD

Historical evidence indicates that Adams County is susceptible to flood events. A total of 40 flood events have been reported by the National Climatic Data Center resulting in \$4.5 million (2017 dollars) in property damage. On an annualized level, these damages amounted to \$224,858 for Adams County.

In order to assess flood risk, a GIS-based analysis was used to estimate exposure to flood events using Digital Flood Insurance Rate Map (DFIRM) data in combination with improved property records for the county. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified floodplain. Due to a lack of digital parcel data in most counties, it was determined that an analysis using the inventory from Hazus-MH 4.0 would be used, though it should be noted that the data will merely be an estimation and may not reflect actual counts or values located in the floodplain. Indeed, in almost all cases, this analysis likely overestimates the amount of property at risk. **Table A.39** presents the potential at-risk property. Both the number of parcels and the approximate value are presented.

**TABLE A.39: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE FLOOD HAZARD<sup>28</sup>**

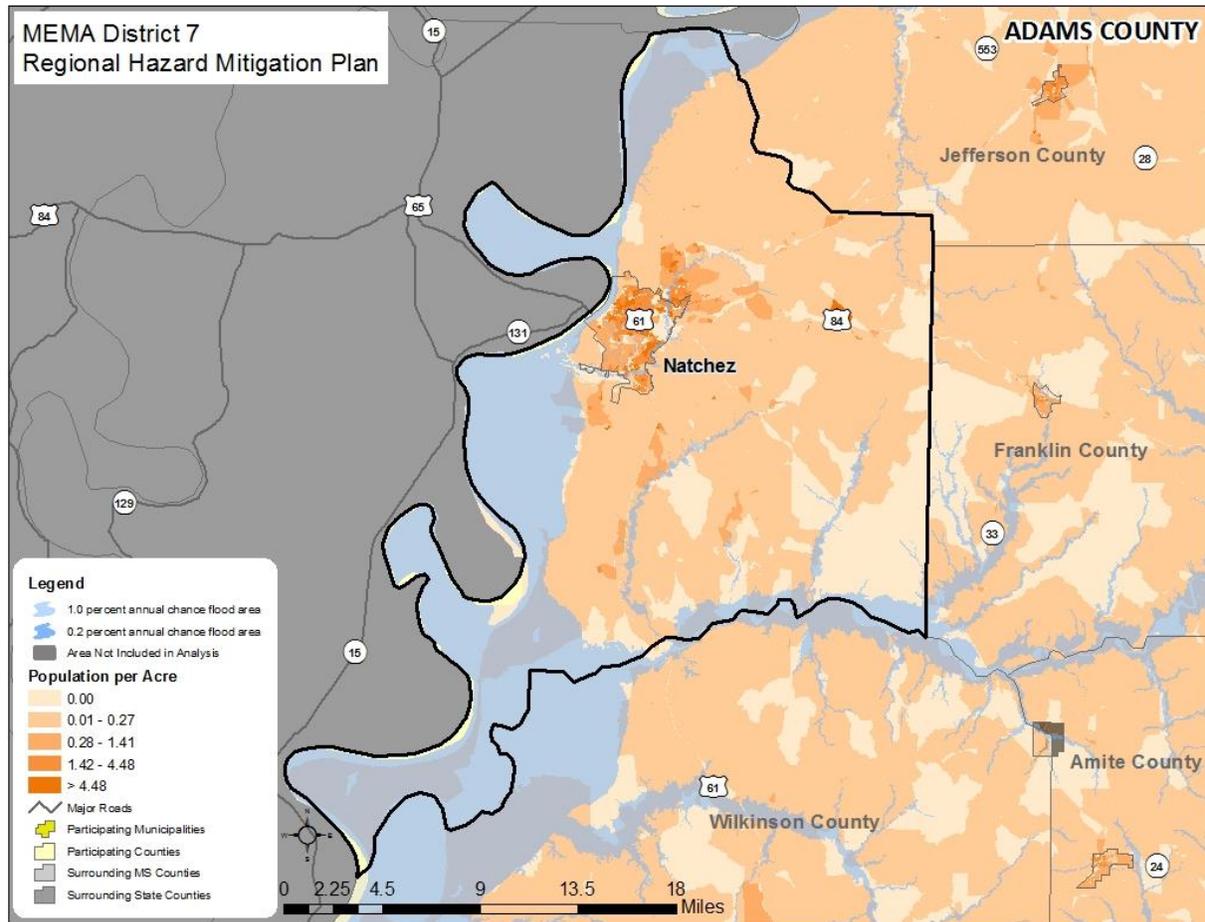
| Location                  | 1.0-percent ACF                |                        | 0.2-percent ACF                |                        |
|---------------------------|--------------------------------|------------------------|--------------------------------|------------------------|
|                           | Approx. Number of Improvements | Approx. Improved Value | Approx. Number of Improvements | Approx. Improved Value |
| Natchez                   | 3,477                          | \$864,838,000          | 78                             | \$20,474,000           |
| Unincorporated Area       | 2,007                          | \$303,019,000          | 0                              | \$0                    |
| <b>ADAMS COUNTY TOTAL</b> | <b>5,484</b>                   | <b>\$1,167,857,000</b> | <b>78</b>                      | <b>\$20,474,000</b>    |

Source: Federal Emergency Management Agency DFIRM; Hazus MH 4.0

**Social Vulnerability**

**Figure A.20** is presented to gain a better understanding of at-risk population by evaluating census block level population data against mapped floodplains. There are areas of concern in several of the population centers. Therefore, further investigation in these areas may be warranted.

<sup>28</sup> As noted in Section 6.4, no building-specific data, such as building footprints, was available to determine buildings at risk. As a result of this data limitation, at-risk census block building counts and values of the structures were used.

**FIGURE A.20 : POPULATION DENSITY NEAR FLOODPLAINS IN ADAMS COUNTY**

Source: Federal Emergency Management Agency DFIRM; United States Census Bureau, 2010 Census

### Critical Facilities

The critical facility analysis revealed that there are 2 critical facilities located in the floodplain. (Please note, as previously indicated, this analysis does not consider building elevation, which may negate risk.) Both of these facilities are transportation infrastructure located in the 1.0 percent annual chance flood zone. A list of specific critical facilities and their associated risk can be found in **Table A.45** at the end of this subsection.

In conclusion, a flood has the potential to impact many existing and future buildings, facilities, and populations in Adams County, though some areas are at a higher risk than others. All types of structures in a floodplain are at-risk, though elevated structures will have a reduced risk. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. Furthermore, areas subject to repetitive flooding should be analyzed for potential mitigation actions.

### WILDFIRE

Although historical evidence indicates that Adams County is susceptible to wildfire events, there are few reports which include information on historic dollar losses. Therefore, it is difficult to calculate a reliable

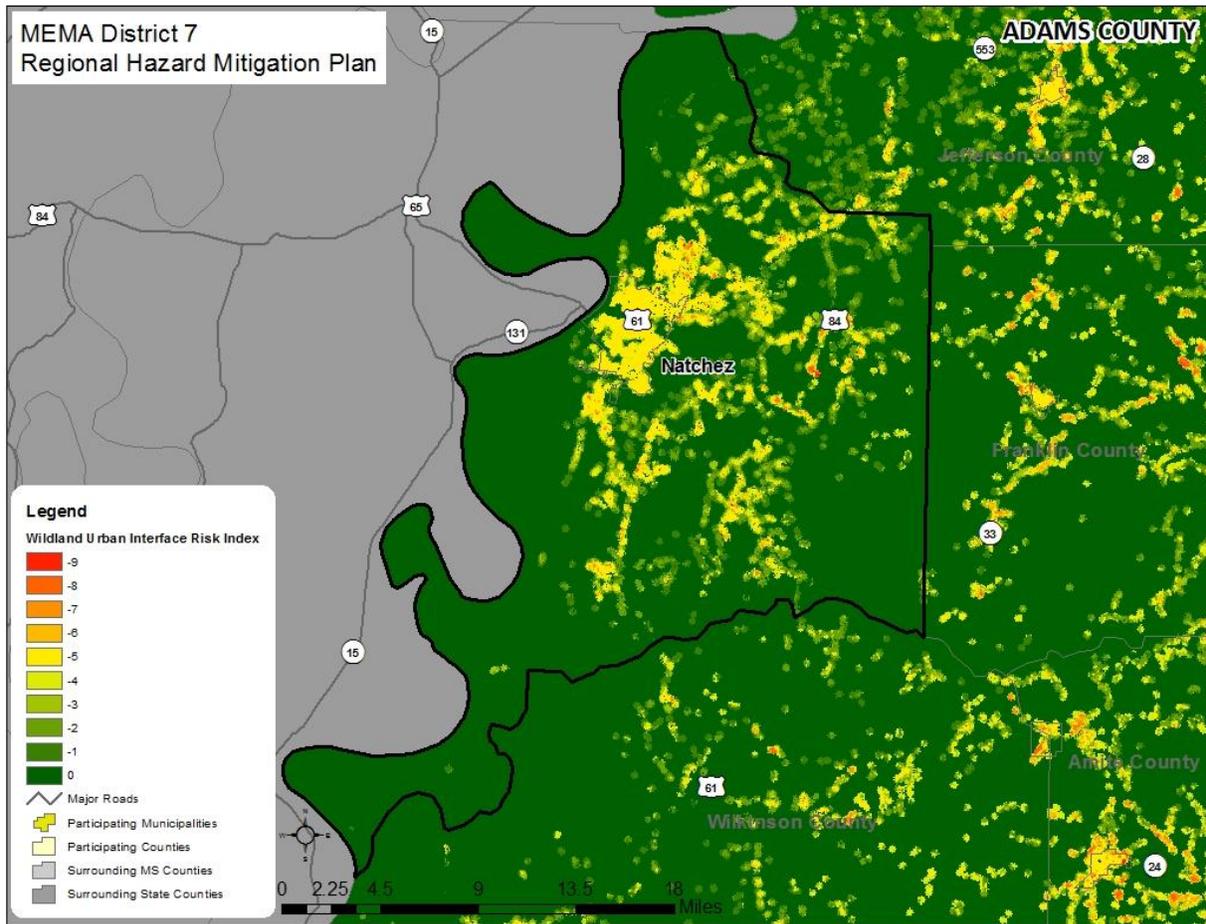
annualized loss figure. Annualized loss is considered negligible though it should be noted that a single event could result in significant damages throughout the county.

To estimate exposure to wildfire, building data was obtained from Hazus-MH 4.0 which includes information that has been aggregated at the census block level and which has been deemed useful for analyzing wildfire vulnerability. However, it should be noted that the accuracy of Hazus data is somewhat lower than that of parcel data. For the critical facility analysis, areas of concern were intersected with critical facility locations.

**Figure A.21** shows the Wildland Urban Interface Risk Index (WUIRI) data, which is a data layer that shows a rating of the potential impact of a wildfire on people and their homes. The key input, Wildland Urban Interface (WUI), reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the WUI and rural areas is key information for defining potential wildfire impacts to people and homes. Initially provided as raster data, it was converted to a polygon to allow for analysis. The Wildland Urban Interface Risk Index data ranges from 0 to -9 with lower values being most severe (as noted previously, this is only a measure of relative risk). **Figure A.22** shows the areas of analysis where any grid cell is less than -4. Areas with a value below -4 were chosen to be displayed as areas of risk because this showed the upper echelon of the scale and the areas at highest risk.

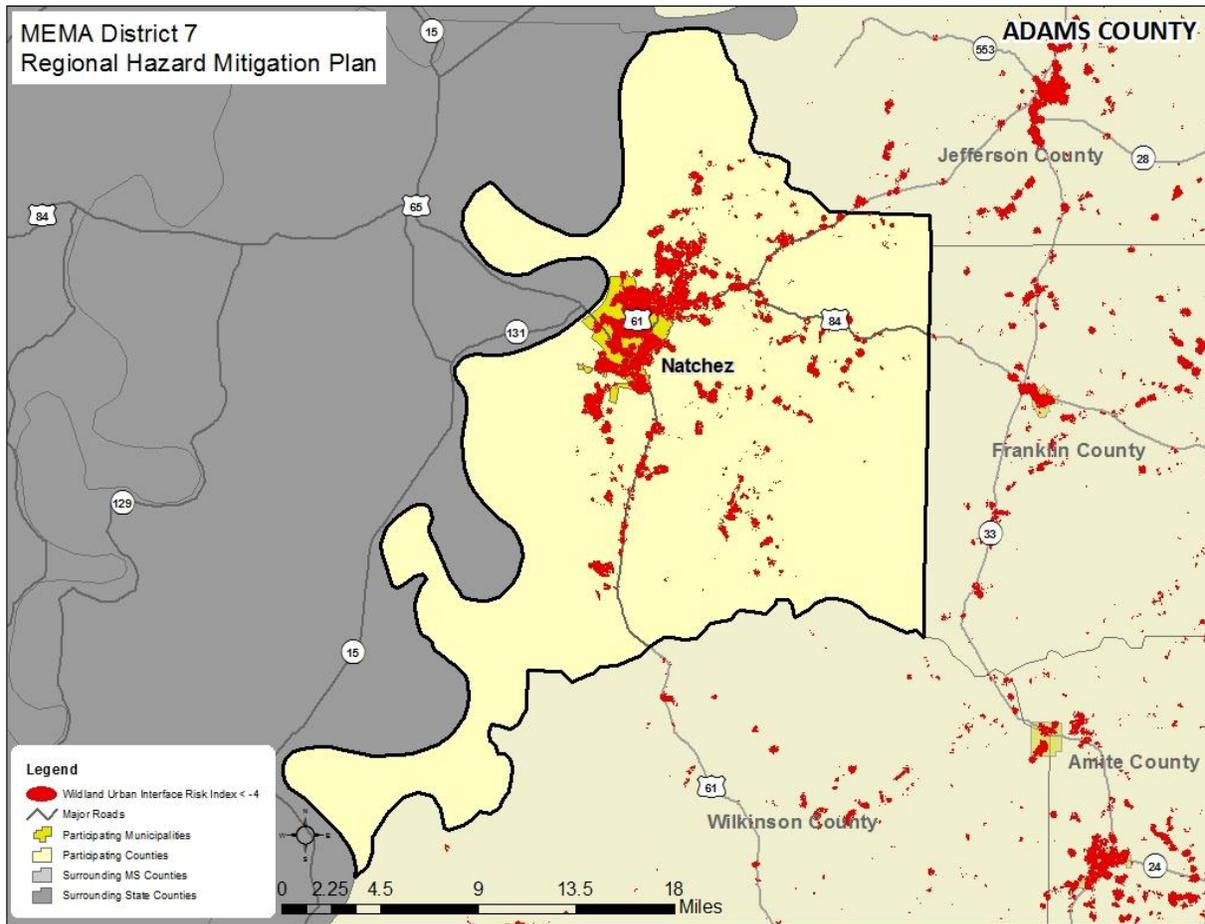
**Table A.40** shows the results of the analysis.

FIGURE A.21: WUI RISK INDEX AREAS IN ADAMS COUNTY



Source: Southern Wildfire Risk Assessment Data

**FIGURE A.22: WILDFIRE RISK AREAS IN ADAMS COUNTY**



Source: Southern Wildfire Risk Assessment Data

**TABLE A.40: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO WILDFIRE RISK AREAS<sup>29</sup>**

| Location                  | Wildfire Risk Area             |                        |
|---------------------------|--------------------------------|------------------------|
|                           | Approx. Number of Improvements | Approx. Improved Value |
| Natchez                   | 7,774                          | \$1,852,133,000        |
| Unincorporated Area       | 6,094                          | \$1,021,136,000        |
| <b>ADAMS COUNTY TOTAL</b> | <b>13,868</b>                  | <b>\$2,873,269,000</b> |

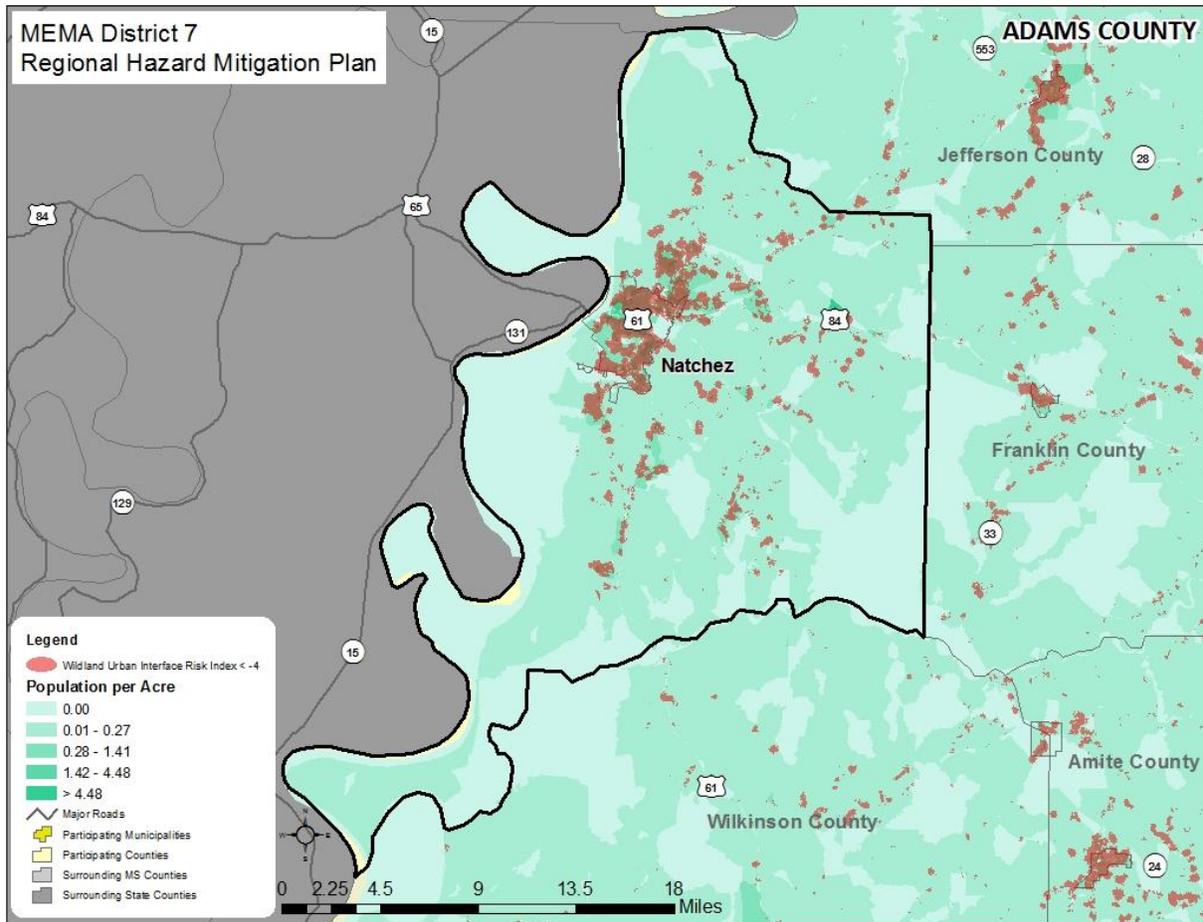
Source: Southern Wildfire Risk Assessment; Hazus-MH 4.0

**Social Vulnerability**

Given some level of susceptibility across the entire county, it is assumed that the total population is at risk to the wildfire hazard. **Figure A.23** shows an overlay of the wildfire risk areas identified above with the population density by census block. This shows that many of the areas of high population concentration are susceptible to wildfire because of their proximity to the wildland urban interface.

<sup>29</sup> Parcel/Building Footprint data was not available for Adams County. Therefore, building counts and values were pulled from Hazus-MH at the census block level and approximate improved value was calculated.

FIGURE A.23: WILDFIRE RISK AREAS IN ADAMS COUNTY



Source: Southern Wildfire Risk Assessment Data; United States Census Bureau, 2010 Census

### Critical Facilities

The critical facility analysis revealed that there are 18 critical facilities located in wildfire areas of concern, including 5 fire stations, 3 medical care facilities, 1 police station, and 9 schools. It should be noted, that several factors could impact the spread of a wildfire putting all facilities at risk. A list of specific critical facilities and their associated risk can be found in **Table A.45** at the end of this subsection.

In conclusion, a wildfire event has the potential to impact many existing and future buildings, critical facilities, and populations in Adams County.

### EARTHQUAKE

As the Hazus-MH model suggests below, and historical occurrences confirm, any significant earthquake activity in the area is likely to inflict minor damage to the county. Hazus-MH 4.0 estimates a total annualized loss of \$23,000 which includes structural and non-structural damage to buildings, contents, and inventory throughout the county.

For the earthquake hazard vulnerability assessment, a probabilistic scenario was created to estimate the average annualized loss<sup>30</sup> for the county. The results of the analysis are generated at the census tract level within Hazus-MH and then aggregated to the county level. Since the scenario is annualized, no building counts are provided. Losses reported included losses due to structure failure, building loss, contents damage, and inventory loss. They do not include losses to business interruption, lost income, or relocation. **Table A.41** summarizes the findings with results rounded to the nearest thousand.

**TABLE A.41: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR EARTHQUAKE HAZARD**

| Location     | Structural Damage | Non-Structural Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|--------------|-------------------|-----------------------|-----------------|----------------|-----------------------|
| Adams County | \$6,000           | \$13,000              | \$4,000         | \$0            | \$23,000              |

Source: Hazus-MH 4.0

**Social Vulnerability**

It can be assumed that all existing and future populations are at risk to the earthquake hazard.

**Critical Facilities**

The Hazus-MH probabilistic analysis did not indicate that any critical facilities would sustain measurable damage in an earthquake event. However, all critical facilities should be considered at-risk to minor to moderate damage should an event occur. A list of specific critical facilities and their associated risk can be found in **Table A.45** at the end of this subsection.

In conclusion, an earthquake has the potential to impact all existing and future buildings, facilities, and populations in Adams County. Specific vulnerabilities for these assets will be greatly dependent on their individual design and the mitigation measures in place. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. The Hazus-MH scenario indicates that minimal to moderate damage is expected from an earthquake occurrence. While Adams County may not experience a catastrophic earthquake, localized damage is possible with a moderate to larger scale occurrence.

**HURRICANE AND TROPICAL STORM**

Historical evidence indicates that Adams County has significant risk to the hurricane and tropical storm hazard. There have been five disaster declarations due to hurricanes as noted in pervious sections. Several tracks have come near or traversed through the county, as shown and discussed in Section A.2.10. Hazus-MH 4.0 estimates a total annualized loss of \$258,000 which includes buildings, contents, and inventory throughout the county.

Hurricanes and tropical storms can cause damage through numerous additional hazards such as flooding, erosion, tornadoes, and high winds, thus it is difficult to estimate total potential losses from these cumulative effects. The current Hazus-MH hurricane model only analyzes hurricane winds and is not capable of modeling and estimating cumulative losses from all hazards associated with hurricanes; therefore, only hurricane winds are analyzed in this section. It can be assumed that all existing and future buildings and populations are at risk to the hurricane and tropical storm hazard. Hazus-MH 4.0 was used

<sup>30</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

to determine average annualized losses<sup>31</sup> for the county as shown below in **Table A.42**. Only losses to buildings, inventory, and contents are included in the results.

**TABLE A.42: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR HURRICANE WIND HAZARD**

| Location     | Building Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|--------------|-----------------|-----------------|----------------|-----------------------|
| Adams County | \$203,000       | \$55,000        | \$0            | \$258,000             |

Source: Hazus-MH 4.0

**Social Vulnerability**

Given some equal susceptibility across the entire county, it is assumed that the total population, both current and future, is at risk to the hurricane and tropical storm hazard.

**Critical Facilities**

Given equal vulnerability across Adams County, all critical facilities are considered to be at risk. Some buildings may perform better than others in the face of such an event due to construction and age, among other factors. Determining individual building response is beyond the scope of this plan. However, this plan will consider mitigation action for especially vulnerable structures and/or critical facilities to mitigate against the effects of the hurricane hazard. A list of specific critical facilities can be found in **Table A.45** at the end of this subsection.

In conclusion, a hurricane event has the potential to impact many existing and future buildings, critical facilities, and populations in Adams County.

**RADIOLOGICAL EVENT**

The location of Grand Gulf and River Bend Nuclear Stations north and south of the region, respectively, demonstrate that the county is at some risk to the effects of a nuclear accident. Although there have not been any major events at these plants in the past, there have been major events at other nuclear stations around the country. Additionally, smaller scale incidents at both these nuclear stations have occurred.

In order to assess nuclear risk, a GIS-based analysis was used to estimate exposure during a nuclear event within each of the risk zones described in Section A.2.14. The determination of assessed value at-risk (exposure) was calculated using GIS analysis by summing the total values for those properties that were confirmed to be located within one of the risk zones. **Table A.43** presents potential at-risk properties in the 50-mile buffer zone (no property was located in the 10-mile buffer zone). The number of buildings, parcels, and the approximate value are presented.

**TABLE A.43: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO A NUCLEAR ACCIDENT**

| Location            | 50-mile Nuclear Buffer Area    |                        |
|---------------------|--------------------------------|------------------------|
|                     | Approx. Number of Improvements | Approx. Improved Value |
| Natchez             | 8,332                          | \$2,068,891,000        |
| Unincorporated Area | 6,329                          | \$1,061,032,000        |

<sup>31</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

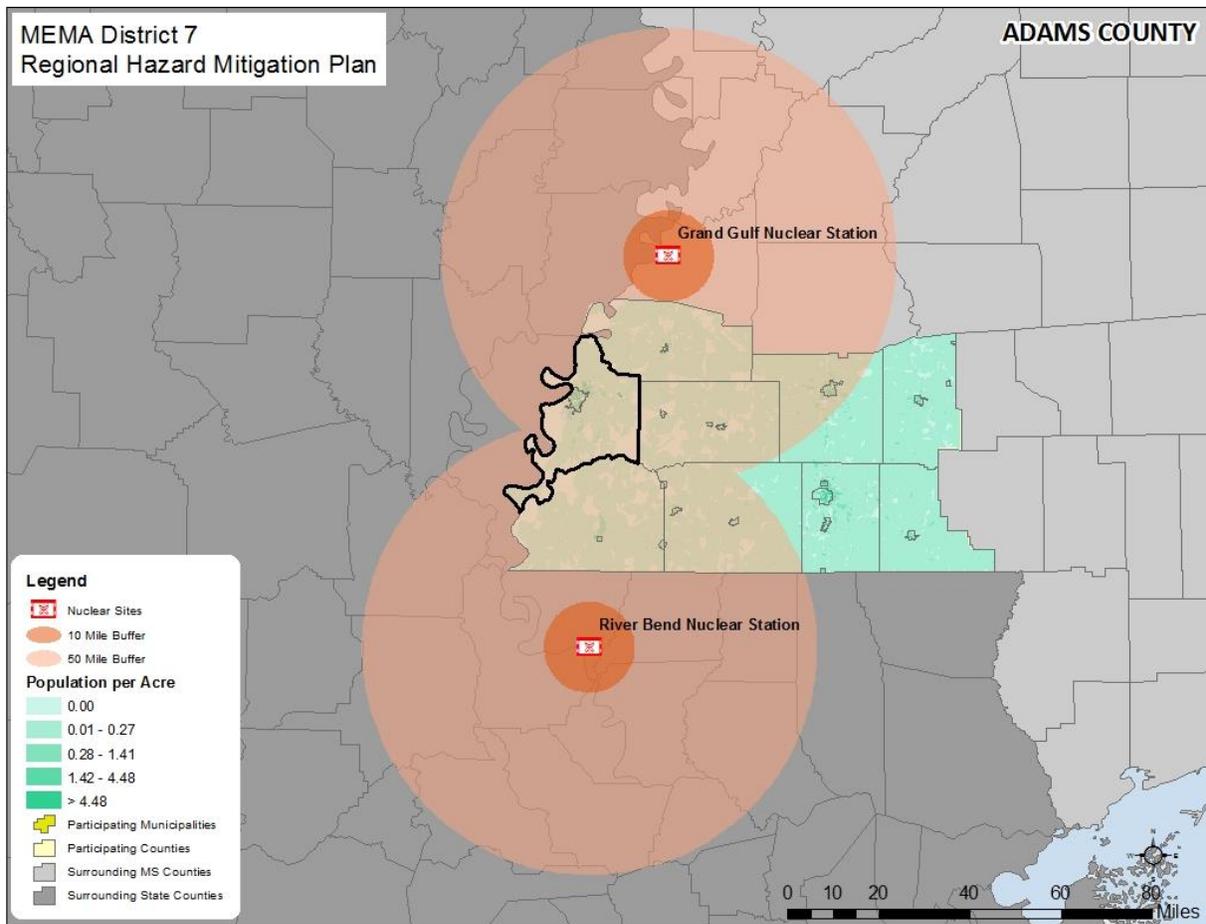
| Location           | 50-mile Nuclear Buffer Area    |                        |
|--------------------|--------------------------------|------------------------|
|                    | Approx. Number of Improvements | Approx. Improved Value |
| ADAMS COUNTY TOTAL | 14,661                         | \$3,129,923,000        |

Source: International Atomic Energy Agency; Hazus-MH 4.0

**Social Vulnerability**

Since the entire county is within the 50-mile buffer area, the entire population is considered to be at high risk to a radiological event. This risk can be seen in **Figure A.24**.

**FIGURE A.24: POPULATION DENSITY NEAR NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN ADAMS COUNTY**



Source: International Atomic Energy Agency; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that all 44 critical facilities in the county are located in the 50-mile nuclear buffer area, including 1 EOC, 8 fire stations, 1 government/public building, 9 medical care facilities, 2 police stations, 2 private sector buildings, 17 schools, and 3 transportation infrastructure.

No critical facilities are located in the 10-mile buffer area. A list of specific critical facilities and their associated risk can be found in **Table A.45** at the end of this section.

In conclusion, a nuclear accident has the potential to impact many existing and future buildings, facilities, and populations in Adams County.

**CONCLUSIONS ON HAZARD VULNERABILITY**

**Table A.44** presents a summary of annualized loss for each hazard in Adams County. Due to the reporting of hazard damages primarily at the county level, it was difficult to determine an accurate annualized loss estimate for each municipality. Therefore, an annualized loss was determined through the damage reported through historical occurrences at the county level. These values should be used as an additional planning tool or measure risk for determining hazard mitigation strategies throughout the county.

**TABLE A.44: ANNUALIZED LOSS FOR ADAMS COUNTY**

| Event                         | Adams County |
|-------------------------------|--------------|
| <b>Flood-related Hazards</b>  |              |
| Dam and Levee Failure         | Negligible   |
| Erosion                       | Negligible   |
| Flood                         | \$224,858    |
| <b>Fire-related Hazards</b>   |              |
| Drought                       | Negligible   |
| Lightning                     | \$18,282     |
| Wildfire                      | Negligible   |
| <b>Geologic Hazards</b>       |              |
| Earthquake*                   | \$6,000      |
| <b>Wind-related Hazards</b>   |              |
| Extreme Heat                  | Negligible   |
| Hailstorm                     | \$9,363      |
| Hurricane & Tropical Storm    | \$8,471,834  |
| Severe Thunderstorm/High Wind | \$2,077,786  |
| Tornado                       | \$363,924    |
| Winter Storm & Freeze         | \$68,864     |
| <b>Human-caused Hazards</b>   |              |
| Radiological Event            | Negligible   |

\*No historic losses for earthquake were recorded, so Hazus estimates for annualized loss were used.

Note: In this table, the term “Negligible” is used to indicate that no records of dollar losses for the particular hazard were recorded. This could be the case either because there were no events that caused dollar damage or because documentation of that particular type of event is not well kept.

As noted previously, all existing and future buildings and populations (including critical facilities) are vulnerable to atmospheric hazards including drought, lightning, extreme heat, hailstorm, hurricane and tropical storm, severe thunderstorm/high wind, tornado, and winter storm and freeze. Some buildings may be more vulnerable to these hazards based on other factors such as construction and building type. **Table A.45** shows the critical facilities vulnerable to the hazards analyzed in this section. The table lists those assets that are determined to be exposed to each of the identified hazards (marked with an “X”).

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**TABLE A.45: AT-RISK CRITICAL FACILITIES IN ADAMS COUNTY**

| FACILITY NAME                           | FACILITY TYPE     | FLOOD-RELATED         |         |                | FIRE-RELATED   |         |           | GEO      | WIND-RELATED |              |           |                              |                                 |         | HUM                     |                                 |                                 |
|---|-------------------|-----------------------|---------|----------------|----------------|---------|-----------|----------|--------------|--------------|-----------|------------------------------|---------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|   |                   | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought | Lightning | Wildfire | Earthquake   | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Tornado | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| <b>Adams County</b>                     |                   |                       |         |                |                |         |           |          |              |              |           |                              |                                 |         |                         |                                 |                                 |
| Adams County EOC                        | EOC               |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Foster Mound Volunteer Fire Department  | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Kingston Volunteer Fire Department      | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Lake Montrose Volunteer Fire Department | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Liberty Road Volunteer Fire Department  | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Natchez Fire Department #1              | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Natchez Fire Department #2              | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Natchez Fire Department #3              | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Natchez Fire Department #4              | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Adams County Community Safe Room        | Government/Public |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Adams County Nursing Home               | Medical Care      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Arnolds Personal Care Home              | Medical Care      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Doctors Pavilion                        | Medical Care      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Glenburney Nursing Home                 | Medical Care      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Jefferson Comprehensive Health          | Medical Care      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Magnolia House                          | Medical Care      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Merit Health Natchez                    | Medical Care      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |
| Miss-Lou Rural Health                   | Medical Care      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                               | X       | X                       |                                 | X                               |

| FACILITY NAME                             | FACILITY TYPE  | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                                   |         | HUM                     |                                 |
|---|----------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-----------------------------------|---------|-------------------------|---------------------------------|
|   |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Lightning | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area |
| Natchez Rehabilitation Healthcare Center  | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Adams County Sheriff's Office             | Police Station |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Natchez Police Department                 | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| MS River Corp                             | Private Sector |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Natchez-Adams County Port Industrial Park | Private Sector |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Adams County Christian School             | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Adams County Life Skills                  | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Alcorn State University                   | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Cathedral School                          | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Central Alternative School                | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Co-Lin Community College                  | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Fallin Career and Tech Center             | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Frazier Primary School                    | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| McLaurin Elementary School                | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Morganton Arts Academy                    | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Morganton CPL Academy                     | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Natchez-Adams School District             | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Natchez Freshman Academy                  | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Natchez High School                       | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         | X                               |
| Robert Lewis Middle School                | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         | X                               |

| FACILITY NAME                                     | FACILITY TYPE  | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                                   |         |                         | HUM                             |                                 |
|---|----------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-----------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|   |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Lightning | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Trinity Episcopal Day School                      | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| West Primary School                               | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Mississippi River Bridge                          | Transportation |                       | X       | X              |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Natchez-Adams County Airport (Hardy-Anders Field) | Transportation |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Natchez-Adams County Port                         | Transportation |                       | X       | X              |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |

## A.4 ADAMS COUNTY CAPABILITY ASSESSMENT

This subsection discusses the capability of Adams County to implement hazard mitigation activities. More information on the purpose and methodology used to conduct the assessment can be found in Section 7: *Capability Assessment*.

### A.4.1 Planning and Regulatory Capability

**Table A.46** provides a summary of the relevant local plans, ordinances, and programs already in place or under development for Adams County. A checkmark (✓) indicates that the given item is currently in place and being implemented. An asterisk (\*) indicates that the given item is currently being developed for future implementation. A dagger (†) indicates that the given item is administered for that municipality by the county. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the MEMA District 7 Regional Hazard Mitigation Plan.

**TABLE A.46: RELEVANT PLANS, ORDINANCES, AND PROGRAMS**

| Planning Tool/Regulatory Tool | Hazard Mitigation Plan | Threat and Hazard Identification and Risk Assessment (THIRA) | Comprehensive Land Use Plan | Floodplain Management Plan/Flood Mitigation Plan | Open Space Management Plan (Parks & Rec/Greenway Plan) | Stormwater Management Plan/Ordinance | Natural Resource Protection Plan | Flood Response Plan | Emergency Operations Plan | Emergency Management Accreditation Program (EMAP Accreditation) | Continuity of Operations Plan | Evacuation Plan | Disaster Recovery Plan | Capital Improvements Plan | Economic Development Plan | Historic Preservation Plan | Flood Damage Prevention Ordinance | Zoning Ordinance | Subdivision Ordinance | Unified Development Ordinance | Post-Disaster Redevelopment/ Reconstruction Plan/ Ordinance | Building Code | Fire Code | National Flood Insurance Program (NFIP) | NFIP Community Rating System (CRS Program) |
|-------------------------------|------------------------|--|-----------------------------|--|--|--------------------------------------|----------------------------------|---------------------|---------------------------|---|-------------------------------|-----------------|------------------------|---------------------------|---------------------------|----------------------------|-----------------------------------|------------------|-----------------------|-------------------------------|---|---------------|-----------|---|--|
|                               | ADAMS COUNTY           | ✓  |                             |  |  |                                      |                                  |                     |                           | ✓   |                               |                 |                        |                           |                           | ✓                          |                                   | ✓                |                       |                               |   |               |           |   | ✓  |
| Natchez                       | †                      |  | ✓                           |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            | ✓                                 | ✓                | ✓                     |                               |   | ✓             | ✓         | ✓                                       |  |

A more detailed discussion on the county’s planning and regulatory capabilities follows.

#### EMERGENCY MANAGEMENT

##### Hazard Mitigation Plan

Adams County has previously adopted a hazard mitigation plan. The City of Natchez was also included in this plan.

##### Emergency Operations Plan

Adams County maintains an emergency operations plan through its Emergency Management Agency. The City of Natchez is also covered by this plan.

**GENERAL PLANNING**

**Comprehensive Land Use Plan**

The City of Natchez and a portion of the surrounding Adams County have adopted a comprehensive plan.

**Historic Preservation Plan**

None of the jurisdictions in Adams County has a historic preservation plan. However, the City of Natchez has adopted a historic preservation ordinance.

**Zoning Ordinance**

The City of Natchez is the only jurisdiction in Adams County that has adopted a zoning ordinance.

**Subdivision Ordinance**

The City of Natchez is the only jurisdiction in Adams County that has adopted a subdivision ordinance.

**Building Codes, Permitting, and Inspections**

The City of Natchez is the only jurisdiction in Adams County that has adopted a building code.

**FLOODPLAIN MANAGEMENT**

Table A.47 provides NFIP policy and claim information for each participating jurisdiction in Adams County.

**TABLE A.47: NFIP POLICY AND CLAIM INFORMATION**

| Jurisdiction  | Date Joined NFIP | Current Effective Map Date | NFIP Policies in Force | Insurance in Force | Closed Claims | Total Payments to Date |
|---------------|------------------|----------------------------|------------------------|--------------------|---------------|------------------------|
| ADAMS COUNTY† | 09/29/89         | 06/16/11                   | 30                     | \$6,322,400        | 97            | \$1,367,517            |
| Natchez       | 06/01/78         | 06/16/11                   | 34                     | \$9,803,100        | 23            | \$381,250              |

†Includes unincorporated areas of county only

Source: NFIP Community Status information as of 8/17/2017; NFIP claims and policy information as of 4/30/2017

All jurisdictions listed above that are participants in the NFIP will continue to comply with all required provisions of the program and will work to adequately comply in the future utilizing a number of strategies. For example, the jurisdictions will coordinate with MEMA and FEMA to develop maps and regulations related to special flood hazard areas within their jurisdictional boundaries and, through a consistent monitoring process, will design and improve their floodplain management program in a way that reduces the risk of flooding to people and property.

**Flood Damage Prevention Ordinance**

All communities participating in the NFIP are required to adopt a local flood damage prevention ordinance. Adams County and the City of Natchez both participate in the NFIP and have adopted flood damage prevention regulations.

## A.4.2 Administrative and Technical Capability

**Table A.48** provides a summary of the capability assessment results for Adams County with regard to relevant staff and personnel resources. A checkmark (✓) indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill. A dagger (†) indicates a county-level staff member(s) provides the specified knowledge or skill to that municipality.

**TABLE A.48: RELEVANT STAFF/PERSONNEL RESOURCES**

| Staff/Personnel Resource | Planners with knowledge of land development/land management practices | Engineers or professionals trained in construction practices related to buildings and/or infrastructure | Planners or engineers with an understanding of natural and/or human-caused hazards | Emergency Manager | Floodplain Manager | Land Surveyors | Scientists familiar with the hazards of the community | Staff with education or expertise to assess the community's vulnerability to hazards | Personnel skilled in GIS and/or Hazus | Resource development staff or grant writers |
|--------------------------|---|---|--|-------------------|--------------------|----------------|---|--|---------------------------------------|---|
| ADAMS COUNTY             |   |   |  | ✓                 | ✓                  |                | ✓   | ✓  | ✓                                     |   |
| Natchez                  | ✓   | ✓   |  | †                 | ✓                  |                | †   | †  | †                                     |   |

Credit for having a floodplain manager was given to those jurisdictions that have a flood damage prevention ordinance, and therefore an appointed floodplain administrator, regardless of whether the appointee was dedicated solely to floodplain management. Credit was given for having a scientist familiar with the hazards of the community if a jurisdiction has a Cooperative Extension Service or Soil and Water Conservation Department. Credit was also given for having staff with education or expertise to assess the community's vulnerability to hazards if a staff member from the jurisdiction was a participant on the existing hazard mitigation plan's planning committee.

## A.4.3 Fiscal Capability

**Table A.49** provides a summary of the results for Adams County with regard to relevant fiscal resources. A checkmark (✓) indicates that the given fiscal resource has previously been used to implement hazard mitigation actions. A dagger (†) indicates that the given fiscal resource is locally available for hazard mitigation purposes (including match funds for state and federal mitigation grant funds).

**TABLE A.49: RELEVANT FISCAL RESOURCES**

| Fiscal Tool/Resource | Capital Improvement Programming | Community Development Block Grants (CDBG) | Special Purpose Taxes (or taxing districts) | Gas/Electric Utility Fees | Water/Sewer Fees | Stormwater Utility Fees | Development Impact Fees | General Obligation, Revenue, and/or Special Tax Bonds | Partnering Arrangements or Intergovernmental Agreements | Other: FEMA Hazard Mitigation Grants, Homeland Security Grants, USDA Rural Development Agency Grants, and US Economic Development Administration Grants |
|----------------------|---------------------------------|---|---|---------------------------|------------------|-------------------------|-------------------------|---|---|---|
| ADAMS COUNTY         |                                 | +   |   |                           |                  |                         |                         |   | ✓   | ✓   |
| Natchez              |                                 | ✓   |   |                           |                  |                         |                         |   | +   | ✓   |

### A.4.4 Political Capability

During the months immediately following a disaster, local public opinion in Adams County is more likely to shift in support of hazard mitigation efforts.

Table A.50 provides a summary of the results for Adams County with regard to political capability. A checkmark (✓) indicates the expected degree of political support by local elected officials in terms of adopting/funding information.

**TABLE A.50: LOCAL POLITICAL SUPPORT**

| Political Support | Limited | Moderate | High |
|-------------------|---------|----------|------|
| ADAMS COUNTY      |         |          | ✓    |
| Natchez           |         |          | ✓    |

### A.4.5 Conclusions on Local Capability

Table A.51 shows the results of the capability assessment using the designed scoring methodology described in Section 7: *Capability Assessment*. The capability score is based solely on the information found in existing hazard mitigation plans and readily available on the jurisdictions’ government websites. This information was reviewed by all jurisdictions and each jurisdiction provided feedback on the information included in the capability assessment. Local government input was vital to identifying capabilities. According to the assessment, the average local capability score for the county and its jurisdictions is 29.5, which falls into the moderate capability ranking.

**TABLE A.51: CAPABILITY ASSESSMENT RESULTS**

| Jurisdiction | Overall Capability Score | Overall Capability Rating |
|--------------|--------------------------|---------------------------|
| ADAMS COUNTY | 26                       | Moderate                  |
| Natchez      | 33                       | Moderate                  |

## A.5 ADAMS COUNTY MITIGATION STRATEGY

This subsection provides the blueprint for Adams County to follow in order to become less vulnerable to its identified hazards. It is based on general consensus of the Regional Hazard Mitigation Council and the findings and conclusions of the capability assessment and risk assessment. Additional Information can be found in Section 8: *Mitigation Strategy* and Section 9: *Mitigation Action Plan*.

### A.5.1 Mitigation Goals

Adams County developed six mitigation goals in coordination with the other participating MEMA District 7 Region jurisdictions. The regional mitigation goals are presented in **Table A.52**.

**TABLE A.52: MEMA DISTRICT 7 REGIONAL MITIGATION GOALS**

|         | Goal   |
|---------|--|
| Goal #1 | Increase the overall public awareness of natural hazards that face the region.   |
| Goal #2 | Retrofit of critical facilities and/or critical infrastructure to lower the risk of damage from natural hazards.   |
| Goal #3 | General improvement of regional or local mitigation planning and capability.   |
| Goal #4 | Support State Identified Mitigation Initiatives such as saferooms and storm shelters, severe weather warning systems for universities and colleges, and severe weather notification systems for local communities. |
| Goal #5 | Reduce loss of life, damage and loss of property and infrastructure, economic costs, including response, recovery and disruption of economic activity.   |
| Goal #6 | Foster cooperation among all levels of governments and the private sector with respect to improving, updating, and implementing the hazard mitigation plan.  |

### A.5.2 Mitigation Action Plan

The mitigation actions proposed by Adams County and the City of Natchez are listed in the following individual Mitigation Action Plans.

### Adams County Mitigation Action Plan

| Action #          | Description   | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|-------------------|---|---------------------------|-------------------|--|---|-------------------------|---|
| <b>Prevention</b> |   |                           |                   |  |   |                         |   |
| P-1               | <p><b>Comprehensive Land Use and Long Term Recovery Planning –</b><br/>                     The City of Natchez and a portion of the surrounding Adams County have a Comprehensive Plan. This plan should be reviewed and updated if necessary in light of the Hurricane Katrina and Rita disasters. The remaining portion of Adams County not covered by this plan should be included.</p> | Hurricane or other hazard | High              | Adams County Board of Supervisors/ City of Natchez Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Adams County Board of Supervisors/City of Natchez Board of Aldermen and Mayor recognize that comprehensive land use planning yields many benefits for both the county and city. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. Although Natchez has adopted a Comprehensive Plan, the county has not developed a Comprehensive Plan. Therefore, this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-2      | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

| Action #                           | Description   | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|------------------------------------|---|---|-------------------|--|---|-------------------------|---|
| <b>Property Protection</b>         |   |   |                   |  |   |                         |   |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Adams County Board of Supervisors/City of Natchez Board of Aldermen and Mayor should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Adams County Board of Supervisors/ City of Natchez Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Adams County Board of Supervisors/City of Natchez Board of Aldermen and Mayor recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/city government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |
| <b>Natural Resource Protection</b> |   |   |                   |  |   |                         |   |
| NRP-1                              |   |   |                   |  |   |                         |   |

| Action #                   | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------------------------|--|---------------------|-------------------|--|---|-------------------------|---|
| <b>Structural Projects</b> |  |                     |                   |  |   |                         |   |
| SP-1                       | <b>Renovate Underground Drainage Structure</b> – The Adams County Board of Supervisors/City of Natchez Board of Aldermen and Mayor intends to reconstruct this entire underground drainage structure to protect current structures and access to this vital area and allow for continued growth. | Flood               | High              | Adams County Board of Supervisors/ City of Natchez Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Completed               | Within the City of Natchez in the area north of Madison Street, deterioration of old underground drainage structures threatens a vital historic area of Natchez. Additionally, failure of the underground drainage structures would close streets preventing residents, businesses and emergency vehicles access during times of distress. Also, many historic sites in the immediate area which is drained by the underground structure would be more susceptible to flooding. The City of Natchez secured funding through the Corps of Engineers and CDBG for this project. Phase 1 and Phase 2 of the project are now completed. |

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|---|---|-------------------------|--|
| SP-2     | <b>Improve Surface Drainage –</b><br>Improve the surface drainage through a combination of culverts and enlarged drainage ditches to allow floodwaters to run off without causing problems. | Flood               | High              | Adams County Board of Supervisors/<br>City of Natchez Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Completed               | Storm water runoff during intense storm events is flooding the roadway and 6 homes in the Liberty Road at Passback Drive area. In addition to the obvious damage to the roadway and homes, the floodwaters on the roadway make it impassable for emergency vehicles. The county completed the above project and also received funding from the Mississippi Development Authority to also improve drainage areas on Kingston Road, Cloverdale Road and in the Pineview/Grafton Heights neighborhoods. |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | Completed               | Adams County is now a “storm ready” county. This action was combined with ES-7 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                  | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|--|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Adams County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Adams County will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department           | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|-----------------------------------|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Adams County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Adams County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department           | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|--|-------------------|-----------------------------------|---|-------------------------|--|
| ES-4     | <b>Construct New Emergency Shelter</b> – The county should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions. | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Adams County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Completed               | The Adams County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/city residents and evacuees from other areas during times of disaster. Previously a combination of schools, churches, and other government buildings were used. This worked acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility's designed function. The county applied for a FEMA 361 Shelter and a new emergency shelter was constructed in 2015. |
| ES-5     | <b>Construct New Emergency Operations Center</b> – The EOC should construct a new building of sufficient size to house all EOC staff and equipment, including Search and Rescue and Hazmat. The E911 dispatch center should also be housed in the new building.  | Hurricane or other hazard requiring action from the EOC                    | High              | Adams County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | The Adams County Emergency Operations Center (EOC) is currently housed in adequate space, and a new EOC is not needed at this time.  |

**ANNEX A: ADAMS COUNTY**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                            | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|--|--|-------------------------|---|
| ES-6     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county/city to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county/city where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide/citywide system.  | Tornado             | High              | Adams County Board of Supervisors/ City of Natchez | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County and/or City General Fund | Completed               | Many citizens in Adams County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings, as well as residents of Natchez. A siren system was installed in Adams County in 2013. |
| ES-7     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency            | MEMA, FEMA   | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department           | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|-----------------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                                   |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Adams County Board of Supervisors | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau            | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division         | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Adams County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

### City of Natchez Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department  | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|--|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |  |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include lidar with aerial photography and 100 year base flood elevations in the A Zones and any other area where base flood elevations need to be computed.   | Flood               | High              | Adams County Board of Supervisors/ City of Natchez Mayor and Board of Aldermen | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate and A Zones need to be studied to determine the base flood elevation, so this action will remain in place to improve future vulnerability assessments.             |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as cities develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc.                  | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

| Action #                   | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department  | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------------------------|--|---------------------|-------------------|--|--|-------------------------|--|
| P-3                        | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as cities develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc.    | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan.   |
| <b>Property Protection</b> |  |                     |                   |  |  |                         |  |
| PP-1                       | <b>Elevate Lift Station</b> – Elevate the sanitary sewer lift station and controls by six feet.  | Flood               | High              | City of Natchez Mayor and Board of Alderman/ Natchez Water Works | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants and Natchez Water Works                           | 2022                    | A Sanitary Sewer Lift Station adjacent to the Mississippi River is inundated during high water, therefore causing numerous businesses to be without sewer services resulting in a possible risk of Health Hazard. The City of Natchez/Natchez Water Works is working to secure funding to complete this project, therefore, this action will remain in the plan. |
| PP-2                       | <b>Elevate Gravel Road</b> – Elevate the Gravel Road approximately five feet.  | Flood               | High              | City of Natchez Mayor and Board of Alderman                      | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants and City General Fund                             | 2022                    | A gravel road adjacent to the Mississippi River is inundated during high water, therefore being impassable. The City of Natchez is working to secure funding to complete this project, therefore, this action will remain in the plan.   |

| Action #                           | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|------------------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Natural Resource Protection</b> |  |                         |                   |   |                           |                         |   |
| NRP-1                              |  |                         |                   |   |                           |                         |   |
| <b>Structural Projects</b>         |  |                         |                   |   |                           |                         |   |
| SP-1                               |  |                         |                   |   |                           |                         |   |
| <b>Emergency Services</b>          |  |                         |                   |   |                           |                         |   |
| ES-1                               | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | Completed               | Adams County is now a “storm ready” county. This action was combined with ES-4 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                            | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|--|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>City of Natchez Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The City of Natchez will continue to purchase critical facility generators as funding permits, so this action will remain in the plan</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|---|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Needs to update communications system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | City of Natchez Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The City of Natchez continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-4     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency     | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-5     | <b>Safe Rooms and Community Shelters</b> – The city should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | City of Natchez Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | City of Natchez           | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The City of Natchez will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

# ANNEX B

## AMITE COUNTY

This annex includes jurisdiction-specific information for Amite County and its participating municipalities. It consists of the following five subsections:

- B.1 Amite County Community Profile
  - B.2 Amite County Risk Assessment
  - B.3 Amite County Vulnerability Assessment
  - B.4 Amite County Capability Assessment
  - B.5 Amite County Mitigation Strategy
- 

### B.1 AMITE COUNTY COMMUNITY PROFILE

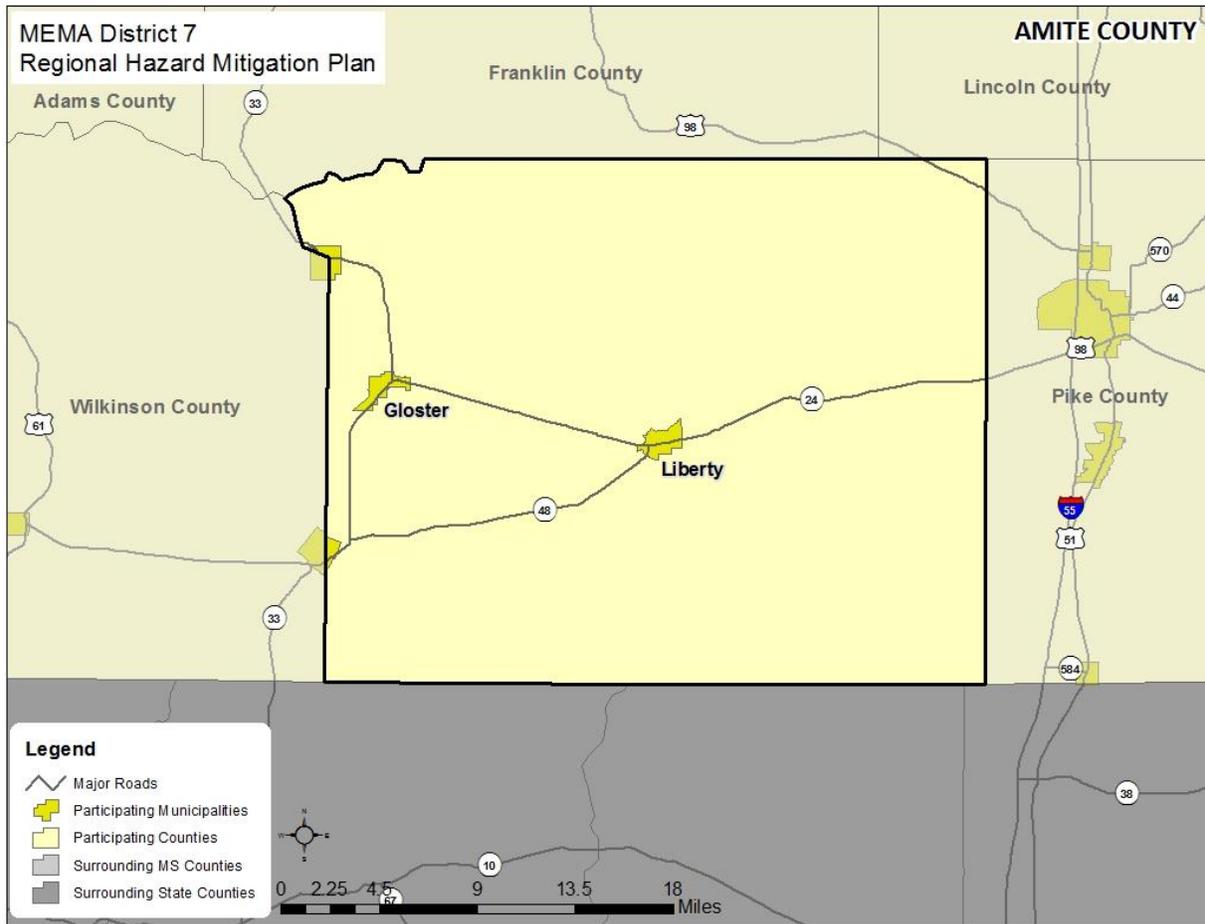
#### B.1.1 Geography and the Environment

Amite County is located in southwestern Mississippi. It comprises two towns, Town of Gloster and Town of Liberty, as well as many small unincorporated communities. An orientation map is provided as **Figure B.1**.

The county is located to the east of the Mississippi River suppling diverse recreational activities. The total area of the county is 732 square miles, 2 square miles of which is water area.

Amite County enjoys four distinct seasons but the climate in the region is generally hot and humid compared to the rest of the United States given its latitude and relative proximity to the Gulf Coast. Precipitation is generally highest in winter months when the temperatures are moderately lower, but the likelihood of precipitation remains relatively constant throughout the year. Summers in the region can become fairly hot with average highs in the nineties and lows in the seventies. The region is also often susceptible to turbulent weather when warm, wet air from the Gulf of Mexico is pushed up into the region to mix with cooler air coming down from across the continent which can result in severe weather conditions. This is particularly true in the spring when seasons are changing and diverse weather patterns interact.

**FIGURE B.1: AMITE COUNTY ORIENTATION MAP**



### B.1.2 Population and Demographics

According to the 2015 American Community Survey, Amite County has a population of 12,840 people. The county has seen a decrease in population between 2000 and 2015, and the population density is 18 people per square mile. Population counts from the U.S. Census Bureau for 2000 and 2010 and from the American Community Survey for 2015 for the county and participating jurisdictions are presented in **Table B.1**.

**TABLE B.1: POPULATION COUNTS FOR AMITE COUNTY**

| Jurisdiction        | 2000 Census Population | 2010 Census Population | 2015 American Community Survey Estimate | % Change 2000-2015 |
|---------------------|------------------------|------------------------|---|--------------------|
| <b>Amite County</b> | <b>13,599</b>          | <b>13,131</b>          | <b>12,840</b>                           | <b>-5.6%</b>       |
| Gloster             | 1,073                  | 960                    | 972                                     | -9.4%              |
| Liberty             | 633                    | 728                    | 771                                     | 21.8%              |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

Based on the 2010 Census, the median age of residents of Amite County is 43.7 years. The racial characteristics of the county are presented in **Table B.2**. Whites make up the majority of the population in the county, accounting for 58 percent of the population.

**TABLE B.2: DEMOGRAPHICS OF AMITE COUNTY**

| Jurisdiction        | White, Percent | Black or African American, Percent | American Indian or Alaska Native, Percent | Asian, Percent | Native Hawaiian or Other Pacific Islander, Percent | Other Race, Percent | Two or More Races, percent | Persons of Hispanic Origin, Percent* |
|---------------------|----------------|------------------------------------|---|----------------|--|---------------------|----------------------------|--------------------------------------|
| <b>Amite County</b> | <b>57.6%</b>   | <b>42.2%</b>                       | <b>0.0%</b>                               | <b>0.1%</b>    | <b>0.0%</b>  | <b>0.0%</b>         | <b>0.1%</b>                | <b>0.4%</b>                          |
| Gloster             | 32.6%          | 67.4%                              | 0.0%                                      | 0.0%           | 0.0%   | 0.0%                | 0.0%                       | 0.0%                                 |
| Liberty             | 62.1%          | 36.8%                              | 0.4%                                      | 0.0%           | 0.0%   | 0.0%                | 0.6%                       | 0.4%                                 |

\*Hispanics may be of any race, so also are included in applicable race categories

Source: 2011-2015 American Community Survey 5-Year Estimates

### B.1.3 Housing

According to the 2010 U.S. Census, there are 6,446 housing units in Amite County, the majority of which are single family homes or mobile homes. Housing information for the county and two municipalities is presented in **Table B.3**. As shown in the table, both of the incorporated towns have lower percentages of seasonal housing units compared to the unincorporated county.

**TABLE B.3: HOUSING CHARACTERISTICS OF AMITE COUNTY**

| Jurisdiction        | Housing Units (2000) | Housing Units (2010) | Seasonal Units, Percent (2010) | Median Home Value (2011-2015) |
|---------------------|----------------------|----------------------|--------------------------------|-------------------------------|
| <b>Amite County</b> | <b>6,446</b>         | <b>6,635</b>         | <b>7.9%</b>                    | <b>\$71,600</b>               |
| Gloster             | 481                  | 489                  | 3.1%                           | \$55,900                      |
| Liberty             | 309                  | 317                  | 3.8%                           | \$77,100                      |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

### B.1.4 Infrastructure

#### TRANSPORTATION

In Amite County, Mississippi Highway 33 and 24 provide access to the north and south and Mississippi Highway 48 provides access to the east and west.

Crosby Municipal Airport and McGehee Air Park Airport are both general aviation airports located in Amite County.

A major freight rail line operates within Amite County. The Gloster Southern Railroad is a Class III Local railway that operates and runs north to south along a portion of the western county border.

## **UTILITIES**

Electrical power in Amite County is provided by Entergy Mississippi Inc., Magnolia Electric Power Association, South Mississippi Electric Power Association, and Southwest Mississippi Electric Power Association.

Water and sewer service is provided by participating jurisdictions and/or community based associations, but unincorporated areas often rely on septic systems and wells in Amite County.

## **COMMUNITY FACILITIES**

There are a number of buildings and community facilities located throughout Amite County. According to the data collected for the vulnerability assessment (Section 6.4.1), there are 9 fire stations, 3 police stations, and 7 schools located within the county.

There are also 5 hospitals and medical care facilities located in Amite County.

Museums based around the history and culture of the region are prevalent throughout the area. For example, the Jerry Clower Museum in Liberty chronicles the life and works of comedian Jerry Clower.

Recreational opportunities exist throughout Amite County. The Homochitto National Forest comprises almost 200,000 acres of land and is partially located in Amite County. Visitors can camp, hike, hunt, and fish in the forest.

The Mississippi River, which runs to the east of the county, has played an integral part in the history of the county. The river acted as a major conduit for trade in the 19<sup>th</sup> century as plantations produced large quantities of cotton that could be easily shipped down to ports such as New Orleans. Today, the river is still an important part of the local economy as products are shipped worldwide out of the Natchez port. Apart from the Mississippi River there are multiple water based refuges, activities, and recreational features focused on local water bodies in the region. There are also numerous other small lakes, creeks, and other water bodies throughout the region that offer the outstanding outdoor recreational opportunities for which the region is known.

### **B.1.5 Land Use**

Amite County has a blend of old and new development that contributes to physical, cultural, and economic attributes throughout the region. There are two incorporated municipalities located in the county. These areas are where the county's population is generally concentrated. The incorporated areas are also where many of the businesses, commercial uses, and institutional uses are located. Land uses in the balance of the county generally consist of rural residential development, agricultural uses, and recreational areas. There are multiple county- and regional-based agencies that serve to coordinate growth and promote economic development. Local land use and associated regulations are further discussed in *Section 7: Capability Assessment*.

## **B.1.6 Employment and Industry**

According to the U.S. Census Bureau's American Community Survey (ACS), in 2015, Amite County had an average annual employment of 10,357 workers and an average unemployment rate of 12.7 percent (compared to 10.3 percent for the state). In 2015, the Educational services, and health care and social assistance industry employed 25.8 percent of the county's workforce followed by Manufacturing (11.4%) and Agriculture, forestry, fishing, and hunting (10.3%). The average annual median household in 2015 for Amite County was \$30,704 compared to \$39,665 in the state of Mississippi.

## **B.2 AMITE COUNTY RISK ASSESSMENT**

This subsection includes hazard profiles for each of the significant hazards identified in Section 4: *Hazard Identification* as they pertain to Amite County. Each hazard profile includes a description of the hazard's location and extent, notable historical occurrences, and the probability of future occurrences. Additional information can be found in Section 5: *Hazard Profiles*.

### ***FLOOD-RELATED HAZARDS***

#### **B.2.1 Dam and Levee Failure**

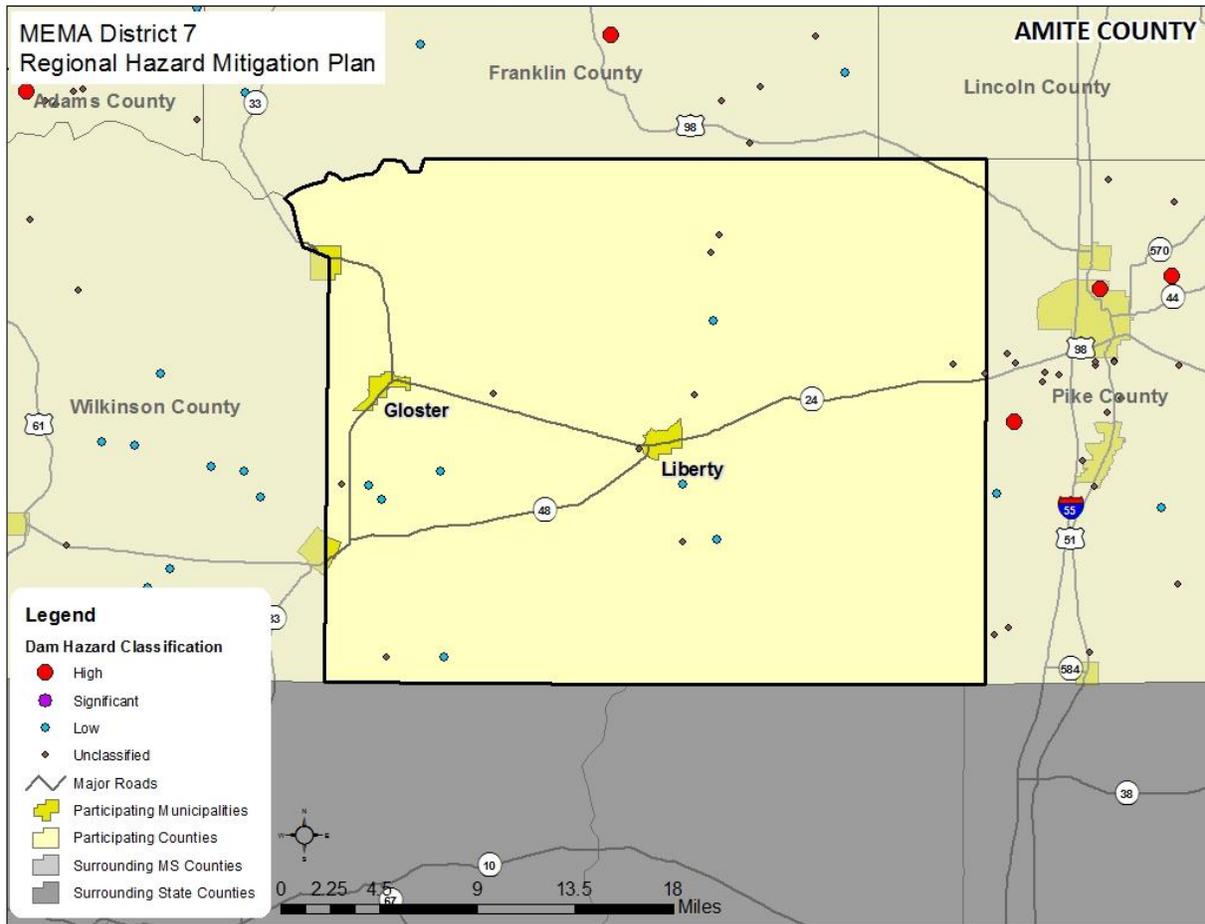
##### ***LOCATION AND SPATIAL EXTENT***

According to the Mississippi Department of Environmental Quality, there are no high hazard dams in Amite County (**Table B.4**).<sup>1</sup> **Figure B.2** and **Figure B.3** show the location of high hazard dams as well as mapped inundation areas located nearby.

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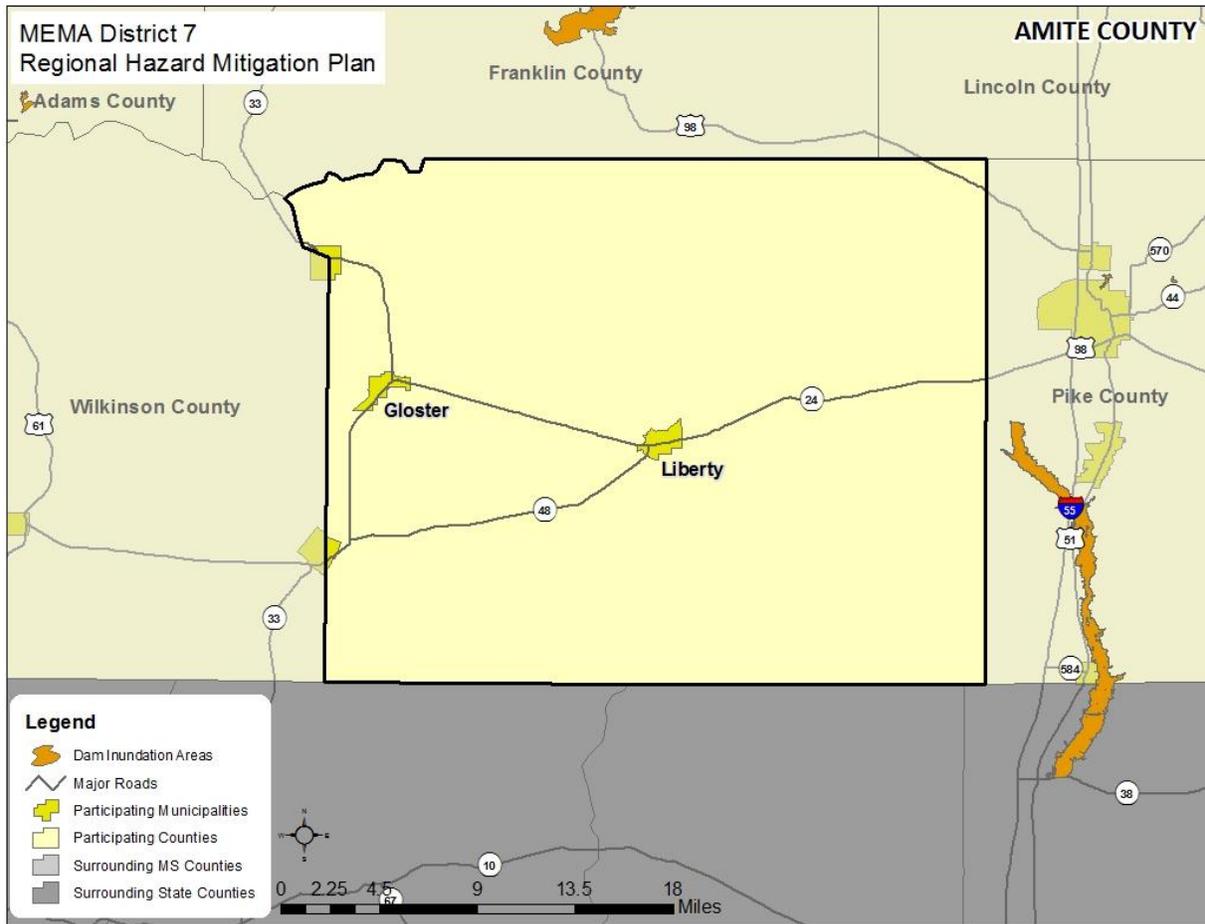
<sup>1</sup> The list of high hazard dams obtained from the Mississippi Department of Environmental Quality was reviewed and amended by local officials to the best of their knowledge.

FIGURE B.2: AMITE COUNTY HIGH HAZARD DAM LOCATIONS



Source: Mississippi Department of Environmental Quality

**FIGURE B.3: AMITE COUNTY DAM INUNDATION AREAS**



Source: Mississippi Department of Environmental Quality

**TABLE B.4: AMITE COUNTY HIGH HAZARD DAMS**

| Dam Name            | Hazard Potential | Max Storage (ac/ft) | Dam Height (ft) |
|---------------------|------------------|---------------------|-----------------|
| <b>Amite County</b> |                  |                     |                 |
| NONE                | N/A              | N/A                 | N/A             |

Source: Mississippi Department of Environmental Quality

**HISTORICAL OCCURRENCES**

According to the Mississippi State Hazard Mitigation Plan, there have been no dam failures reported in Amite County (Table B.5). However, several breach scenarios in the region could be catastrophic.

**TABLE B.5: AMITE COUNTY DAM FAILURES (1982-2012)**

| Date          | County | Structure Name | Cause of Failure |
|---------------|--------|----------------|------------------|
| None reported | Amite  | --             | --               |

Source: Mississippi Department of Environmental Quality

## ***PROBABILITY OF FUTURE OCCURRENCES***

Given the current dam inventory and historic data, a dam breach is unlikely (less than 1 percent annual probability) in the future. As has been demonstrated in the past, regular monitoring is necessary to prevent these events.

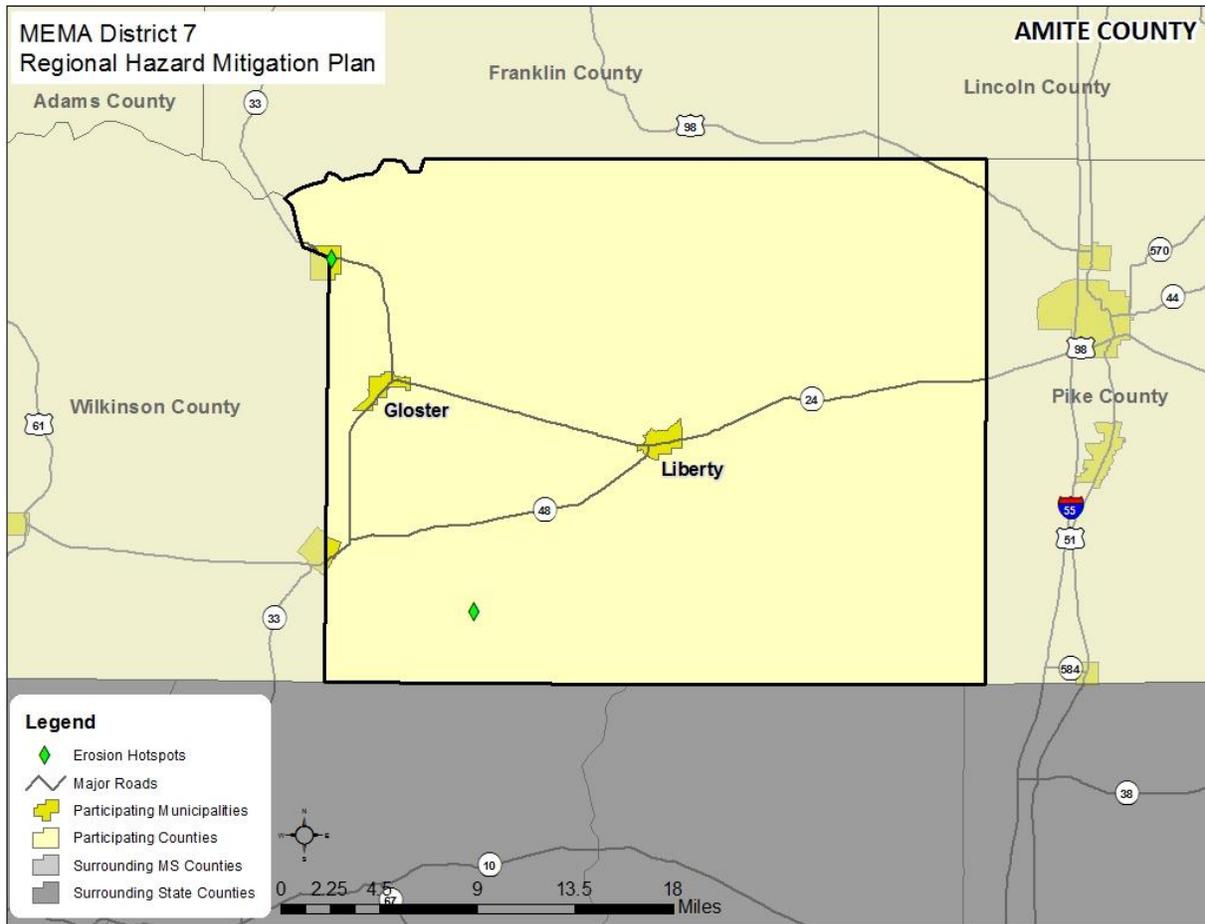
## **B.2.2 Erosion**

### ***LOCATION AND SPATIAL EXTENT***

Erosion in Amite County is typically caused by flash flooding events. Unlike coastal areas, areas of concern for erosion in Amite County are primarily rivers/streams and reservoirs. Generally, vegetation also helps to prevent erosion in the area, but in recent years, erosion has become a growing threat to many of the participating counties and jurisdictions.

At this time, there is no regional or state-level data available on localized areas of erosion so it is a challenge to identify particularly prone areas on a wider geographic scale. However, a few areas of concern were reported by members of the hazard mitigation council and other local sources. Locations along the Mississippi River are known to be especially at-risk, but there are locations in many areas within the region where erosion is prominent. Although not comprehensive, **Figure B.4** is an effort to identify erosion hotspots in the county. These do not constitute a comprehensive analysis of soil erosion areas in the county, but are simply anecdotal accounts of areas where erosion has occurred in the past.

**FIGURE B.4: AMITE COUNTY EROSION HOTSPOTS**



Source: Local Government

**HISTORICAL OCCURRENCES**

Several sources were vetted to identify areas of erosion in Amite County. This includes searching local newspapers, interviewing local officials, and reviewing previous hazard mitigation plans. The locations identified in the figure above are representative of areas where erosion has taken place in the past.

These incidents have caused major problems as bridges have become damaged in many instances and made unsafe for emergency services vehicles to cross during and after storm events. This delays response times and critical life-safety support. In addition, the shutdown of roads has hurt local communities economically as trade and commerce are temporarily shut down as bridges are repaired. It has also caused disruption to daily activities for local school boards who must re-route buses around affected areas, causing additional fuel resources to be expended and increasing drive times for students.

**PROBABILITY OF FUTURE OCCURRENCES**

Erosion remains a natural, dynamic, and continuous process for Amite County, and it will continue to occur. The annual probability level assigned for erosion is possible (between 1 and 10 percent annually).

## B.2.3 Flood

### **LOCATION AND SPATIAL EXTENT**

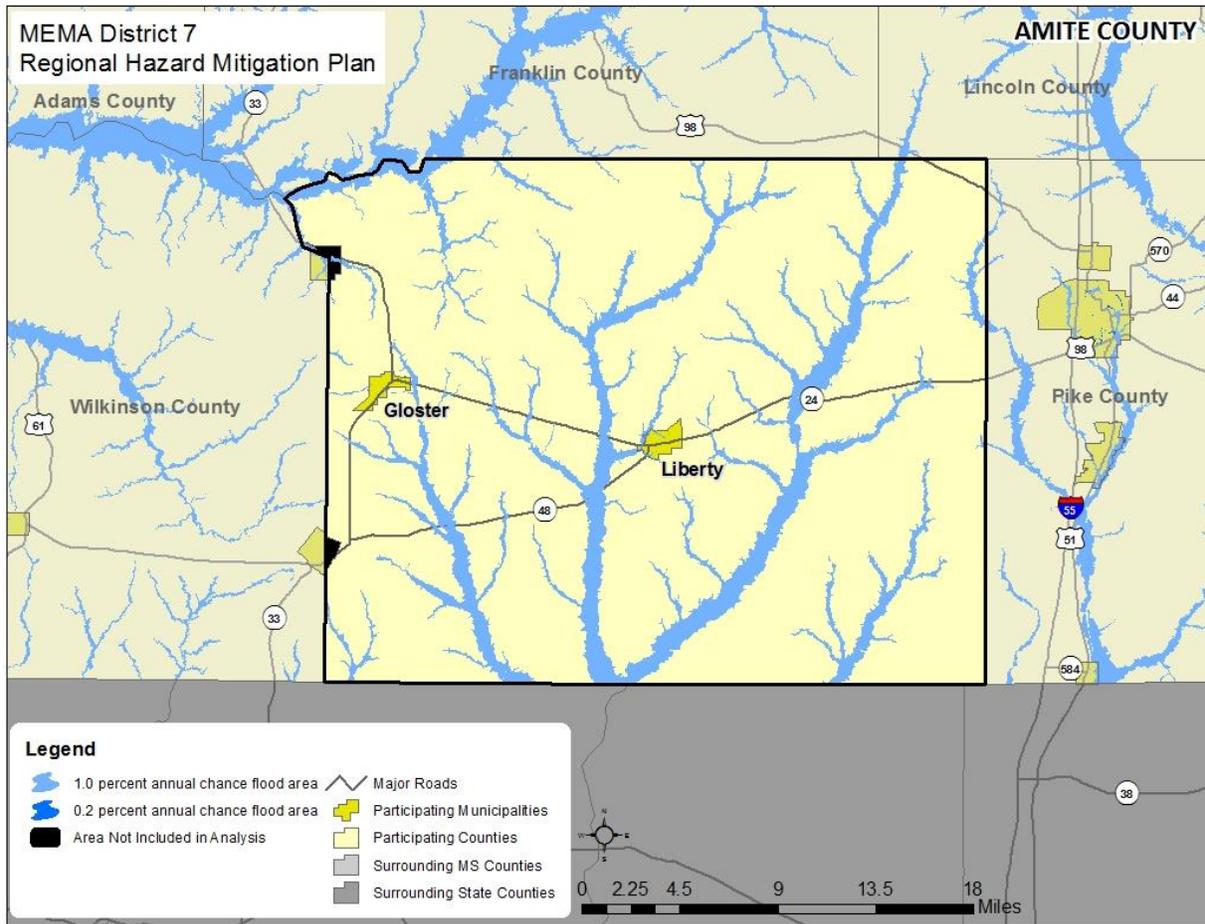
There are areas in Amite County that are susceptible to flood events. Special flood hazard areas in the county were mapped using Geographic Information System (GIS) and FEMA Digital Flood Insurance Rate Maps (DFIRM).<sup>2</sup> This includes Zone A (1-percent annual chance floodplain), Zone AE (1-percent annual chance floodplain with elevations), and Zone X-500 (0.2-percent annual chance floodplain). According to GIS analysis, of the 730 square miles that make up Amite County, there are 85.85 square miles of land in zones A and AE (1-percent annual chance floodplain/100-year floodplain) and 0.00 square miles of land in zone X-500 (0.2 percent annual change floodplain/500-year floodplain).

These flood zone values account for 11.8 percent of the total land area in Amite County. It is important to note that while FEMA digital flood data is recognized as best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Flooding and flood-related losses often do occur outside of delineated special flood hazard areas. **Figure B.5** illustrates the location and extent of currently mapped special flood hazard areas for Amite County based on best available FEMA Digital Flood Insurance Rate Map (DFIRM) data.

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<sup>2</sup>The county-level DFIRM data used for Amite County were updated in 2010.

**FIGURE B.5: SPECIAL FLOOD HAZARD AREAS IN AMITE COUNTY**



Source: Federal Emergency Management Agency

### **HISTORICAL OCCURRENCES**

Floods were at least partially responsible for four disaster declarations in Amite County in 1972, 1973, 1990, and 2003.<sup>3</sup> Information from the National Climatic Data Center was used to ascertain additional historical flood events. The National Climatic Data Center reported a total of six events in Amite County since 2002.<sup>4</sup> A summary of these events is presented in **Table B.6**. These events accounted for over \$702,000 (2017 dollars) in property damage.<sup>5</sup> Specific information on flood events, including date, type of flooding, and deaths and injuries, can be found in **Table B.7**.

<sup>3</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>4</sup> These flood events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported. As additional local data becomes available, this hazard profile will be amended.

<sup>5</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE B.6: SUMMARY OF FLOOD OCCURRENCES IN AMITE COUNTY**

| Location                  | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|---------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Gloster                   | 0                     | 0/0             | \$0                    | \$0                        |
| Liberty                   | 1                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area       | 5                     | 0/0             | \$702,486              | \$46,832                   |
| <b>AMITE COUNTY TOTAL</b> | <b>6</b>              | <b>0/0</b>      | <b>\$702,486</b>       | <b>\$46,832</b>            |

Source: National Climatic Data Center

**TABLE B.7: HISTORICAL FLOOD EVENTS IN AMITE COUNTY**

| Location                   | Date      | Type        | Deaths/Injuries | Property Damage* |
|----------------------------|-----------|-------------|-----------------|------------------|
| <b>Gloster</b>             |           |             |                 |                  |
| None reported              | --        | --          | --              | --               |
| <b>Liberty</b>             |           |             |                 |                  |
| LIBERTY                    | 4/12/2009 | Flash Flood | 0/0             | \$0              |
| <b>Unincorporated Area</b> |           |             |                 |                  |
| COUNTYWIDE                 | 9/26/2002 | Flash Flood | 0/0             | \$0              |
| COUNTYWIDE                 | 2/21/2003 | Flash Flood | 0/0             | \$0              |
| COUNTYWIDE                 | 2/5/2004  | Flash Flood | 0/0             | \$0              |
| CROSBY MUNI ARPT           | 3/28/2014 | Flash Flood | 0/0             | \$103,483        |
| CROSBY MUNI ARPT           | 8/12/2016 | Flash Flood | 0/0             | \$599,003        |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

### **HISTORICAL SUMMARY OF INSURED FLOOD LOSSES**

According to FEMA flood insurance policy records as of March 31, 2017, there have been two flood losses reported in Amite County through the National Flood Insurance Program (NFIP) since 1978, totaling over \$3,000 in claims payments. A summary of these figures for the county is provided in **Table B.8**. It should be emphasized that these numbers include only those losses to structures that were insured through the NFIP policies, and for losses in which claims were sought and received. It is likely that many additional instances of flood loss in Amite County were either uninsured, denied claims payment, or not reported.

**TABLE B.8: SUMMARY OF INSURED FLOOD LOSSES IN AMITE COUNTY**

| Location                  | Number of Policies | Flood Losses | Claims Payments   |
|---------------------------|--------------------|--------------|-------------------|
| Gloster                   | 0                  | 0            | \$0.00            |
| Liberty                   | 0                  | 2            | \$3,416.26        |
| Unincorporated Area       | 18                 | 0            | \$0.00            |
| <b>AMITE COUNTY TOTAL</b> | <b>18</b>          | <b>2</b>     | <b>\$3,416.26</b> |

Source: National Flood Insurance Program

## REPETITIVE LOSS PROPERTIES

According to the Mississippi Emergency Management Agency, there are three non-mitigated repetitive loss properties located in Amite County, which accounted for eight losses and more than \$106,000 in claims payments under the NFIP. The average claim amount for these properties is \$13,276. All three properties are single family. Without mitigation, these properties will likely continue to experience flood losses. **Table B.9** presents detailed information on repetitive loss properties and NFIP claims and policies for Amite County.

**TABLE B.9: REPETITIVE LOSS PROPERTIES IN AMITE COUNTY**

| Location                  | Number of Properties | Types of Properties | Number of Losses | Building Payments  | Content Payments   | Total Payments      | Average Payment    |
|---------------------------|----------------------|---------------------|------------------|--------------------|--------------------|---------------------|--------------------|
| Gloster                   | 0                    | --                  | 0                | \$0.00             | \$0.00             | \$0.00              | \$0.00             |
| Liberty                   | 0                    | --                  | 0                | \$0.00             | \$0.00             | \$0.00              | \$0.00             |
| Unincorporated Area       | 3                    | 3 single family     | 8                | \$83,698.33        | \$22,509.48        | \$106,207.80        | \$13,275.98        |
| <b>AMITE COUNTY TOTAL</b> | <b>3</b>             |                     | <b>8</b>         | <b>\$83,698.33</b> | <b>\$22,509.48</b> | <b>\$106,207.80</b> | <b>\$13,275.98</b> |

Source: National Flood Insurance Program

## PROBABILITY OF FUTURE OCCURRENCES

Flood events will remain a threat in Amite County, and the probability of future occurrences will remain highly likely (100 percent annual probability). The probability of future flood events based on magnitude and according to best available data is illustrated in the figure above, which indicates those areas susceptible to the 1-percent annual chance flood (100-year floodplain).

It can be inferred from the floodplain location maps, previous occurrences, and repetitive loss properties that risk varies throughout the county. For example, Liberty has more floodplain and thus a higher risk of flood than Gloster. Flood is not the greatest hazard of concern but will continue to occur and cause damage. Therefore, mitigation actions may be warranted, particularly for repetitive loss properties.

## FIRE-RELATED HAZARDS

### B.2.4 Drought

#### LOCATION AND SPATIAL EXTENT

Drought typically covers a large area and cannot be confined to any geographic or political boundaries. Furthermore, it is assumed that Amite County would be uniformly exposed to drought, making the spatial extent potentially widespread. It is also notable that drought conditions typically do not cause significant damage to the built environment but may exacerbate wildfire conditions.

#### HISTORICAL OCCURRENCES

According to the U.S. Drought Monitor, Amite County had drought levels of Severe or worse in 7 of the last 17 years (January 2000-December 2016). **Table B.10** shows the most severe drought classification for

each year, according to U.S. Drought Monitor classifications. It should be noted that the U.S. Drought Monitor also estimates what percentage of the county is in each classification of drought severity. For example, the most severe classification reported may be exceptional but a majority of the county may actually be in a less severe condition.

**TABLE B.10: HISTORICAL DROUGHT OCCURRENCES IN AMITE COUNTY**

Abnormally Dry (D0) Moderate Drought (D1) Severe Drought (D2) Extreme Drought (D3) Exceptional Drought (D4)



| Year | Amite County |
|------|--------------|
| 2000 | EXCEPTIONAL  |
| 2001 | MODERATE     |
| 2002 | MODERATE     |
| 2003 | MODERATE     |
| 2004 | ABNORMAL     |
| 2005 | MODERATE     |
| 2006 | EXTREME      |
| 2007 | SEVERE       |
| 2008 | MODERATE     |
| 2009 | MODERATE     |
| 2010 | SEVERE       |
| 2011 | EXTREME      |
| 2012 | ABNORMAL     |
| 2013 | ABNORMAL     |
| 2014 | MODERATE     |
| 2015 | EXTREME      |
| 2016 | SEVERE       |

Source: United States Drought Monitor

No anecdotal information was available from the National Climatic Data Center on droughts in Amite County.

**PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that Amite County has a probability level of possible (between 1 and 10 percent annual probability) for future drought events. However, the extent (or magnitude) of drought and the amount of geographic area covered by drought, varies with each year. Historic information indicates that there is a much lower probability for extreme, long-lasting drought conditions.

**B.2.5 Lightning**

**LOCATION AND SPATIAL EXTENT**

Lightning occurs randomly, therefore it is impossible to predict where and with what frequency it will strike. It is assumed that all of Amite County is uniformly exposed to lightning.

**HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, there have been three recorded lightning events in Amite County since 1999.<sup>6</sup> These events resulted in almost \$18,000 (2017 dollars) in damages, as listed in summary **Table B.11**.<sup>7</sup> Detailed information on historical lightning events can be found in **Table B.12**.

It is certain that more than three events have impacted the county. Many of the reported events are those that cause damage, and it should be expected that damages are likely much higher for this hazard than what is reported.

**TABLE B.11: SUMMARY OF LIGHTNING OCCURRENCES IN AMITE COUNTY**

| Location                  | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|---------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Gloster                   | 1                     | 0/0             | \$7,441                | \$413                      |
| Liberty                   | 2                     | 0/0             | \$10,246               | \$788                      |
| Unincorporated Area       | 0                     | 0/0             | \$0                    | \$0                        |
| <b>AMITE COUNTY TOTAL</b> | <b>3</b>              | <b>0/0</b>      | <b>\$17,687</b>        | <b>\$1,202</b>             |

Source: National Climatic Data Center

**TABLE B.12: HISTORICAL LIGHTNING OCCURRENCES IN AMITE COUNTY**

| Location                   | Date      | Deaths/Injuries | Property Damage* | Details  |
|----------------------------|-----------|-----------------|------------------|--|
| <b>Gloster</b>             |           |                 |                  |  |
| GLOSTER                    | 1/2/1999  | 0/0             | \$7,441          | Lightning hit a house starting a fire that destroyed the kitchen.  |
| <b>Liberty</b>             |           |                 |                  |  |
| LIBERTY                    | 6/16/2004 | 0/0             | \$0              | Lightning started a fire when it struck two chicken houses on a farm.  |
| LIBERTY                    | 7/25/2015 | 0/0             | \$10,246         | Lightning struck a crude oil storage tank batter located east of Liberty, that became engulfed and had to be extinguished by local volunteer fire departments. |
| <b>Unincorporated Area</b> |           |                 |                  |  |
| None reported              | --        | --              | --               | --   |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

<sup>6</sup> These lightning events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is certain that additional lightning events have occurred in Amite County. As additional local data becomes available, this hazard profile will be amended.

<sup>7</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

## **PROBABILITY OF FUTURE OCCURRENCES**

Although there was not a high number of historical lightning events reported in Amite County via NCDC data, it is a regular occurrence accompanied by thunderstorms. In fact, lightning events will assuredly happen on an annual basis, though not all events will cause damage. According to Vaisala's U.S. National Lightning Detection Network (NLDN), Amite County is located in an area of the country that experienced an average of 12 to 20 lightning flashes per square mile per year between 2007 and 2016. Therefore, the probability of future events is highly likely (100 percent annual probability). It can be expected that future lightning events will continue to threaten life and cause minor property damages throughout the county.

## **B.2.6 Wildfire**

### **LOCATION AND SPATIAL EXTENT**

The entire county is at risk to a wildfire occurrence. However, several factors such as drought conditions or high levels of fuel on the forest floor, may make a wildfire more likely. Furthermore, areas in the urban-wildland interface are particularly susceptible to fire hazard as populations abut formerly undeveloped areas. The Wildfire Ignition Density data shown in the figure below give an indication of historic location.

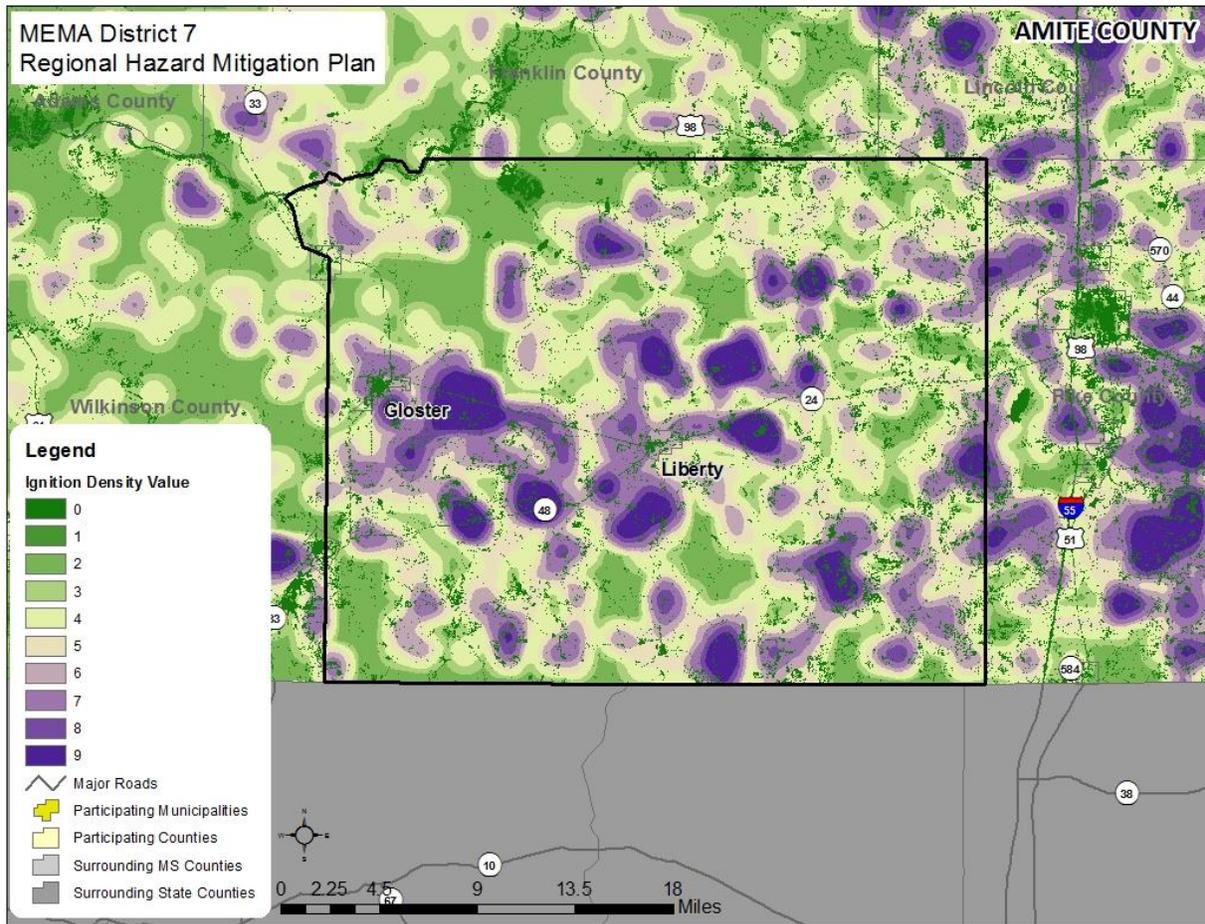
### **HISTORICAL OCCURRENCES**

**Figure B.6** shows the Wildfire Ignition Density in Amite County based on data from the Southern Wildfire Risk Assessment. This data is based on historical fire ignitions and the likelihood of a wildfire igniting in an area. Occurrence is derived by modeling historic wildfire ignition locations to create an average ignition rate map. This is measured in the number of fires per year per 1,000 acres.<sup>8</sup>

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<sup>8</sup> Southern Wildfire Risk Assessment, 2014.

**FIGURE B.6: WILDFIRE IGNITION DENSITY IN AMITE COUNTY**



Source: Southern Wildfire Risk Assessment

Based on data from the Mississippi Forestry Commission from 2007 to 2016, Amite County experienced an average of 52.3 wildfires annually which burned a combined 668.2 acres per year. The data indicate that most of these fires were small to moderate in size, averaging about 12.8 acres per fire. **Table B.13** provides a summary of wildfire occurrences in Amite County and **Table B.14** lists the number of reported wildfire occurrences in the county between the years 2007 and 2016.

**TABLE B.13: SUMMARY TABLE OF ANNUAL WILDFIRE OCCURRENCES (2007-2016)\***

|   | Amite County |
|---|--------------|
| Average Number of Fires per year        | 52.3         |
| Average Number of Acres Burned per year | 668.2        |
| Average Number of Acres Burned per fire | 12.8         |

\*These values reflect averages over a 10-year period.

Source: Mississippi Forestry Commission

**TABLE B.14: HISTORICAL WILDFIRE OCCURRENCES IN AMITE COUNTY**

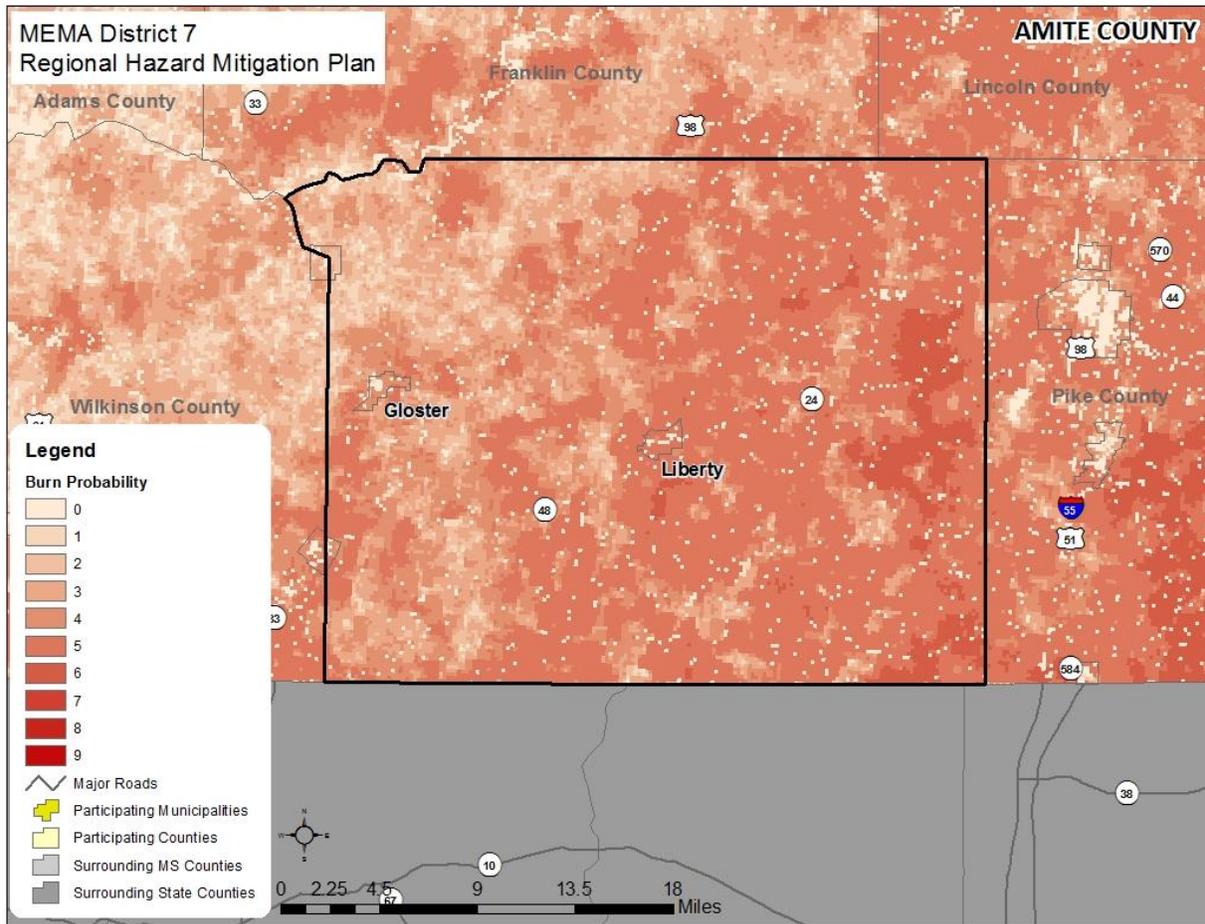
| Year                   | 2007  | 2008 | 2009 | 2010 | 2011  | 2012 | 2013 | 2014 | 2015 | 2016 |
|------------------------|-------|------|------|------|-------|------|------|------|------|------|
| <b>Amite County</b>    |       |      |      |      |       |      |      |      |      |      |
| Number of Fires        | 90    | 78   | 79   | 47   | 89    | 16   | 22   | 50   | 19   | 33   |
| Number of Acres Burned | 1,225 | 773  | 859  | 318  | 1,517 | 201  | 371  | 619  | 354  | 445  |

Source: Mississippi Forestry Commission

### **PROBABILITY OF FUTURE OCCURRENCES**

Wildfire events will be an ongoing occurrence in Amite County. **Figure B.7** shows that there is some probability a wildfire will occur throughout the county. However, the likelihood of wildfires increases during drought cycles and abnormally dry conditions. Fires are likely to stay small in size but could increase due to local climate and ground conditions. Dry, windy conditions with an accumulation of forest floor fuel (potentially due to ice storms or lack of fire) could create conditions for a large fire that spreads quickly. It should also be noted that some areas do vary somewhat in risk. For example, highly developed areas are less susceptible unless they are located near the urban-wildland boundary. The risk will also vary due to assets. Areas in the urban-wildland interface will have much more property at risk, resulting in increased vulnerability and need to mitigate compared to rural, mainly forested areas. The probability assigned to Amite County for future wildfire events is highly likely (100 percent annual probability).

**FIGURE B.7: BURN PROBABILITY IN AMITE COUNTY**



Source: Southern Wildfire Risk Assessment

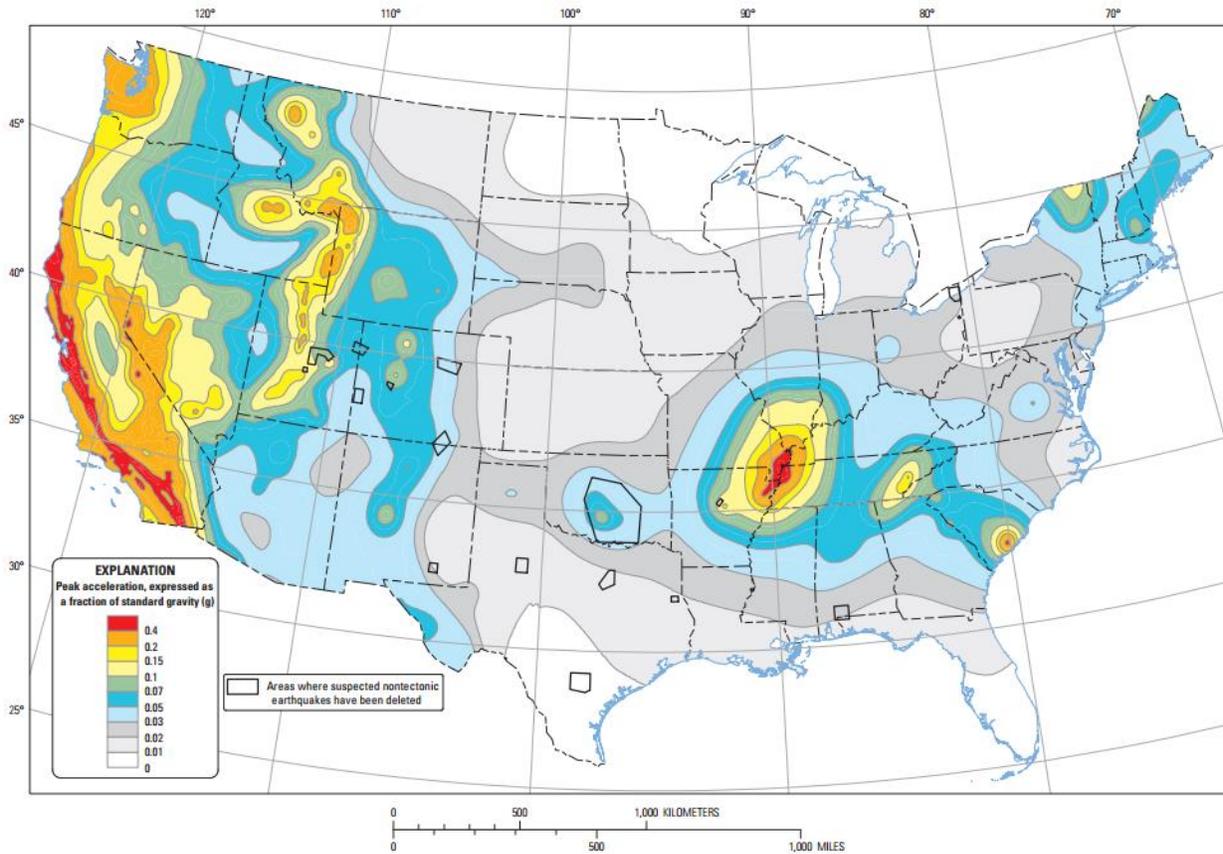
## **GEOLOGIC HAZARDS**

### **B.2.7 Earthquake**

#### **LOCATION AND SPATIAL EXTENT**

Figure B.8 shows the intensity level associated with Amite County, based on the national USGS map of peak acceleration with 10 percent probability of exceedance in 50 years. It is the probability that ground motion will reach a certain level during an earthquake. The data show peak horizontal ground acceleration (the fastest measured change in speed, for a particle at ground level that is moving horizontally due to an earthquake) with a 10 percent probability of exceedance in 50 years. The map was compiled by the U.S. Geological Survey (USGS) Geologic Hazards Team, which conducts global investigations of earthquake, geomagnetic, and landslide hazards. According to this map, Amite County lies within an approximate zone of level “0.01” to “0.03” ground acceleration. This indicates that the county exists within an area of low seismic risk.

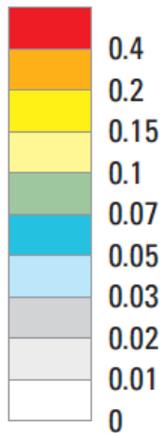
**FIGURE B.8: PEAK ACCELERATION WITH 10 PERCENT PROBABILITY OF EXCEEDANCE IN 50 YEARS**



Ten-percent probability of exceedance in 50 years map of peak ground acceleration

**EXPLANATION**

Peak acceleration, expressed as a fraction of standard gravity (g)



 Areas where suspected nontectonic earthquakes have been deleted

Source: United States Geological Survey, 2014

The primary source of potential damage to Amite County from an earthquake is the New Madrid Seismic Zone (NMSZ). Historically, a series of earthquakes in 1811 and 1812 demonstrated that this fault zone can produce high magnitude seismic events, sometimes on the scale of a 7.5-8.0 on the Richter scale. The biggest challenge with earthquakes that occur in this area of seismic activity is predicting the recurrence of earthquakes emanating from this zone. Although the magnitude of earthquakes from the NMSZ can be large, they occur very irregularly and fairly infrequently. This makes it extremely difficult to project when they will occur.

It should also be noted that the State of Mississippi Hazard Mitigation Plan identifies certain areas of concern for liquefaction and lists the counties and corresponding zones within those counties that have the highest liquefaction potential. Amite County does not have any identified liquefaction potential risk.

**HISTORICAL OCCURRENCES**

No earthquakes are known to have affected Amite County since 1638. **Table B.15** provides a summary of earthquake events reported by the National Centers for Environmental Information (formerly National Geophysical Data Center) between 1638 and 1985, and **Figure B.9** presents a map showing earthquakes whose epicenters have occurred near the county between 1985 and 2015 (no earthquakes occurred within the county’s boundaries during this period). **Table B.16** presents a detailed occurrence of each event including the date, distance for the epicenter, magnitude and Modified Mercalli Intensity (if known).<sup>9</sup>

**TABLE B.15: SUMMARY OF SEISMIC ACTIVITY IN AMITE COUNTY**

| Location                  | Number of Occurrences | Greatest MMI Reported | Greatest Richter Scale Reported |
|---------------------------|-----------------------|-----------------------|---------------------------------|
| Gloster                   | 0                     | --                    | --                              |
| Liberty                   | 0                     | --                    | --                              |
| Unincorporated Area       | 0                     | --                    | --                              |
| <b>AMITE COUNTY TOTAL</b> | <b>0</b>              | <b>--</b>             | <b>--</b>                       |

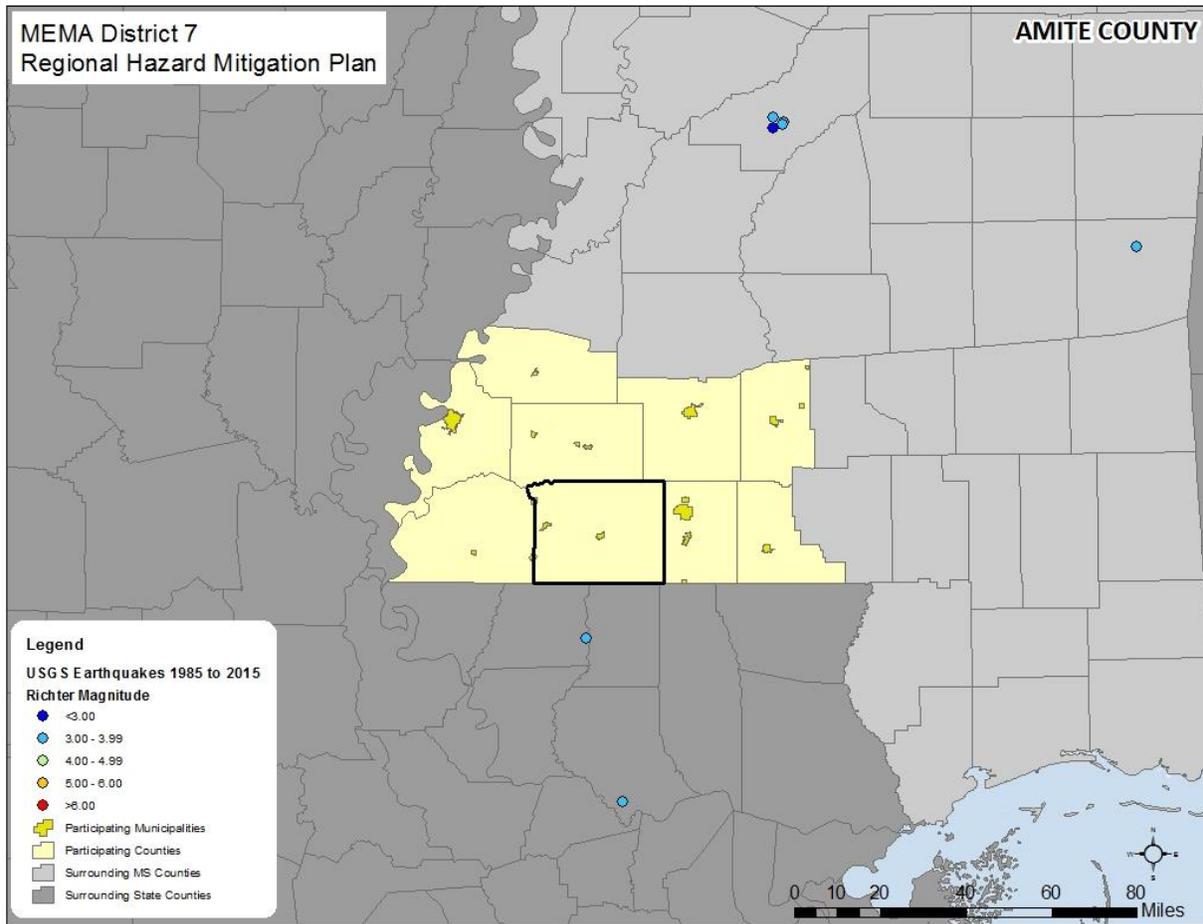
Source: National Centers for Environmental Information

**TABLE B.16: SIGNIFICANT SEISMIC EVENTS IN AMITE COUNTY (1638 -1985)**

| Location                   | Date | Epicentral Distance | Magnitude | MMI |
|----------------------------|------|---------------------|-----------|-----|
| <b>Gloster</b>             |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |
| <b>Liberty</b>             |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |
| <b>Unincorporated Area</b> |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |

Source: National Centers for Environmental Information

<sup>9</sup> Due to reporting mechanisms, not all earthquakes events were recorded during this time. Furthermore, some are missing data, such as the epicenter location, due to a lack of widely used technology. In these instances, a value of “unknown” is reported.

**FIGURE B.9: HISTORIC EARTHQUAKES WITH EPICENTERS NEAR AMITE COUNTY (1985-2015)**

Source: United States Geological Survey

### **PROBABILITY OF FUTURE OCCURRENCES**

The probability of significant, damaging earthquake events affecting Amite County is unlikely. However, it is certainly possible that future earthquakes resulting in light or moderate perceived shaking and damages will affect the county much more frequently. The annual probability level for the county is estimated to be less than 1 percent (unlikely).

## **WIND-RELATED HAZARDS**

### **B.2.8 Extreme Heat**

#### **LOCATION AND SPATIAL EXTENT**

Heat waves typically impact a large area and cannot be confined to any geographic or political boundaries. Therefore, the entire county is considered to be equally susceptible to extreme heat.

### **HISTORICAL OCCURRENCES**

The National Climatic Data Center was used to determine historical heat wave occurrences in the county. No events specific to Amite County were reported, however, several events were reported elsewhere in the region. Similar events and impacts can be expected in Amite County.

**Summer of 2000 Heat Wave** – Hot temperatures persisted from July to September across the South and Plains. Known as the Summer of 2000 Heat Wave, high temperatures commonly peaked over 100 degrees.

**August 2005** – A "HOT" stretch of weather occurred during the middle to later part of August 2005. This "Heat Wave" covered a large portion of the south and lasted for a period of about 10 days. Each of these days had high temperatures consistently between 95 and 100 degrees, with 1 or 2 of these days actually reaching 100 degrees or more. Additionally, overnight lows remained warm with lower and middle 70s recorded. This is the first time since August 2000 where 100 degree temperatures were reached in this area as well as having such an extended period of "HOT" weather.

**July 2006** – A small "heat wave" gripped the region during the middle of July with high temperature ranging from the upper 90s to around 100 degrees for five days with overnight lows only reaching the middle 70s. The hottest temperatures during this period occurred from the Mississippi Delta, across northern Mississippi and then down to the Jackson Metro and toward Meridian. This area peaked between 100 and 102 degrees for at least two days during the hot five day stretch.

**August 2007** – During the first half of August, a heat wave took hold of the region and brought some of the warmest temperatures since the summer of 2000. This heat wave began around August 5th and lasted until the 16th. Between August 10th and 15th, the entire area reached 100 degrees or higher. Twenty-three record highs were also set during this time. As the temperature soared each day, high relative humidities resulted in heat index values between 105 and 112 degrees.

**August 2010** – A four day stretch of extreme temperatures occurred across the region to start off the month of August. High pressure was firmly entrenched across the southeast and allowed temperatures to soar into the triple digits across much of the region. Across the NWS Jackson, MS forecast area, 19 record highs were set between August 1st and 4th. On August 2nd, the 2nd warmest average temperature was recorded. The low was 78 and the high 105, this resulted in an average temperature of 91.5 degrees. Additionally, relatively high humidity levels made conditions even more oppressive, with heat index readings surpassing 110 degrees in many areas. This extreme heat resulted in 3 fatalities across the forecast area.

### **PROBABILITY OF FUTURE OCCURRENCES**

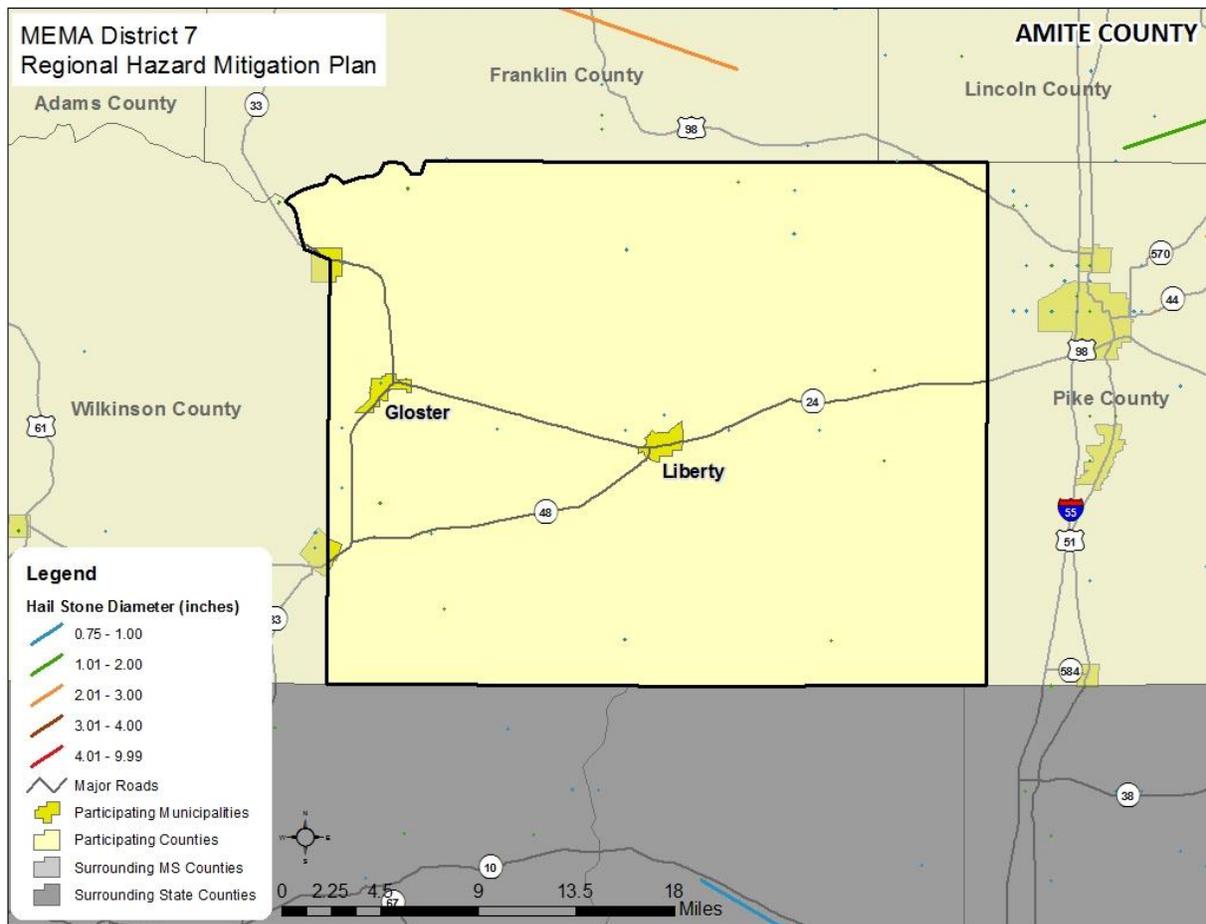
Based on historical occurrence information, it is assumed that all of Amite County has a probability level of likely (between 10 and 100 percent annual probability) for future heat wave events.

## B.2.9 Hailstorm

### LOCATION AND SPATIAL EXTENT

Hailstorms frequently accompany thunderstorms, so their locations and spatial extents coincide. It is assumed that Amite County is uniformly exposed to severe thunderstorms; therefore, all areas of the county are equally exposed to hail which may be produced by such storms. With that in mind, **Figure B.10** shows the location of hail events that have impacted the county between 1955 and 2015.

**FIGURE B.10: HAILSTORM TRACKS IN AMITE COUNTY**



Source: National Weather Service Storm Prediction Center

### HISTORICAL OCCURRENCES

According to the National Climatic Data Center, 31 recorded hailstorm events have affected Amite County since 1986.<sup>10</sup> **Table B.17** is a summary of the hail events in Amite County. **Table B.18** provides detailed information about each event that occurred in the county. In all, hail occurrences did not result in any

<sup>10</sup> These hail events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017. It is likely that additional hail events have affected Amite County. As additional local data becomes available, this hazard profile will be amended.

property damages.<sup>11</sup> Hail ranged in diameter from 0.75 inches to 2.0 inches. It should be noted that hail is notorious for causing substantial damage to cars, roofs, and other areas of the built environment that may not be reported to the National Climatic Data Center. Therefore, it is likely that damages are greater than the reported value.

**TABLE B.17: SUMMARY OF HAIL OCCURRENCES IN AMITE COUNTY**

| Location                  | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|---------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Gloster                   | 5                     | 0/0             | \$0                    | \$0                        |
| Liberty                   | 9                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area       | 17                    | 0/0             | \$0                    | \$0                        |
| <b>AMITE COUNTY TOTAL</b> | <b>31</b>             | <b>0/0</b>      | <b>\$0</b>             | <b>\$0</b>                 |

Source: National Climatic Data Center

**TABLE B.18: HISTORICAL HAIL OCCURRENCES IN AMITE COUNTY**

| Location                   | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-----------|-----------------|------------------|
| <b>Gloster</b>             |            |           |                 |                  |
| Gloster                    | 4/22/1995  | 0.75 in.  | 0/0             | \$0              |
| GLOSTER                    | 4/23/2000  | 0.75 in.  | 0/0             | \$0              |
| GLOSTER                    | 3/31/2005  | 2.00 in.  | 0/0             | \$0              |
| GLOSTER                    | 5/11/2007  | 1.00 in.  | 0/0             | \$0              |
| GLOSTER                    | 2/10/2013  | 1.00 in.  | 0/0             | \$0              |
| <b>Liberty</b>             |            |           |                 |                  |
| LIBERTY                    | 2/19/1996  | 0.75 in.  | 0/0             | \$0              |
| LIBERTY                    | 1/22/1999  | 1.75 in.  | 0/0             | \$0              |
| LIBERTY                    | 3/26/2002  | 1.00 in.  | 0/0             | \$0              |
| LIBERTY                    | 3/12/2003  | 1.00 in.  | 0/0             | \$0              |
| LIBERTY                    | 3/18/2003  | 1.00 in.  | 0/0             | \$0              |
| LIBERTY                    | 4/6/2005   | 0.75 in.  | 0/0             | \$0              |
| LIBERTY                    | 12/4/2005  | 0.75 in.  | 0/0             | \$0              |
| LIBERTY                    | 5/14/2007  | 0.88 in.  | 0/0             | \$0              |
| LIBERTY                    | 12/23/2014 | 0.88 in.  | 0/0             | \$0              |
| <b>Unincorporated Area</b> |            |           |                 |                  |
| AMITE CO.                  | 4/19/1986  | 0.75 in.  | 0/0             | \$0              |
| AMITE CO.                  | 5/12/1987  | 1.00 in.  | 0/0             | \$0              |
| AMITE CO.                  | 4/4/1989   | 1.75 in.  | 0/0             | \$0              |
| AMITE CO.                  | 4/4/1989   | 1.00 in.  | 0/0             | \$0              |
| AMITE CO.                  | 4/20/1992  | 1.25 in.  | 0/0             | \$0              |
| Smithdale                  | 3/25/1993  | 0.75 in.  | 0/0             | \$0              |
| Gillsburg                  | 5/9/1994   | 1.00 in.  | 0/0             | \$0              |
| Macon                      | 3/7/1995   | 1.00 in.  | 0/0             | \$0              |

<sup>11</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| Location   | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|------------|------------|-----------|-----------------|------------------|
| AMITE CO.  | 3/15/1995  | 0.88 in.  | 0/0             | \$0              |
| GILLSBURG  | 1/26/1996  | 1.75 in.  | 0/0             | \$0              |
| GILLSBURG  | 2/19/1996  | 1.75 in.  | 0/0             | \$0              |
| COUNTYWIDE | 4/2/2000   | 1.00 in.  | 0/0             | \$0              |
| SMITHDALE  | 4/23/2000  | 1.75 in.  | 0/0             | \$0              |
| SMITHDALE  | 4/22/2005  | 0.75 in.  | 0/0             | \$0              |
| MC ELVEEN  | 4/2/2009   | 1.75 in.  | 0/0             | \$0              |
| MT OLIVE   | 3/18/2013  | 1.75 in.  | 0/0             | \$0              |
| SMITHDALE  | 12/23/2014 | 1.00 in.  | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

### **PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that the probability of future hail occurrences is highly likely (100 percent annual probability). Since hail is an atmospheric hazard, it is assumed that Amite County has equal exposure to this hazard. It can be expected that future hail events will continue to cause minor damage to property and vehicles throughout the county.

## **B.2.10 Hurricane and Tropical Storm**

### **LOCATION AND SPATIAL EXTENT**

Hurricanes and tropical storms threaten the entire Atlantic and Gulf seaboard of the United States. While coastal areas are most directly exposed to the brunt of landfalling storms, their impact is often felt hundreds of miles inland and they can affect Amite County. All areas in Amite County are equally susceptible to hurricane and tropical storms.

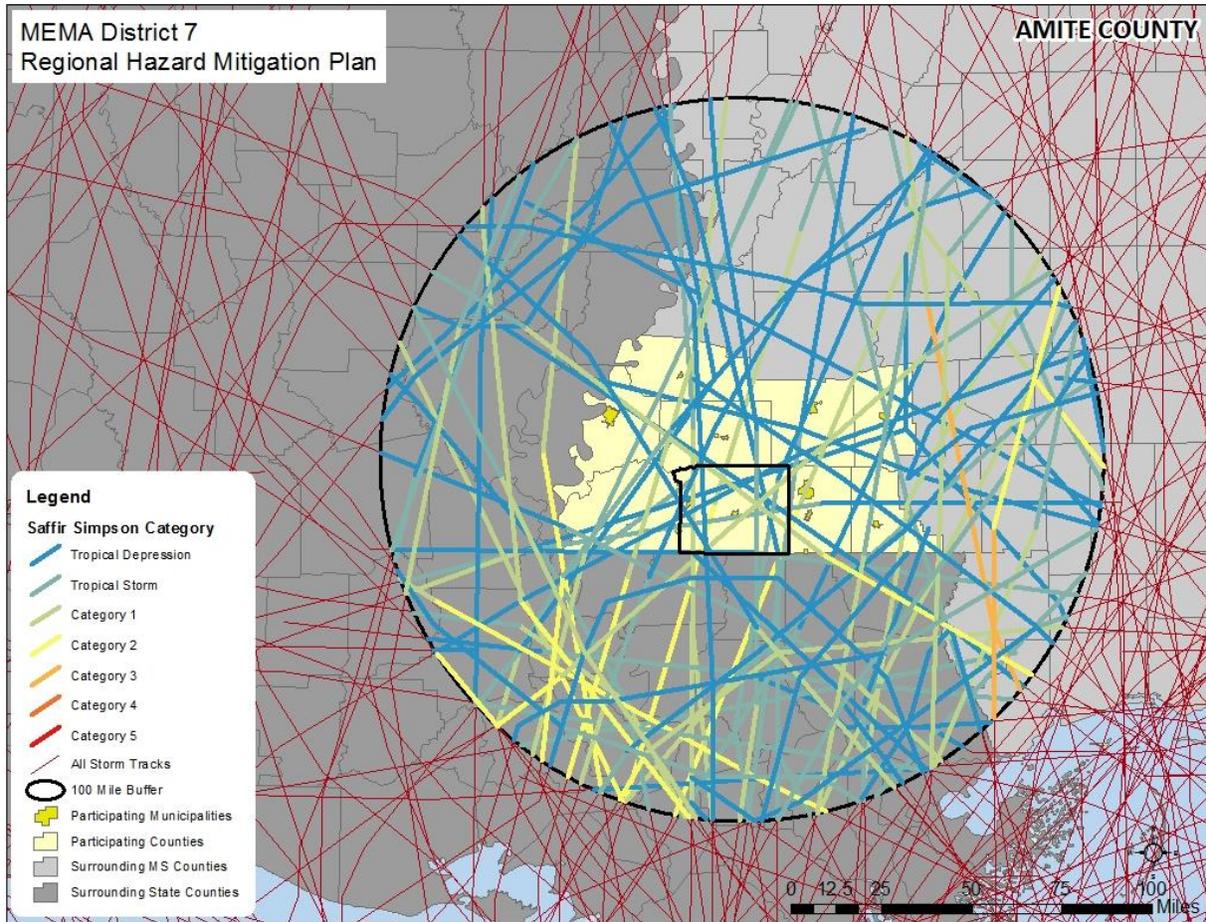
### **HISTORICAL OCCURRENCES**

According to the National Hurricane Center's historical storm track records, 86 hurricane or tropical storm/depression tracks have passed within 100 miles of the MEMA District 7 Region since 1854.<sup>12</sup> This includes: 35 hurricanes, 21 tropical storms, and 30 tropical depressions.

A total of 61 tracks passed directly through the region as shown in **Figure B.11**. **Table B.19** provides the date of occurrence, name (if applicable), maximum wind speed (as recorded within 100 miles of the MEMA District 7 Region) and category of the storm based on the Saffir-Simpson Scale for each event.

<sup>12</sup> These storm track statistics include tropical depressions, tropical storms, and hurricanes. Lesser events may still cause significant local impact in terms of rainfall and high winds.

**FIGURE B.11: HISTORICAL HURRICANE STORM TRACKS WITHIN 100 MILES OF THE MEMA DISTRICT 7 REGION**



Source: National Oceanic and Atmospheric Administration; National Hurricane Center

**TABLE B.19: HISTORICAL STORM TRACKS WITHIN 100 MILES OF THE MEMA 7 DISTRICT REGION (1850–2016)**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/21/1854          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/5/1855           | NOT NAMED  | Not Available              | Tropical Depression |
| 8/11/1856          | UNNAMED    | 85.03                      | Category 2          |
| 10/2/1860          | UNNAMED    | 89.03                      | Category 2          |
| 8/18/1861          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/16/1862          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/30/1863          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/5/1869           | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/12/1872          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/18/1875          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/1/1879           | UNNAMED    | 89.03                      | Category 2          |
| 10/7/1879          | UNNAMED    | 58.6                       | Tropical Storm      |

**ANNEX B: AMITE COUNTY**

| <b>Date of Occurrence</b> | <b>Storm Name</b> | <b>Maximum Wind Speed (knots)</b> | <b>Storm Category</b> |
|---------------------------|-------------------|-----------------------------------|-----------------------|
| 10/7/1879                 | NOT NAMED         | Not Available                     | Tropical Depression   |
| 8/3/1881                  | NOT NAMED         | Not Available                     | Tropical Depression   |
| 6/15/1886                 | UNNAMED           | 69.67                             | Category 1            |
| 8/20/1888                 | UNNAMED           | 81.90                             | Category 1            |
| 8/27/1890                 | UNNAMED           | 42.69                             | Tropical Storm        |
| 9/7/1893                  | UNNAMED           | 78.78                             | Category 1            |
| 8/8/1894                  | UNNAMED           | 17.56                             | Tropical Depression   |
| 9/20/1898                 | UNNAMED           | 42.69                             | Tropical Storm        |
| 9/29/1905                 | UNNAMED           | 42.69                             | Tropical Storm        |
| 10/9/1905                 | UNNAMED           | 42.69                             | Tropical Storm        |
| 8/2/1908                  | UNNAMED           | 17.56                             | Tropical Depression   |
| 9/21/1909                 | UNNAMED           | 92.89                             | Category 2            |
| 8/12/1911                 | UNNAMED           | 50.35                             | Tropical Storm        |
| 6/13/1912                 | UNNAMED           | 64.34                             | Category 1            |
| 7/17/1912                 | UNNAMED           | 0.87                              | Tropical Depression   |
| 9/18/1914                 | UNNAMED           | 32.60                             | Tropical Depression   |
| 9/29/1915                 | UNNAMED           | 95.53                             | Category 2            |
| 7/6/1916                  | UNNAMED           | 85.03                             | Category 2            |
| 9/22/1920                 | UNNAMED           | 87.29                             | Category 2            |
| 10/16/1923                | UNNAMED           | 78.78                             | Category 1            |
| 8/26/1926                 | UNNAMED           | 78.78                             | Category 1            |
| 9/21/1926                 | UNNAMED           | 58.60                             | Tropical Storm        |
| 7/15/1931                 | UNNAMED           | 50.35                             | Tropical Storm        |
| 9/19/1932                 | UNNAMED           | 64.34                             | Category 1            |
| 10/16/1932                | UNNAMED           | 58.6                              | Tropical Storm        |
| 7/26/1933                 | UNNAMED           | 17.56                             | Tropical Depression   |
| 6/16/1934                 | UNNAMED           | 87.29                             | Category 2            |
| 7/27/1936                 | UNNAMED           | 42.69                             | Tropical Storm        |
| 8/23/1936                 | UNNAMED           | 4.99                              | Tropical Depression   |
| 10/3/1937                 | UNNAMED           | 32.6                              | Tropical Depression   |
| 9/24/1940                 | UNNAMED           | 32.6                              | Tropical Depression   |
| 9/6/1945                  | UNNAMED           | 17.56                             | Tropical Depression   |
| 9/8/1947                  | UNNAMED           | 32.6                              | Tropical Depression   |
| 9/19/1947                 | UNNAMED           | 91.63                             | Category 2            |
| 9/4/1948                  | UNNAMED           | 69.67                             | Category 1            |
| 9/4/1949                  | UNNAMED           | 58.6                              | Tropical Storm        |
| 8/1/1955                  | BRENDA            | 64.34                             | Category 1            |
| 8/27/1955                 | UNNAMED           | 50.35                             | Tropical Storm        |
| 6/13/1956                 | UNNAMED           | 58.60                             | Tropical Storm        |
| 9/18/1957                 | ESTHER            | 64.34                             | Category 1            |
| 5/31/1959                 | ARLENE            | 64.34                             | Category 1            |
| 10/4/1964                 | HILDA             | 91.63                             | Category 2            |
| 9/10/1965                 | BETSY             | 89.03                             | Category 2            |
| 8/18/1969                 | CAMILLE           | 99.88                             | Category 3            |
| 8/9/1971                  | UNNAMED           | 4.99                              | Tropical Depression   |
| 9/1/1971                  | UNNAMED           | 4.99                              | Tropical Depression   |

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/5/1971           | FERN       | 4.99                       | Tropical Depression |
| 9/16/1971          | EDITH      | 87.29                      | Category 2          |
| 7/29/1975          | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1977           | BABE       | 58.60                      | Tropical Storm      |
| 7/11/1979          | BOB        | 73.83                      | Category 1          |
| 7/20/1980          | UNNAMED    | 0.87                       | Tropical Depression |
| 8/15/1985          | DANNY      | 78.78                      | Category 1          |
| 9/2/1985           | ELENA      | 92.89                      | Category 2          |
| 10/29/1985         | JUAN       | 73.83                      | Category 1          |
| 8/11/1987          | UNNAMED    | 4.99                       | Tropical Depression |
| 8/9/1988           | BERYL      | 50.35                      | Tropical Storm      |
| 9/10/1988          | FLORENCE   | 69.67                      | Category 1          |
| 8/26/1992          | ANDREW     | 85.03                      | Category 2          |
| 9/20/1998          | HERMINE    | 32.60                      | Tropical Depression |
| 6/11/2001          | ALLISON    | 42.69                      | Tropical Storm      |
| 8/5/2002           | BERTHA     | 32.60                      | Tropical Depression |
| 9/26/2002          | ISIDORE    | 64.34                      | Category 1          |
| 10/3/2002          | LILI       | 69.67                      | Category 1          |
| 6/30/2003          | BILL       | 58.60                      | Tropical Storm      |
| 10/10/2004         | MATTHEW    | 17.56                      | Tropical Depression |
| 8/29/2005          | KATRINA    | 94.63                      | Category 3          |
| 9/13/2007          | HUMBERTO   | 32.60                      | Tropical Depression |
| 8/24/2008          | FAY        | 17.56                      | Tropical Depression |
| 9/1/2008           | GUSTAV     | 87.29                      | Category 2          |
| 7/25/2010          | BONNIE     | 0.87                       | Tropical Depression |
| 8/17/2010          | FIVE       | 4.99                       | Tropical Depression |
| 9/4/2011           | LEE        | 32.60                      | Tropical Depression |
| 8/29/2012          | ISAAC      | 69.67                      | Category 1          |

Source: National Hurricane Center

Federal records indicate that seven disaster declarations were made in 1965 (Hurricane Betsy), 1969 (Hurricane Camille), 2002 (Tropical Storm Isidore), 2004 (Hurricane Ivan), 2005 (Hurricane Katrina), 2008 (Hurricane Gustav), and 2012 (Hurricane Isaac) in Amite County.<sup>13</sup> Hurricane and tropical storm events can cause substantial damage in the area due to high winds and flooding.

The National Climatic Data Center also reported six hurricane or tropical storm events in Amite County since 2002.<sup>14</sup> These storms are listed in **Table B.20** and are generally representative of storms with the greatest impact on the county over that time period.

<sup>13</sup> A complete listing of historical disaster declarations can be found in Section 4: Hazard Identification.

<sup>14</sup> These hurricane events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported.

**TABLE B.20: HISTORICAL HURRICANE/TROPICAL STORM OCCURRENCES IN AMITE COUNTY**

| Date of Occurrence | Storm Name          | Deaths/Injuries | Property Damage (2017) <sup>15</sup> |
|--------------------|---------------------|-----------------|--------------------------------------|
| 10/2/2002          | Hurricane Lili      | 0/0             | \$2,252,372                          |
| 8/28/2005          | Hurricane Katrina   | 0/0             | \$90,887,230                         |
| 8/24/2008          | Tropical Storm Faye | 0/0             | \$0                                  |
| 9/1/2008           | Hurricane Gustav    | 0/0             | \$279,414                            |
| 9/2/2011           | Tropical Storm Lee  | 0/0             | \$5,389                              |
| 8/28/2012          | Hurricane Isaac     | 0/0             | \$265,350                            |

Source: National Climatic Data Center

Flooding and high winds from hurricanes and tropical storms can cause damage throughout the county. Anecdotes are available from NCDC for the major storms that have impacted the county as found below:

#### **Hurricane Katrina – August 29, 2005**

The damage from Hurricane Katrina was devastating and widespread. Damage occurred across all of the Jackson forecast area which includes 9 parishes in Northeast Louisiana, 2 counties in Southeast Arkansas and about 2/3 of Central and Southern Mississippi. As widespread as the damage was, the more concentrated and most significant damage occurred across Southeast and East-Central Mississippi. For other areas, especially those west of Natchez to Yazoo City to Grenada line, damage to trees and power lines was significant and scattered across the landscape. As you move toward Central Mississippi and along Interstate 55 the damage and impacts increase. This portion of the state sustained widespread damage to trees and power lines.

#### **Hurricane Gustav – September 1, 2008**

As the center of Gustav crossed much of southern Louisiana, tropical storm force winds extended into southern Mississippi and portions of east central Louisiana. Sustained winds were between 35 and 45 mph with higher gusts between 70 and 100 mph occurred. Tree and power line damage was extensive across these areas which resulted in widespread power outages, some of which lasted for 3 to 5 days. As Gustav slowed across central Louisiana, the outer rainbands continued to rotate across much of southern and central Mississippi. This kept those portions of Mississippi in the region which was favorable for tornadoes. Over 3 days, 26 tornadoes were confirmed, all of which were in the EF0 to EF1 range.

#### **Hurricane Isaac – August 29, 2012**

Isaac moved very slowly to the north and northwest over the course of August 29th, which made for prolonged impacts. Forward motion of about 5 mph lead to tremendous flooding issues for both Louisiana and portions of Mississippi south of I-20. Around noon on August 29th, Isaac was downgraded to a Tropical Storm, but this was not much relief to the many residents who were being inundated with rain and wind. The worst of the wind was felt generally along and south of an axis from Marion County to Adams County. Numerous trees were down in Adams County, leaving many without power for several days. Eighty percent of the roads were blocked in Franklin County due to downed trees.

<sup>15</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

### **PROBABILITY OF FUTURE OCCURRENCES**

Given the inland location of the county, Amite County will not be susceptible to many of the sub-hazards that are often associated with hurricanes and tropical storms such as storm surge. Although the probability of experiencing major impacts is somewhat less than coastal areas because of this, hurricanes and tropical storms remain a real threat to Amite County due to induced events like flooding and high wind. Based on historical evidence, the probability level of future occurrence is likely (between 10 and 100 percent annual probability). Given the regional nature of the hazard, all areas in the county are equally exposed to this hazard. However, when the county is impacted, the damage could be significant, threatening lives and property throughout the planning area.

### **HURRICANE EVACUATIONS**

As discussed above, the MEMA District 7 Region has been directly impacted by a number of hurricane and tropical storm events historically. However, it should be noted that the region is also susceptible to indirect effects from hurricanes and tropical storms, particularly in the form of evacuations from coastal counties. The counties within MEMA District 7 are located far enough inland that they are often the primary recipients of evacuees from counties that will be (or have been) impacted by major storm events.

For example, during Hurricane Katrina in 2005, thousands of evacuees made their way to counties in southwest Mississippi to take temporary refuge from the storm. Due to the severe and devastating effects of the storm, temporary sheltering within these counties was extended much longer than originally anticipated and in some cases, the evacuees ended up staying for weeks or months. This additional population caused a major strain on resources within these relatively rural counties, as local communities with limited resources had an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people.

Caring for all of these evacuees was especially challenging for counties in the MEMA District 7 Region because most had been impacted themselves by the storm and were attempting to help their own citizens recover from the storm. Undoubtedly, recovering from a major disaster while simultaneously attempting to help evacuees from surrounding counties poses a number of difficulties for emergency management personnel and other local officials.

Based on Hurricane Katrina and other major hurricane events that have impacted the Gulf Coast in the past, it is likely that many of the MEMA District 7 counties will be receiver counties when it comes to evacuees. Many of these evacuees will likely come from locations in Louisiana, including New Orleans. Indeed, the State of Louisiana evacuation plan indicates that one of the primary evacuation routes from the City of New Orleans will direct evacuees north along Interstate 55, sending people through Pike County and Lincoln County (**Figure B.12**). Depending on the severity of the event, officials in Louisiana may even change Interstate 55 over to a contraflow traffic pattern to enable quicker evacuations.



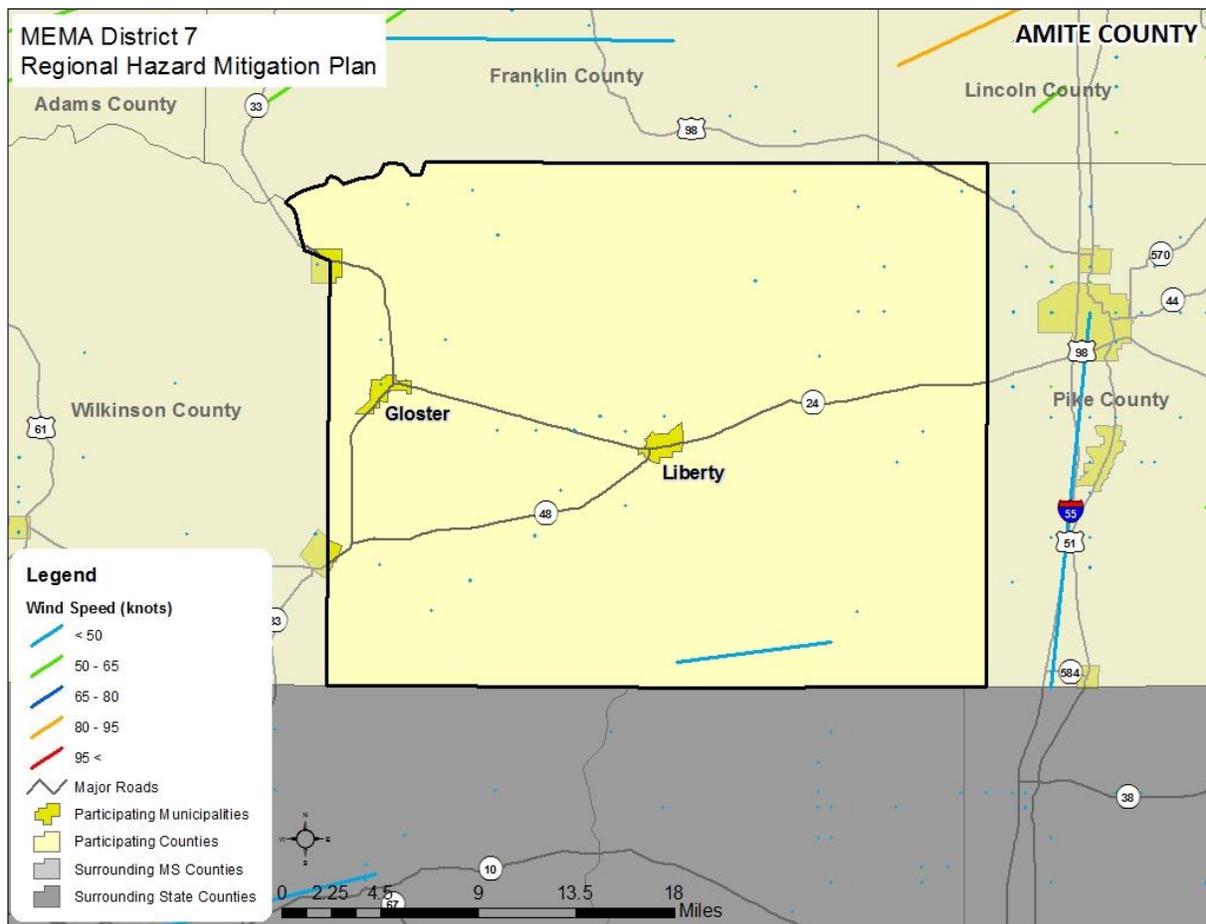
may not be directly impacted by the storm. As in past storms, it is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future storm events.

### B.2.11 Severe Thunderstorm/High Wind

#### LOCATION AND SPATIAL EXTENT

A thunderstorm event is an atmospheric hazard, and thus has no geographic boundaries. It is typically a widespread event that can occur in all regions of the United States. However, thunderstorms are most common in the central and southern states because atmospheric conditions in those regions are favorable for generating these powerful storms. It is assumed that Amite County has uniform exposure to an event and the spatial extent of an impact could be large. With that in mind, **Figure B.13** shows the location of wind events that have impacted the county between 1955 and 2015.

**FIGURE B.13: SEVERE THUNDERSTORM TRACKS IN AMITE COUNTY**



Source: National Weather Service Storm Prediction Center

**HISTORICAL OCCURRENCES**

Severe storms were at least partially responsible for four disaster declarations in Amite County in 1990, 1992, 2001, and 2003.<sup>16</sup> According to NCDC, there have been 80 reported thunderstorm and high wind events since 1975 in Amite County.<sup>17</sup> These events caused over \$1.5 million (2017 dollars) in damages.<sup>18</sup> There were also reports of one injury. **Table B.21** summarizes this information. **Table B.22** presents detailed thunderstorm and high wind event reports including date, magnitude, and associated damages for each event.

**TABLE B.21: SUMMARY OF THUNDERSTORM/HIGH WIND OCCURRENCES IN AMITE COUNTY**

| Location                  | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|---------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Gloster                   | 9                     | 0/0             | \$859,154              | \$35,798                   |
| Liberty                   | 34                    | 0/0             | \$229,761              | \$9,573                    |
| Unincorporated Area       | 37                    | 0/1             | \$426,240              | \$10,149                   |
| <b>AMITE COUNTY TOTAL</b> | <b>80</b>             | <b>0/1</b>      | <b>\$1,515,155</b>     | <b>\$55,520</b>            |

Source: National Climatic Data Center

**TABLE B.22: HISTORICAL THUNDERSTORM/HIGH WIND OCCURRENCES IN AMITE COUNTY**

| Location       | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------------|------------|-------------------|------------|-----------------|------------------|
| <b>Gloster</b> |            |                   |            |                 |                  |
| Gloster        | 12/4/1993  | Thunderstorm Wind | 0 kts.     | 0/0             | \$8,386          |
| Gloster        | 1/27/1994  | Thunderstorm Wind | 0 kts.     | 0/0             | \$836,265        |
| GLOSTER        | 8/12/1996  | Thunderstorm Wind | --         | 0/0             | \$1,244          |
| GLOSTER        | 8/12/1996  | Thunderstorm Wind | --         | 0/0             | \$933            |
| GLOSTER        | 1/27/1997  | Thunderstorm Wind | --         | 0/0             | \$768            |
| GLOSTER        | 3/13/1999  | Thunderstorm Wind | --         | 0/0             | \$741            |
| GLOSTER        | 4/15/2001  | Thunderstorm Wind | --         | 0/0             | \$691            |
| GLOSTER        | 11/27/2003 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,325          |
| GLOSTER        | 6/9/2005   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$8,800          |
| <b>Liberty</b> |            |                   |            |                 |                  |
| Liberty        | 4/7/1993   | Thunderstorm Wind | 0 kts.     | 0/0             | \$849            |
| Liberty        | 6/9/1994   | Thunderstorm Wind | 0 kts.     | 0/0             | \$826            |
| Liberty to     | 8/20/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$800            |
| LIBERTY        | 1/26/1996  | Thunderstorm Wind | --         | 0/0             | \$3,167          |
| LIBERTY        | 6/22/1996  | Thunderstorm Wind | --         | 0/0             | \$156            |

<sup>16</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>17</sup> These thunderstorm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017 and these high wind events are only inclusive of those reported by NCDC from 1996 through February 2017. It is likely that additional thunderstorm and high wind events have occurred in Amite County. As additional local data becomes available, this hazard profile will be amended.

<sup>18</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**ANNEX B: AMITE COUNTY**

| Location                   | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-------------------|------------|-----------------|------------------|
| LIBERTY                    | 2/21/1997  | Thunderstorm Wind | --         | 0/0             | \$0              |
| LIBERTY                    | 2/21/1997  | Thunderstorm Wind | --         | 0/0             | \$766            |
| LIBERTY                    | 4/5/1997   | Thunderstorm Wind | --         | 0/0             | \$458            |
| LIBERTY                    | 5/28/1997  | Thunderstorm Wind | --         | 0/0             | \$38,183         |
| LIBERTY                    | 6/5/1998   | Thunderstorm Wind | --         | 0/0             | \$7,501          |
| LIBERTY                    | 7/10/1998  | Thunderstorm Wind | --         | 0/0             | \$1,498          |
| LIBERTY                    | 11/10/1998 | Thunderstorm Wind | --         | 0/0             | \$746            |
| LIBERTY                    | 1/22/1999  | Thunderstorm Wind | --         | 0/0             | \$372            |
| LIBERTY                    | 3/2/1999   | Thunderstorm Wind | --         | 0/0             | \$1,111          |
| LIBERTY                    | 3/13/1999  | Thunderstorm Wind | --         | 0/0             | \$4,446          |
| LIBERTY                    | 6/25/1999  | Thunderstorm Wind | --         | 0/0             | \$14,713         |
| LIBERTY                    | 4/3/2000   | Thunderstorm Wind | --         | 0/0             | \$35,687         |
| LIBERTY                    | 4/3/2000   | Thunderstorm Wind | --         | 0/0             | \$42,824         |
| LIBERTY                    | 3/1/2001   | Thunderstorm Wind | --         | 0/0             | \$9,714          |
| LIBERTY                    | 3/1/2001   | Thunderstorm Wind | --         | 0/0             | \$20,816         |
| LIBERTY                    | 4/15/2001  | Thunderstorm Wind | --         | 0/0             | \$691            |
| LIBERTY                    | 6/25/2002  | Thunderstorm Wind | --         | 0/0             | \$6,796          |
| LIBERTY                    | 12/31/2002 | Thunderstorm Wind | --         | 0/0             | \$2,703          |
| LIBERTY                    | 6/27/2004  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,934          |
| LIBERTY                    | 3/31/2005  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$12,650         |
| LIBERTY                    | 6/6/2005   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$629            |
| LIBERTY                    | 3/9/2006   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,448          |
| LIBERTY                    | 2/12/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,775          |
| LIBERTY                    | 3/3/2008   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$573            |
| LIBERTY                    | 5/3/2008   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,258          |
| LIBERTY                    | 2/1/2011   | Thunderstorm Wind | 60 kts. EG | 0/0             | \$2,210          |
| LIBERTY                    | 10/12/2011 | Thunderstorm Wind | 56 kts. EG | 0/0             | \$5,400          |
| LIBERTY                    | 4/2/2012   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$1,063          |
| LIBERTY                    | 6/10/2014  | Thunderstorm Wind | 61 kts. EG | 0/0             | \$0              |
| <b>Unincorporated Area</b> |            |                   |            |                 |                  |
| AMITE CO.                  | 4/30/1975  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| AMITE CO.                  | 4/4/1977   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| AMITE CO.                  | 5/3/1983   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| AMITE CO.                  | 10/14/1984 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| AMITE CO.                  | 7/29/1987  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| AMITE CO.                  | 10/2/1988  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| AMITE CO.                  | 11/26/1988 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| AMITE CO.                  | 6/10/1989  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| AMITE CO.                  | 2/15/1990  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| AMITE CO.                  | 11/21/1992 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| AMITE CO.                  | 3/7/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$4,845          |
| Gillsburg                  | 4/22/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| Gillsburg                  | 4/22/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| HOMOCHITTO                 | 2/19/1996  | Thunderstorm Wind | --         | 0/0             | \$157,859        |
| GILLSBURG                  | 4/13/1996  | Thunderstorm Wind | --         | 0/1             | \$156,445        |
| GILLSBURG                  | 7/22/1997  | Thunderstorm Wind | --         | 0/0             | \$762            |

| Location   | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|------------|------------|-------------------|------------|-----------------|------------------|
| SMITHDALE  | 2/10/1998  | Thunderstorm Wind | --         | 0/0             | \$755            |
| O NEIL     | 2/26/1998  | Thunderstorm Wind | --         | 0/0             | \$1,510          |
| COUNTYWIDE | 1/2/1999   | Thunderstorm Wind | --         | 0/0             | \$744            |
| GILLISBURG | 1/22/1999  | Thunderstorm Wind | --         | 0/0             | \$14,883         |
| SMITHDALE  | 1/3/2000   | Thunderstorm Wind | --         | 0/0             | \$4,346          |
| COUNTYWIDE | 3/27/2000  | Thunderstorm Wind | --         | 0/0             | \$17,140         |
| GILLSBURG  | 4/2/2000   | Thunderstorm Wind | --         | 0/0             | \$143            |
| COUNTYWIDE | 3/12/2001  | Thunderstorm Wind | --         | 0/0             | \$20,816         |
| COUNTYWIDE | 7/11/2001  | Thunderstorm Wind | --         | 0/0             | \$20,664         |
| COUNTYWIDE | 10/13/2001 | Thunderstorm Wind | --         | 0/0             | \$2,752          |
| GILLSBURG  | 11/18/2003 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,325          |
| COUNTYWIDE | 11/24/2004 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$6,401          |
| SMITHDALE  | 3/3/2008   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$573            |
| GILLSBURG  | 3/27/2009  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,724          |
| GLADING    | 8/22/2010  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$1,680          |
| THOMPSON   | 4/15/2011  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$10,872         |
| SMITHDALE  | 12/23/2014 | Thunderstorm Wind | 56 kts. EG | 0/0             | \$0              |
| STREET     | 7/7/2015   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| EAST FORK  | 7/25/2015  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$0              |
| SMITHDALE  | 2/15/2016  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$0              |
| EAST FORK  | 1/2/2017   | Thunderstorm Wind | 60 kts. EG | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

†E = estimated; EG = estimated gust; ES = estimated sustained; M = measured; MG = measured gust; MS = measured sustained

Source: National Climatic Data Center

## PROBABILITY OF FUTURE OCCURRENCES

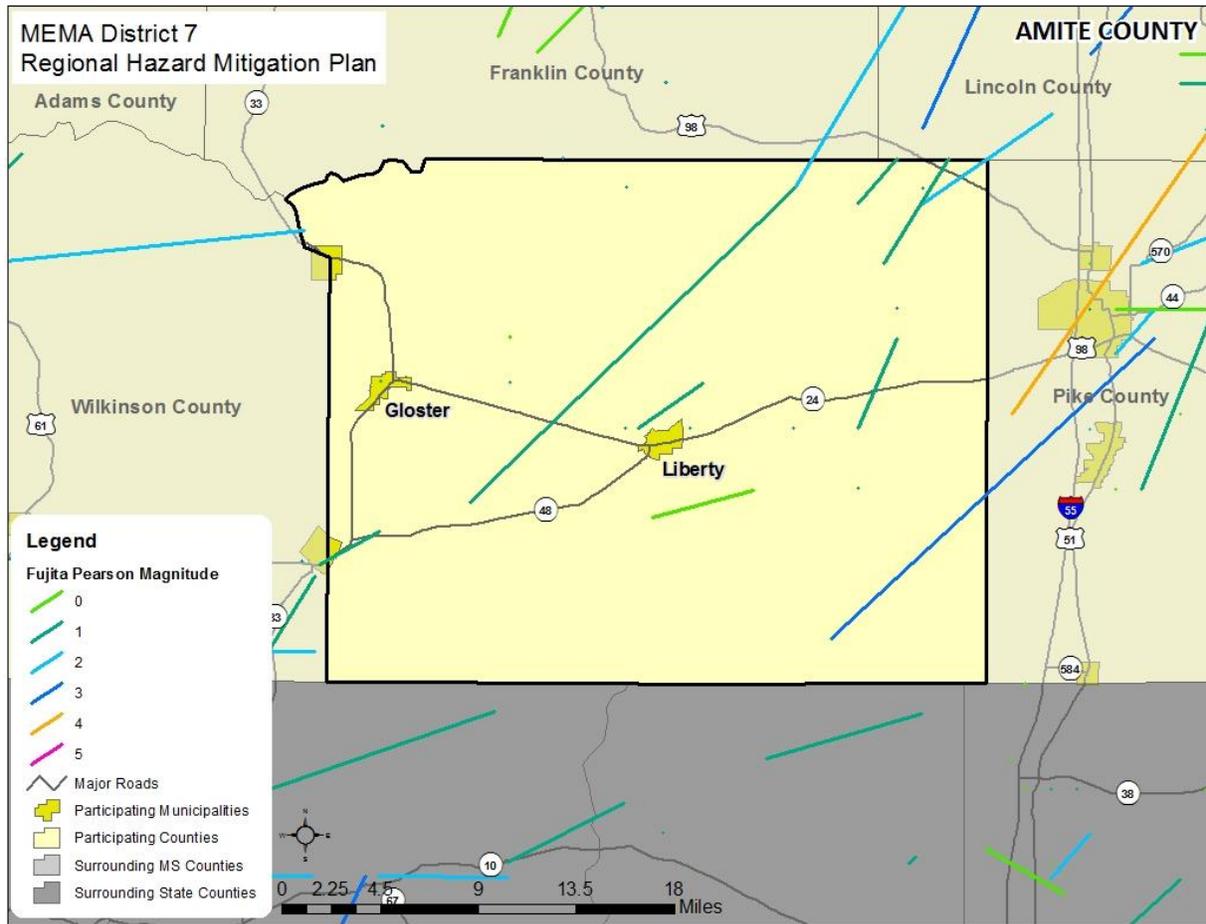
Given the high number of previous events, it is certain that thunderstorm events, including straight-line wind events, will occur in the future. This results in a probability level of highly likely (100 percent annual probability) for the entire county.

### B.2.12 Tornado

#### LOCATION AND SPATIAL EXTENT

Tornadoes occur throughout the state of Mississippi, and thus in Amite County. Tornadoes typically impact a relatively small area, but damage may be extensive. Event locations are completely random and it is not possible to predict specific areas that are more susceptible to tornado strikes over time. Therefore, it is assumed that Amite County is uniformly exposed to this hazard. With that in mind, **Figure B.14** shows tornado track data for many of the major tornado events that have impacted the county between 1950 and 2015. While no definitive pattern emerges from this data, some areas that have been impacted in the past may be potentially more susceptible in the future.

**FIGURE B.14: HISTORICAL TORNADO TRACKS IN AMITE COUNTY**



Source: National Weather Service Storm Prediction Center

**HISTORICAL OCCURRENCES**

Tornadoes were at least partially responsible for five disaster declarations in Amite County in 1973, 1990, 1992, 2001, and 2003.<sup>19</sup> According to the National Climatic Data Center, there have been a total of 25 recorded tornado events in Amite County since 1961 (**Table B.23**), resulting in almost \$4.1 million (2017 dollars) in property damages.<sup>20 21</sup> In addition, six injuries were reported. The magnitude of these tornadoes ranges from F0 to F3, although an F5 event is possible. Detailed information on historic tornado events can be found in **Table B.24**.

<sup>19</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>20</sup> These tornado events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1950 through February 2017. It is likely that additional tornadoes have occurred in Amite County. As additional local data becomes available, this hazard profile will be amended.

<sup>21</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE B.23: SUMMARY OF TORNADO OCCURRENCES IN AMITE COUNTY**

| Location                  | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|---------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Gloster                   | 1                     | 0/0             | \$0                    | \$0                        |
| Liberty                   | 3                     | 0/0             | \$189,018              | \$17,183                   |
| Unincorporated Area       | 21                    | 0/6             | \$3,902,004            | \$69,679                   |
| <b>AMITE COUNTY TOTAL</b> | <b>25</b>             | <b>0/6</b>      | <b>\$4,091,022</b>     | <b>\$86,862</b>            |

Source: National Climatic Data Center

**TABLE B.24: HISTORICAL TORNADO IMPACTS IN AMITE COUNTY**

| Location                   | Date       | Magnitude    | Deaths/Injuries | Property Damage* | Details  |
|----------------------------|------------|--------------|-----------------|------------------|--|
| <b>Gloster</b>             |            |              |                 |                  |  |
| GLOSTER                    | 10/19/2006 | Funnel Cloud | 0/0             | \$0              | A funnel cloud was observed by the public.   |
| <b>Liberty</b>             |            |              |                 |                  |  |
| LIBERTY                    | 3/9/2006   | F0           | 0/0             | \$0              | A tornado was reported to have briefly touched down northwest of Liberty causing no damage.  |
| LIBERTY                    | 3/3/2008   | EF1          | 0/0             | \$171,774        | A tornado moved along a north northeast path for approximately 1.5 miles. The path width varied between 75 and 250 yards. Several large trees were blown down and uprooted with numerous large branches broken off. Several houses suffered extensive roof damage and several trailers were damaged. |
| LIBERTY                    | 3/25/2009  | EF1          | 0/0             | \$17,244         | A tornado ripped a 200 foot section of roofing material off of a school, removed the roof of a mobile home, and knocked down or snapped numerous trees.  |
| <b>Unincorporated Area</b> |            |              |                 |                  |  |
| AMITE CO.                  | 3/28/1961  | F1           | 0/0             | \$205,138        | --   |
| AMITE CO.                  | 5/8/1969   | F1           | 0/0             | \$0              | --   |
| AMITE CO.                  | 5/8/1971   | F1           | 0/0             | \$0              | --   |
| AMITE CO.                  | 12/20/1972 | F1           | 0/0             | \$14,384         | --   |
| AMITE CO.                  | 12/13/1977 | F3           | 0/0             | \$98,440         | --   |
| AMITE CO.                  | 4/17/1978  | F2           | 0/2             | \$95,667         | --   |
| AMITE CO.                  | 3/12/1986  | F2           | 0/0             | \$561,866        | --   |
| AMITE CO.                  | 7/21/1986  | F1           | 0/0             | \$558,274        | --   |
| AMITE CO.                  | 3/17/1987  | F1           | 0/0             | \$54,533         | --   |
| AMITE CO.                  | 12/14/1987 | F1           | 0/0             | \$529,731        | --   |
| AMITE CO.                  | 10/2/1988  | F1           | 0/0             | \$50,858         | --   |
| AMITE CO.                  | 11/19/1988 | F1           | 0/0             | \$508,155        | --   |
| AMITE CO.                  | 5/18/1989  | F1           | 0/0             | \$493,788        | --   |

**ANNEX B: AMITE COUNTY**

| Location   | Date       | Magnitude    | Deaths/<br>Injuries | Property<br>Damage* | Details  |
|------------|------------|--------------|---------------------|---------------------|--|
| Mars Hill  | 11/16/1993 | F1           | 0/3                 | \$83,856            | Three people were injured when a tornado rolled their mobile home. A large gas tank was turned over and a hay barn was destroyed. Many trees and power lines were blown down.  |
| Berwick to | 5/8/1995   | F1           | 0/0                 | \$481,979           | A tornado moved across Amite County on an intermittent path from near Berwick to Smithdale. Seven houses were heavily damaged and widespread damage to trees was reported. Two mobile homes were destroyed. Path length and width were estimated. Damage estimated.  |
| MC ELVEEN  | 11/30/1996 | F1           | 0/0                 | \$0                 | A tornado touched down several times along an intermittent path damaging four chicken houses and cutting a swatch through a heavily wooded area.   |
| PEORIA     | 10/6/2000  | Funnel Cloud | 0/0                 | \$0                 | A trained spotter sighted a funnel cloud.  |
| GILLSBURG  | 4/11/2005  | Funnel Cloud | 0/0                 | \$0                 | --   |
| MIXON      | 4/2/2009   | Funnel Cloud | 0/0                 | \$0                 | A funnel cloud was observed near Interstate 55 at exit 13.   |
| BEECHWOOD  | 11/30/2010 | EF0          | 0/0                 | \$5,588             | Sporadic tree and limb damage. Maximum wind speed estimated at 65 mph.   |
| ARIEL      | 12/25/2012 | EF1          | 0/1                 | \$159,749           | The tornado first touched down south of Highway 24, just east of the intersection of Highway 33 and Highway 24 on the south side of Centreville. Initially, numerous soft wood trees and a few hard woods were snapped and uprooted, and a few power poles lost their crossmembers. The tornado quickly moved to the east-northeast across Highway 24 uprooting another 6 to 10 trees, one of which clipped a house, bringing down much of the east facing wall. The tornado was 170-200 yards wide at this point and continued into the town of Centreville. A tire service station lost most of its canopy with the columns still standing, and the Centreville Head Start lost its metal awning. The tornado crossed Fort Street with many more trees coming down, one on top of a car. Also along Fort Street, a single-wide mobile home lost most of its exterior walls. On East Howard Street, another tree fell into a house, pinning and injuring a lady. The tornado continued to the east-northeast, leading to another area of significant tree damage, uprooting and snapping numerous hard woods. A residence had minor structural damage leading to the carport partially collapsing. The tornado moved along Highway 48 for about another mile causing light tree damage before lifting. Times were based on radar and eyewitness reports. Maximum wind speed was estimated at 105 mph. |

| Location | Date | Magnitude | Deaths/<br>Injuries | Property<br>Damage* | Details |
|----------|------|-----------|---------------------|---------------------|---------|
|----------|------|-----------|---------------------|---------------------|---------|

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

### PROBABILITY OF FUTURE OCCURRENCES

According to historical information, tornado events pose a significant threat to Amite County. The probability of future tornado occurrences affecting Amite County is likely (between 10 and 100 percent annual probability).

## B.2.13 Winter Storm and Freeze

### LOCATION AND SPATIAL EXTENT

Nearly the entire continental United States is susceptible to winter storm and freeze events. Some ice and winter storms may be large enough to affect several states, while others might affect limited, localized areas. The degree of exposure typically depends on the normal expected severity of local winter weather. Amite County is not accustomed to severe winter weather conditions and seldom receives severe winter weather, even during the winter months. Events tend to be mild in nature; however, this creates a situation where even relatively small accumulations of snow, ice, or other wintery precipitation can lead to losses and damage due to the fact that these events are not commonplace. Given the atmospheric nature of the hazard, the entire county has uniform exposure to a winter storm.

### HISTORICAL OCCURRENCES

According to the National Climatic Data Center, there have been a total of 13 recorded winter storm events in Amite County since 2002 (**Table B.25**).<sup>22</sup> These events did not result in any property damages.<sup>23</sup> Detailed information on the recorded winter storm events can be found in **Table B.26**.

**TABLE B.25: SUMMARY OF WINTER STORM EVENTS IN AMITE COUNTY**

| Location     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|--------------|-----------------------|-----------------|------------------------|----------------------------|
| Amite County | 13                    | 0/0             | \$0                    | \$0                        |

Source: National Climatic Data Center

**TABLE B.26: HISTORICAL WINTER STORM IMPACTS IN AMITE COUNTY**

| Location       | Date | Type | Deaths/Injuries | Property Damage* |
|----------------|------|------|-----------------|------------------|
| <b>Gloster</b> |      |      |                 |                  |
| None reported  | --   | --   | --              | --               |

<sup>22</sup> These ice and winter storm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional winter storm conditions have affected Amite County.

<sup>23</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| Location                   | Date       | Type           | Deaths/Injuries | Property Damage* |
|----------------------------|------------|----------------|-----------------|------------------|
| <b>Liberty</b>             |            |                |                 |                  |
| <i>None reported</i>       | --         | --             | --              | --               |
| <b>Unincorporated Area</b> |            |                |                 |                  |
| AMITE (ZONE)               | 1/1/2002   | Winter Storm   | 0/0             | \$0              |
| AMITE (ZONE)               | 12/11/2008 | Heavy Snow     | 0/0             | \$0              |
| AMITE (ZONE)               | 12/4/2009  | Winter Storm   | 0/0             | \$0              |
| AMITE (ZONE)               | 2/11/2010  | Heavy Snow     | 0/0             | \$0              |
| AMITE (ZONE)               | 2/3/2011   | Ice Storm      | 0/0             | \$0              |
| AMITE (ZONE)               | 2/3/2011   | Ice Storm      | 0/0             | \$0              |
| AMITE (ZONE)               | 2/3/2011   | Ice Storm      | 0/0             | \$0              |
| AMITE (ZONE)               | 1/23/2014  | Winter Weather | 0/0             | \$0              |
| AMITE (ZONE)               | 1/28/2014  | Sleet          | 0/0             | \$0              |
| AMITE (ZONE)               | 3/4/2014   | Winter Weather | 0/0             | \$0              |
| AMITE (ZONE)               | 1/9/2015   | Winter Weather | 0/0             | \$0              |
| AMITE (ZONE)               | 1/9/2015   | Winter Weather | 0/0             | \$0              |
| AMITE (ZONE)               | 1/6/2017   | Sleet          | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

There have been several severe winter weather events in Amite County. The text below describes two of the major events and associated impacts on the county. Similar impacts can be expected with severe winter weather.

### February 2010

Heavy snow affected a large portion of the region, especially locations across central and southern Mississippi, on Thursday night and Friday, February 11th and 12th. The heavy snow was a result of a low pressure system that tracked eastward across the northern Gulf of Mexico, and a vigorous upper level disturbance that moved across the region while a cold air mass was in place. Light precipitation overspread the region late Thursday afternoon into the evening before becoming heavy Thursday night into early Friday morning. The snow tapered off from west to east during the midday hours Friday.

### February 2011

An ice storm developed across the area on February 3rd into the early morning hours of the 4th. While this icing event was not devastating, the impact to travel was a major issue across the region. Thousands of accidents occurred from slick roads. As a result of the accidents, three fatalities occurred along with a handful of injuries. Overall, most areas received 0.25 to 0.5 inches of ice accumulation from freezing rain. Additionally, some areas had a mix of precipitation with sleet accumulating. Some snow did occur, but those were just across select areas and the accumulation was mainly one inch or less.

Winter storms throughout the planning area have several negative externalities including hypothermia, cost of snow and debris cleanup, business and government service interruption, traffic accidents, and power outages. Furthermore, citizens may resort to using inappropriate heating devices that could to fire or an accumulation of toxic fumes.

### ***PROBABILITY OF FUTURE OCCURRENCES***

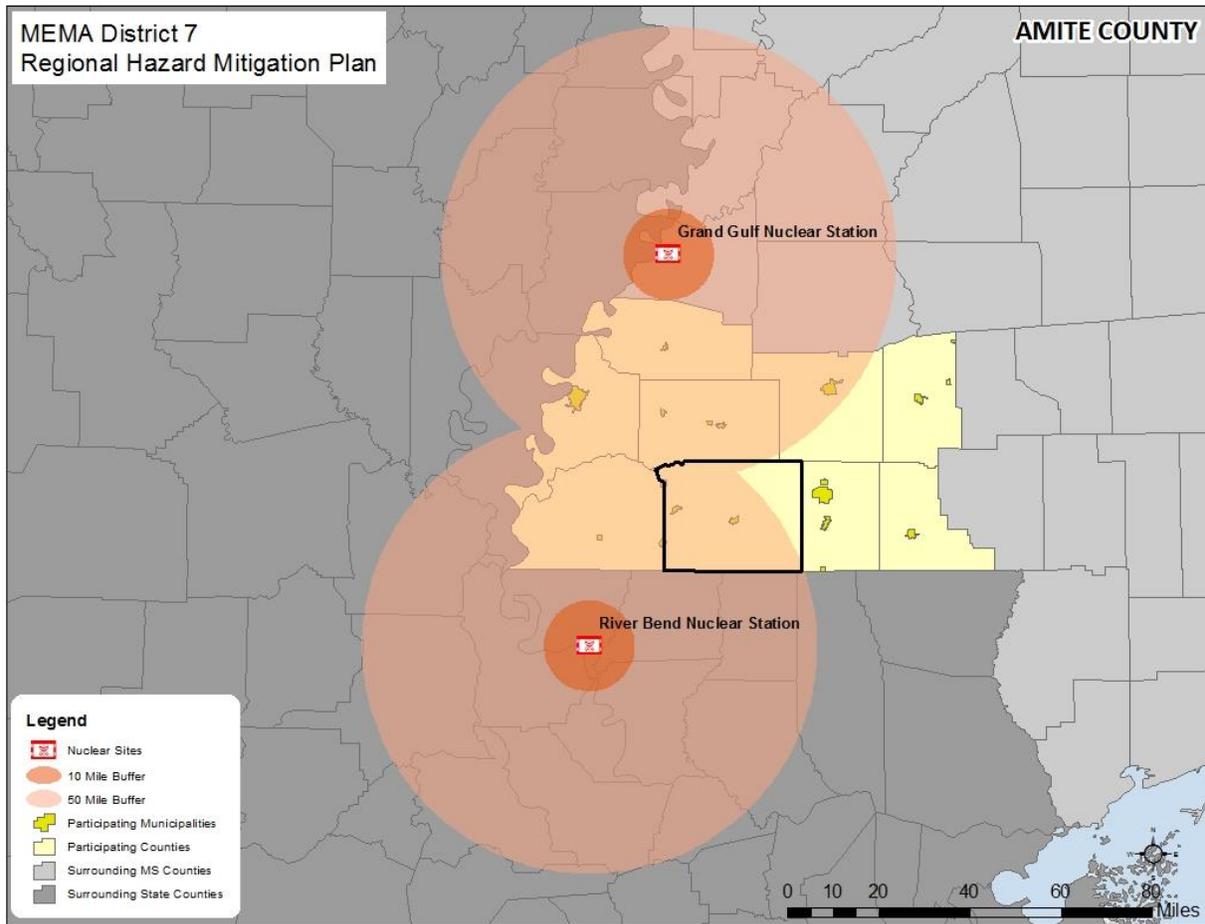
Winter storm events will continue to occur in Amite County. Based on historical information, the probability is likely (between 10 and 100 percent annual probability).

## ***HUMAN-CAUSED HAZARDS***

### **B.2.14 Radiological Event**

#### ***LOCATION AND SPATIAL EXTENT***

The Grand Gulf Nuclear Station and River Bend Nuclear Station are both located within a 50-mile radius of the MEMA District 7 Region. The Nuclear Regulatory Commission defines two emergency planning zones around nuclear plants. Areas located within 10 miles of the station are considered to be within the zone of highest risk to a nuclear incident and this radius is the designated evacuation radius recommended by the Nuclear Regulatory Commission. Within the 10-mile zone, the primary concern is exposure to and inhalation of radioactive contamination. No part of Amite County is located in the 10-mile radius of a nuclear station. The most concerning effects in the secondary 50-mile zone are related to ingestion of food and liquids that may have been contaminated. The majority of Amite County is located within this 50-mile radius. The 50-mile zone is still considered to be at risk from a nuclear incident, though the impacts may be less severe than in the 10-mile zone (**Figure B.15**).

**FIGURE B.15: NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN AMITE COUNTY**

Source: International Atomic Energy Agency

### **HISTORICAL OCCURRENCES**

Although there have been no major nuclear events at either the Grand Gulf or River Bend Nuclear Stations, there is some possibility that one could occur as there have been incidents in the past in the United States at other facilities and at facilities around the world. Additionally, a list of minor events/notifications was acquired from reports collected by the Nuclear Regulatory Commission (NRC). The NRC classifies events using the scale found in **Table B.27**. A list of events at Grand Gulf Nuclear Station can be found in **Table B.28** and a list of events at River Bend Nuclear Station can be found in **Table B.29**. It is noteworthy that all of the events were minor in magnitude and many were insignificant enough that they did not register on the classification scale.

**TABLE B.27: NUCLEAR REGULATORY COMMISSION EMERGENCY CLASSIFICATION SCALE FOR EVENTS OCCURRING AT NUCLEAR POWER PLANTS**

| Classification                       | Description   |
|--------------------------------------|---|
| Notification of Unusual Event (NOUE) | Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. [Note: This term is sometimes shortened to Unusual Event (UE). The terms Notification of Unusual Event, NOUE and Unusual Event are used interchangeably.]  |
| Alert                                | Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) protective action guides (PAGs)  |
| Site Area Emergency                  | Site Area Emergency (SAE) – Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile action that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary. |
| General Emergency                    | Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile action that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.  |

Source: Nuclear Regulatory Commission

**TABLE B.28: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT GRAND GULF NUCLEAR STATION**

| Date      | Retrieved From*                  | Classification | Plant             | Description  |
|-----------|----------------------------------|----------------|-------------------|--|
| 8/29/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST         |
| 10/1/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF NUCLEAR STATION SECURITY OFFICER LOCKOUT                  |
| 9/29/2016 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF EXTENDED PLANT SHUTDOWN TO ADDRESS OPERATIONS PERFORMANCE |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lersearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

**TABLE B.29: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT  
RIVER BEND NUCLEAR STATION**

| Date       | Retrieved From*                  | Classification                               | Plant             | Description   |
|------------|----------------------------------|--|-------------------|---|
| 11/26/1985 | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | ECCS Initiation: Improper restoration of a level transmitter causes HPSC injection    |
| 11/27/1985 | Licensee Event Report            | Alert  | River Bend Unit 1 | Failure to Perform Surveillance Tests   |
| 3/5/1992   | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | REACTOR SCRAM CAUSED BY A GENERATOR TRIP DUE TO HIGH WINDS CAUSING TRANSFORMER DAMAGE |
| 9/15/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE IVAN  |
| 10/4/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | Shutdown Greater than 72 Hours  |
| 9/23/2005  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | NRC ENTERS MONITORING MODE DUE TO HURRICANE RITA                                      |
| 5/23/2007  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REACTOR SHUTDOWN DUE TO UNEXPECTED CHANGE IN RECIRCULATION FLOW                       |
| 9/2/2008   | Preliminary Notification Reports | Notification of Unusual Event/Not Applicable | River Bend Unit 1 | NRC RESPONSE TO HURRICANE GUSTAV  |
| 5/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | AUGMENTED INSPECTION TEAM ONSITE AT RIVER BEND STATION                                |
| 8/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST                          |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lsearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

### **PROBABILITY OF FUTURE OCCURRENCES**

A nuclear event is a very rare occurrence in the United States due to the intense regulation of the industry. There have been minor incidents in the past, but it is considered unlikely (less than 1 percent annual probability).

### **RADIOLOGICAL EVACUATIONS**

Similar to the hurricane evacuations discussed above, in many ways the MEMA District 7 Region would potentially be impacted to a greater degree by evacuations caused by a radiological event than by the event itself. Since the region is not directly located within the 10-mile evacuation area but neighboring counties are located within this zone, it is highly likely that populations from those neighboring counties will be evacuated to the counties within the MEMA District 7 Region.

Due to the severe and long-term effects of a major radiological event, temporary sheltering will be an initial concern, but the greater challenge may be in the long-term. As has happened with historical radiological accidents in other locations, the danger in the impacted area will likely extend for a very long period after the event and evacuees may be unable to return to their homes for months or years. This additional influx of population will cause a major strain on resources within these relatively rural counties in the short-term, as local communities with limited resources will have an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people. In the long-term, there may be challenges for local officials as existing infrastructure will likely be inadequate to handle larger populations.

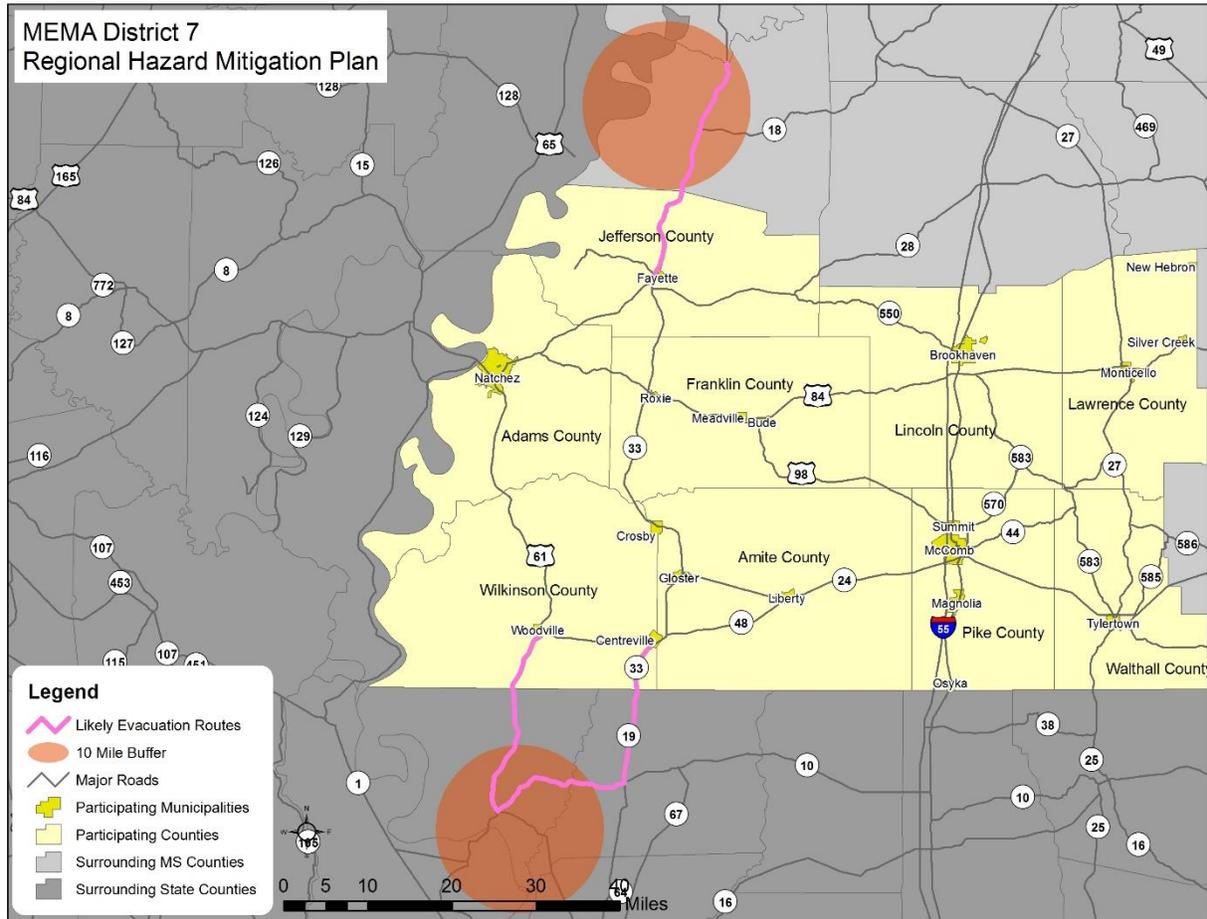
Although there have not been any major radiological events in the region historically, hurricane evacuations (discussed above) provide a similar scenario in terms of what the region might expect. However, one additional concern that officials will need to consider in a radiological event is that evacuees may be contaminated by radioactivity. According to the Centers for Disease Control, radioactive contamination can occur when radioactive materials are released into the environment and become deposited into the air, water, surfaces, soil, plants, buildings, people or animals. This contamination can then be spread when people touch other people, surfaces, or objects. Therefore, when people evacuate a contaminated zone, they pose a potential risk of spreading the contamination to others if they are not properly treated. Local officials in MEMA District 7 may need to be prepared to set up decontamination centers along major evacuation routes to ensure that the contamination is not spread. It is also important for citizens to understand the steps they can take to reduce the risk of spreading contamination such as evacuating quickly after an event and following decontamination instructions as directed by local officials.<sup>24</sup>

Based on the locations of the 10-mile evacuation areas near the region, many of these evacuees will likely come from Claiborne County to the north and West Feliciana and East Feliciana Parishes to the south. The main roads for these evacuees will probably be U.S. Highway 61 and Mississippi State Highway 33 since these are the primary and most direct roads into and out of the aforementioned evacuation counties and into MEMA District 7 (**Figure B.16**). Depending on the severity of the event, officials may even change these roads over to a contraflow traffic pattern to enable quicker evacuations.

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<sup>24</sup> Centers for Disease Control and Prevention. *Emergency Preparedness and Response: Contamination vs. Exposure*. Retrieved on September 1, 2017 from <https://emergency.cdc.gov/radiation/contamination.asp>

**FIGURE B.16: LIKELY EVACUATION ROUTES FOR A RADIOLOGICAL EVENT IN THE MEMA DISTRICT 7 REGION**



Source: International Atomic Energy Agency

As a result of the potential for an influx of evacuees during a radiological event, it is critical for local officials in MEMA District 7 to prepare for evacuations. It is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future events.

### B.2.15 Conclusions on Hazard Risk

The hazard profiles presented in this subsection were developed using best available data and result in what may be considered principally a qualitative assessment as recommended by FEMA in its “How-to” guidance document titled *Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA Publication 386-2). It relies heavily on historical and anecdotal data, stakeholder input, and professional and experienced judgment regarding observed and/or anticipated hazard impacts. It also carefully considers the findings in other relevant plans, studies, and technical reports.

**HAZARD EXTENT**

**Table B.30** describes the extent of each natural hazard identified for Amite County. The extent of a hazard is defined as its severity or magnitude, as it relates to the planning area.

**TABLE B.30: EXTENT OF AMITE COUNTY HAZARDS**

| Flood-related Hazards |  |             |  |                                     |                                 |  |   |    |
|-----------------------|--|-------------|--|-------------------------------------|---------------------------------|--|---|----|
| Dam and Levee Failure | Dam Failure extent is defined using the Mississippi Department of Environmental Quality classifications which include Low, Significant, and High. No dams are classified as high-hazard in Amite County.   |             |  |                                     |                                 |  |   |    |
| Erosion               | The extent of erosion can be defined by the measurable rate of erosion that occurs. There are no official erosion rate records in Amite County but local estimates are around 0.25 to 0.50 feet per year. Some areas of erosion have been identified by local coordinators.  |             |  |                                     |                                 |  |   |    |
| Flood                 | Flood extent can be measured by the amount of land and property in the floodplain as well as flood height and velocity. The amount of land in the floodplain accounts for 11.8 percent of the total land area in Amite County.   |             |  |                                     |                                 |  |   |    |
|                       | Flood depth and velocity are recorded via United States Geological Survey stream gages throughout the region. While a gage does not exist for each participating jurisdiction, there is one at or near many areas. The greatest peak discharge recorded for the county was on the East Fork Amite River near Peoria. Water reached a discharge of 34,000 cubic feet per second (recorded on January 25, 1990). The highest stream gage height was on Tanyard Creek at Liberty with a height that was recorded at 94.31 feet (recorded on April 13, 1955). Additional peak discharge readings, historic crest heights, and the corresponding flood categories (where available) are in the table below. |             |  |                                     |                                 |  |   |    |
|                       | <b>Location/<br/>Jurisdiction</b>  | <b>Date</b> | <b>Maximum<br/>Historic<br/>Crest (ft)</b> | <b>Peak<br/>Discharge<br/>(cfs)</b> | <b>Flood Categories</b>         |  |   |    |
|                       |  |             |  | <b>Action<br/>Stage<br/>(ft)</b>    | <b>Flood<br/>Stage<br/>(ft)</b> | <b>Moderate<br/>Flood<br/>Stage (ft)</b> | <b>Major<br/>Flood<br/>Stage<br/>(ft)</b> |    |
|                       | <b>Amite County</b>  |             |  |                                     |                                 |  |   |    |
|                       | Stock Pond Draw near Liberty   | 10/16/1975  | 8.26                                       | 443                                 | NA                              | NA                                       | NA  | NA |
|                       | East Fork Amite River near Peoria  | 1/25/1990   | 21.10                                      | 34,000                              | NA                              | NA                                       | NA  | NA |
|                       | Tanyard Creek at Liberty   | 4/13/1955   | 94.31                                      | 8,000                               | NA                              | NA                                       | NA  | NA |
|                       | Crs Draw near Liberty  | 6/8/1975    | 11.81                                      | 993                                 | NA                              | NA                                       | NA  | NA |
|                       | NA= Data not available for this particular gage  |             |  |                                     |                                 |  |   |    |
|                       | *Occurred on a different date than Maximum Historic Crest  |             |  |                                     |                                 |  |   |    |

| <b>Fire-related Hazards</b>    |  |
|--------------------------------|--|
| Drought                        | Drought extent is defined by the U.S. Drought Monitor Classifications which include Abnormally Dry, Moderate Drought, Severe Drought, Extreme Drought, and Exceptional Drought. According to the U.S. Drought Monitor Classifications, the most severe drought condition is Exceptional. Amite County has received this ranking once over the 17-year reporting period.  |
| Lightning                      | According to the Vaisala’s flash density map, Amite County is located in an area that experiences 12 to 20 lightning flashes per square mile per year. It should be noted that future lightning occurrences may exceed these figures.  |
| Wildfire                       | Wildfire data was provided by the Mississippi Forestry Commission and is reported annually by county from 2007-2016. The greatest number of fires to occur in Amite County in any year was 90 in 2007. The greatest number of acres to burn in the county in a single year occurred in 2011 when 1,517 acres were burned. Although this data lists the extent that has occurred, larger and more frequent wildfires are possible throughout the county.            |
| <b>Geologic Hazards</b>        |  |
| Earthquake                     | Earthquake extent can be measured by the Richter Scale or the Modified Mercalli Intensity (MMI) scale. According to data provided by the National Centers for Environmental Information, no earthquakes were reported in Amite County.   |
| <b>Wind-related Hazards</b>    |  |
| Extreme Heat                   | The extent of extreme heat can be measured by the record high temperature recorded. Official long term temperature records are not kept for any areas in Amite County. However, the highest recorded temperature in the region was 106°F in 2007 with heat index values recorded above 115°F.  |
| Hailstorm                      | Hail extent can be defined by the size of the hail stone. The largest hail stone reported in Amite County was 2.0 inches (reported on March 31, 2005). It should be noted that future events may exceed this.  |
| Hurricane and Tropical Storm   | Hurricane extent is defined by the Saffir-Simpson Scale which classifies hurricanes into Category 1 through Category 5. The greatest classification of hurricane to impact the MEMA District 7 Region was a Category 3 storm. This occurred in 1969 with Hurricane Camille and in 2005 with Hurricane Katrina. The storm track of both storms passed just to the east of the region, but due to the size of these storms, their impact was felt across the region. |
| Severe Thunderstorm/ High Wind | Thunderstorm extent is defined by the number of thunder events and wind speeds reported. According to a 67-year history from the National Climatic Data Center, the strongest recorded wind event in Amite County was reported on June 10, 2014 at 61 knots (approximately 70 mph). It should be noted that future events may exceed these historical occurrences.   |
| Tornado                        | Tornado hazard extent is measured by tornado occurrences in the US provided by FEMA as well as the Fujita/Enhanced Fujita Scale. The greatest magnitude reported in Amite County was an F3 (reported on December 13, 1977).  |
| Winter Storm and Freeze        | The extent of winter storms can be measured by the amount of snowfall received (in inches). Official long term snow records are not kept for any areas in Amite County. However, reports from NCDC of the greatest snowfall in the county has been 4 inches (reported on February 11, 2010).   |
| <b>Human-caused Hazards</b>    |  |
| Radiological Event             | Although there is no history of a nuclear accident at either the Grand Gulf Nuclear Station or River Bend Nuclear Station, other events across the globe and in the United States in particular indicate that an event is possible. Since several national and international events were Level 7 events on the INES, the potential for a Level 7 event at these stations is possible.  |

### PRIORITY RISK INDEX RESULTS

In order to draw some meaningful planning conclusions on hazard risk for Amite County, the results of the hazard profiling process were used to generate countywide hazard classifications according to a “Priority Risk Index” (PRI). More information on the PRI and how it was calculated can be found in Section 5.17.2.

**Table B.31** summarizes the degree of risk assigned to each category for all initially identified hazards based on the application of the PRI. Assigned risk levels were based on the detailed hazard profiles developed for this subsection, as well as input from the Regional Hazard Mitigation Council. The results were then used in calculating PRI values and making final determinations for the risk assessment.

**TABLE B.31: SUMMARY OF PRI RESULTS FOR AMITE COUNTY**

| Hazard                        | Category/Degree of Risk |              |                |                    |                    |            |
|-------------------------------|-------------------------|--------------|----------------|--------------------|--------------------|------------|
|                               | Probability             | Impact       | Spatial Extent | Warning Time       | Duration           | PRI Score  |
| <b>Flood-related Hazards</b>  |                         |              |                |                    |                    |            |
| Dam Failure and Levee Failure | Unlikely                | Critical     | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>2.3</b> |
| Erosion                       | Possible                | Minor        | Small          | More than 24 hours | More than 1 week   | <b>1.8</b> |
| Flood                         | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 24 hours | <b>3.2</b> |
| <b>Fire-related Hazards</b>   |                         |              |                |                    |                    |            |
| Drought                       | Possible                | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.5</b> |
| Lightning                     | Highly Likely           | Limited      | Small          | 6 to 12 hours      | Less than 6 hours  | <b>2.6</b> |
| Wildfire                      | Highly Likely           | Limited      | Moderate       | Less than 6 hours  | Less than 1 week   | <b>3.1</b> |
| <b>Geologic Hazards</b>       |                         |              |                |                    |                    |            |
| Earthquake                    | Unlikely                | Minor        | Small          | Less than 6 hours  | Less than 6 hours  | <b>1.5</b> |
| <b>Wind-related Hazards</b>   |                         |              |                |                    |                    |            |
| Extreme Heat                  | Likely                  | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.8</b> |
| Hailstorm                     | Highly Likely           | Limited      | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>2.8</b> |
| Hurricane and Tropical Storm  | Likely                  | Catastrophic | Large          | More than 24 hours | Less than 1 week   | <b>3.3</b> |
| Severe Thunderstorm/High Wind | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>3.1</b> |
| Tornado                       | Likely                  | Catastrophic | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>3.2</b> |
| Winter Storm and Freeze       | Likely                  | Minor        | Moderate       | More than 24 hours | Less than 1 week   | <b>2.2</b> |
| <b>Human-caused Hazards</b>   |                         |              |                |                    |                    |            |
| Radiological Event            | Unlikely                | Limited      | Moderate       | More than 24 hours | Less than 1 week   | <b>1.9</b> |

### B.2.16 Final Determinations on Hazard Risk

The conclusions drawn from the hazard profiling process for Amite County, including the PRI results and input from the Regional Hazard Mitigation Council, resulted in the classification of risk for each identified hazard according to three categories: High Risk, Moderate Risk, and Low Risk (**Table B.32**). For purposes of these classifications, risk is expressed in relative terms according to the estimated impact that a hazard

will have on human life and property throughout all of Amite County. A more quantitative analysis to estimate potential dollar losses for each hazard has been performed separately, and is described in Section 6: *Vulnerability Assessment* and below in Section B.3. It should be noted that although some hazards are classified below as posing low risk, their occurrence of varying or unprecedented magnitudes is still possible in some cases and their assigned classification will continue to be evaluated during future plan updates. In most cases, the hazards of greatest concern did not change much since the last plan update, indicating that the priorities remained relatively stable and there were few changes in priorities.

**TABLE B.32: CONCLUSIONS ON HAZARD RISK FOR AMITE COUNTY**

|                      |   |
|----------------------|---|
| <b>HIGH RISK</b>     | Hurricane and Tropical Storm<br>Tornado<br>Flood<br>Wildfire<br>Severe Thunderstorm/High Wind |
| <b>MODERATE RISK</b> | Extreme Heat<br>Hailstorm<br>Lightning<br>Drought<br>Dam and Levee Failure                    |
| <b>LOW RISK</b>      | Winter Storm and Freeze<br>Radiological Event<br>Erosion<br>Earthquake                        |

### B.3 AMITE COUNTY VULNERABILITY ASSESSMENT

This subsection identifies and quantifies the vulnerability of Amite County to the significant hazards previously identified. This includes identifying and characterizing an inventory of assets in the county and assessing the potential impact and expected amount of damages caused to these assets by each identified hazard event. More information on the methodology and data sources used to conduct this assessment can be found in Section 6: *Vulnerability Assessment*.

#### B.3.1 Asset Inventory

**Table B.33** lists the estimated number of improved properties and the total value of improvements for Amite County and its participating jurisdictions (study area of vulnerability assessment). Because digital parcel data was not available for most communities, data obtained from Hazus-MH 4.0 inventory was utilized to complete the analysis.

**TABLE B.33: IMPROVED PROPERTY IN AMITE COUNTY**

| Location                  | Counts of Improved Property | Total Value of Improvements |
|---------------------------|-----------------------------|-----------------------------|
| Gloster                   | 716                         | \$112,157                   |
| Liberty                   | 453                         | \$80,122                    |
| Unincorporated Area       | 5,759                       | \$941,219,721               |
| <b>AMITE COUNTY TOTAL</b> | <b>6,928</b>                | <b>\$941,412,000</b>        |

Source: Hazus-MH 4.0

**Table B.34** lists the fire stations, police stations, medical care facilities, emergency operation centers, schools, government/public buildings, transportation infrastructure, and private facilities located in Amite County according to previous plan data and Hazus-MH 4.0 data that was reviewed and updated by local officials.

In addition, **Figure B.17** shows the locations of critical facilities in Amite County. **Table B.45**, at the end of this subsection, shows a complete list of the critical facilities by name, as well as the hazards that affect each facility. As noted previously, this list is not all-inclusive and only includes information provided through Hazus which was updated, as best as possible, with local knowledge.

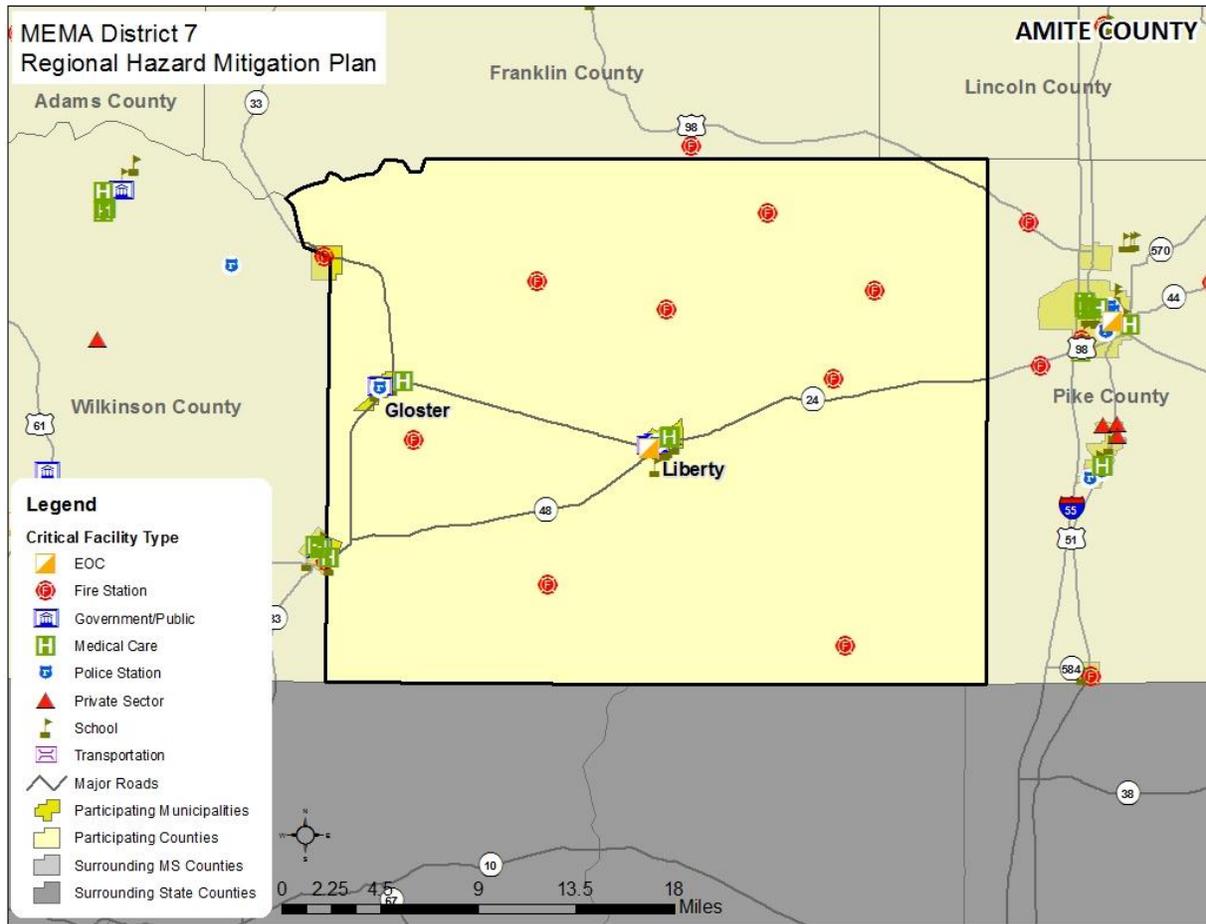
**TABLE B.34: CRITICAL FACILITY INVENTORY IN AMITE COUNTY**

| Location                  | Fire Stations | Police Stations | Medical Care | EOC      | Schools  | Gov't/ Public | Trans    | Private Sector |
|---------------------------|---------------|-----------------|--------------|----------|----------|---------------|----------|----------------|
| Gloster                   | 2             | 1               | 1            | 0        | 2        | 1             | 0        | 0              |
| Liberty                   | 3             | 2               | 2            | 1        | 4        | 2             | 0        | 3              |
| Unincorporated Area       | 4             | 0               | 1            | 0        | 1        | 0             | 0        | 0              |
| <b>AMITE COUNTY TOTAL</b> | <b>9</b>      | <b>3</b>        | <b>5*</b>    | <b>1</b> | <b>7</b> | <b>3</b>      | <b>0</b> | <b>3</b>       |

\*One of these facilities is located in the part of Centreville that is located in Amite County

Source: Hazus-MH 4.0; Local Officials

**FIGURE B.17: CRITICAL FACILITY LOCATIONS IN AMITE COUNTY**



Source: Hazus-MH 4.0; Local Officials

### B.3.2 Social Vulnerability

In addition to identifying those assets potentially at risk to identified hazards, it is important to identify and assess those particular segments of the resident population in Amite County that are potentially at risk to these hazards.

**Table B.35** lists the population by jurisdiction according to U.S. Census, American Community Survey 2015 population estimates. The total population in Amite County according to Census data was 12,840 persons. Additional population estimates are presented above in Section B.1.

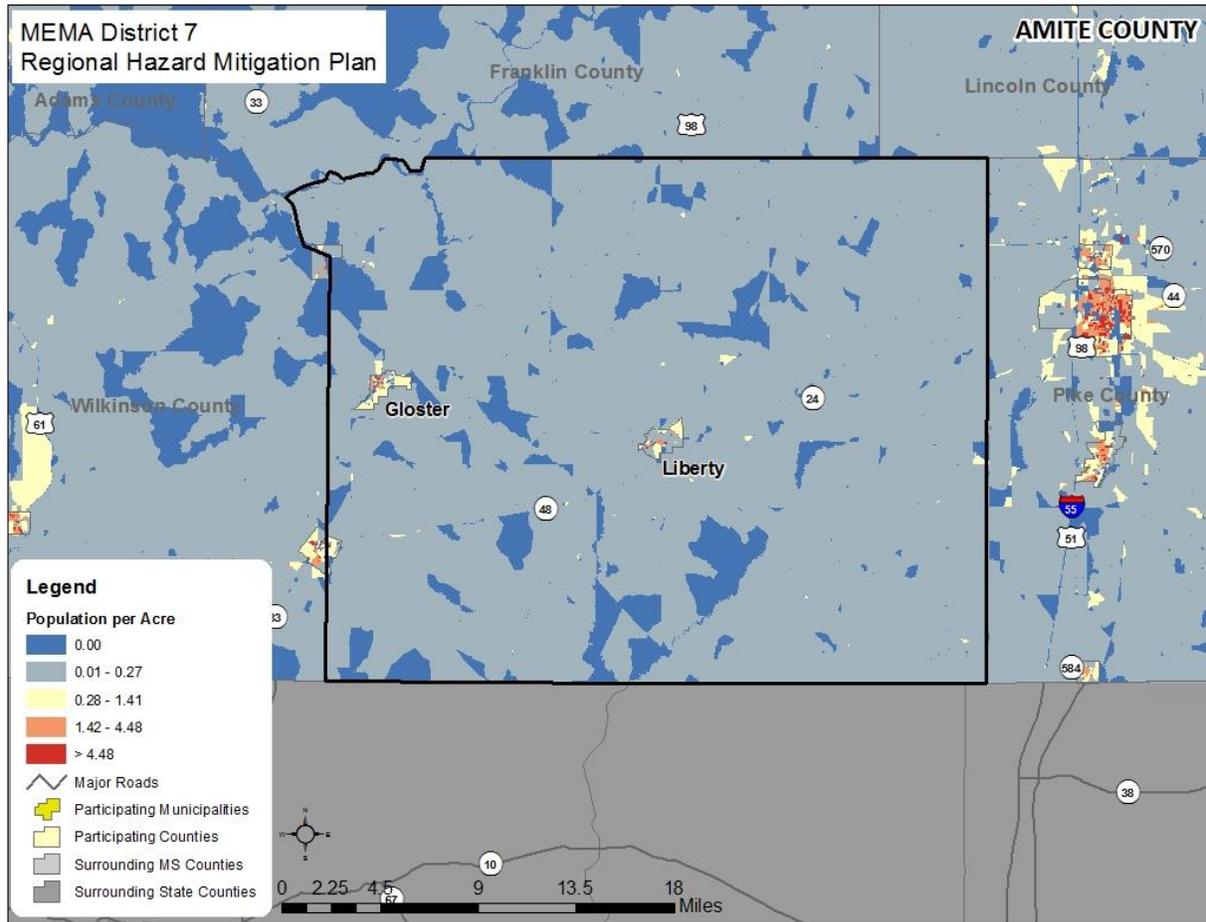
**TABLE B.35: TOTAL POPULATION IN AMITE COUNTY**

| Location                  | Total 2015 Population |
|---------------------------|-----------------------|
| Gloster                   | 972                   |
| Liberty                   | 771                   |
| Unincorporated Area       | 11,097                |
| <b>AMITE COUNTY TOTAL</b> | <b>12,840</b>         |

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

In addition, **Figure B.18** illustrates the population density per acre by census block as it was reported by the U.S. Census Bureau in 2010. As can be seen in the figure, the population is spread out with concentrations in municipal areas such as Gloster and Liberty.

**FIGURE B.18: POPULATION DENSITY IN AMITE COUNTY**



Source: United States Census Bureau, 2010 Census

### B.3.3 Development Trends and Changes in Vulnerability

Since the previous hazard mitigation plan was approved, Amite County has experienced limited growth and development. **Table B.36** shows the number of building units constructed since 2010 according to the U.S. Census American Community Survey.

**TABLE B.36: BUILDING COUNTS FOR AMITE COUNTY**

| Location            | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|---------------------|----------------------------|---------------------------|----------------------------------|
| Gloster             | 548                        | 0                         | 0.00%                            |
| Liberty             | 372                        | 16                        | 4.30%                            |
| Unincorporated Area | 5,716                      | 95                        | 1.66%                            |

| Location                  | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|---------------------------|----------------------------|---------------------------|----------------------------------|
| <b>AMITE COUNTY TOTAL</b> | <b>6,636</b>               | <b>111</b>                | <b>1.67%</b>                     |

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

**Table B.37** shows population growth estimates for the county from 2010 to 2015 based on the U.S. Census American Community Survey.

**TABLE B.37: POPULATION GROWTH FOR AMITE COUNTY**

| Location                  | Population Estimates |               |               |               |               |               | % Change 2010-2015 |
|---------------------------|----------------------|---------------|---------------|---------------|---------------|---------------|--------------------|
|                           | 2010                 | 2011          | 2012          | 2013          | 2014          | 2015          |                    |
| Gloster                   | 1,388                | 1,210         | 1,084         | 956           | 1,026         | 972           | -29.97%            |
| Liberty                   | 639                  | 694           | 666           | 759           | 809           | 771           | 20.66%             |
| Unincorporated Area       | 11,291               | 11,309        | 11,389        | 11,346        | 11,122        | 11,097        | -1.72%             |
| <b>AMITE COUNTY TOTAL</b> | <b>13,318</b>        | <b>13,213</b> | <b>13,139</b> | <b>13,061</b> | <b>12,957</b> | <b>12,840</b> | <b>-3.59%</b>      |

Source: United States Census Bureau, 2006-2010, 2007-2011, 2008-2012, 2009-2013, and 2010-2014, and 2011-2015 American Community Survey 5-Year Estimates

Based on the data above, there has been a low rate of residential development and population growth in the county since 2010, and the county has actually experienced a population decline. However, it is notable that Liberty has experienced a significant rate of growth and development compared to the rest of the county, resulting in an increased number of people and structures that are vulnerable to the potential impacts of the identified hazards. Therefore, development and population growth have impacted the county's vulnerability since the previous local hazard mitigation plan was approved and there has been a slight increase in the overall vulnerability as well as a larger increase in certain areas and communities.

It is also important to note that as development increases in the future, greater populations and more structures and infrastructure will be exposed to potential hazards if development occurs in the floodplains or other high risk areas.

### B.3.4 Vulnerability Assessment Results

As noted in Section 6: *Vulnerability Assessment*, only hazards with a specific geographic boundary, available modeling tool, or sufficient historical data allow for further analysis. Those results, specific to Amite County, are presented here. All other hazards are assumed to impact the entire planning region (drought, extreme heat, hailstorm, lightning, severe thunderstorm/high wind, tornado, and winter storm) or, due to lack of data, analysis would not lead to credible results (erosion). The total county exposure, and thus risk to these hazards, was presented in **Table B.33**.

The hazards to be further analyzed in this subsection include: dam/levee failure, flood, wildfire, earthquake, hurricane and tropical storm winds, and radiological event.

The annualized loss estimate for all hazards is presented near the end of this subsection in **Table B.44**.

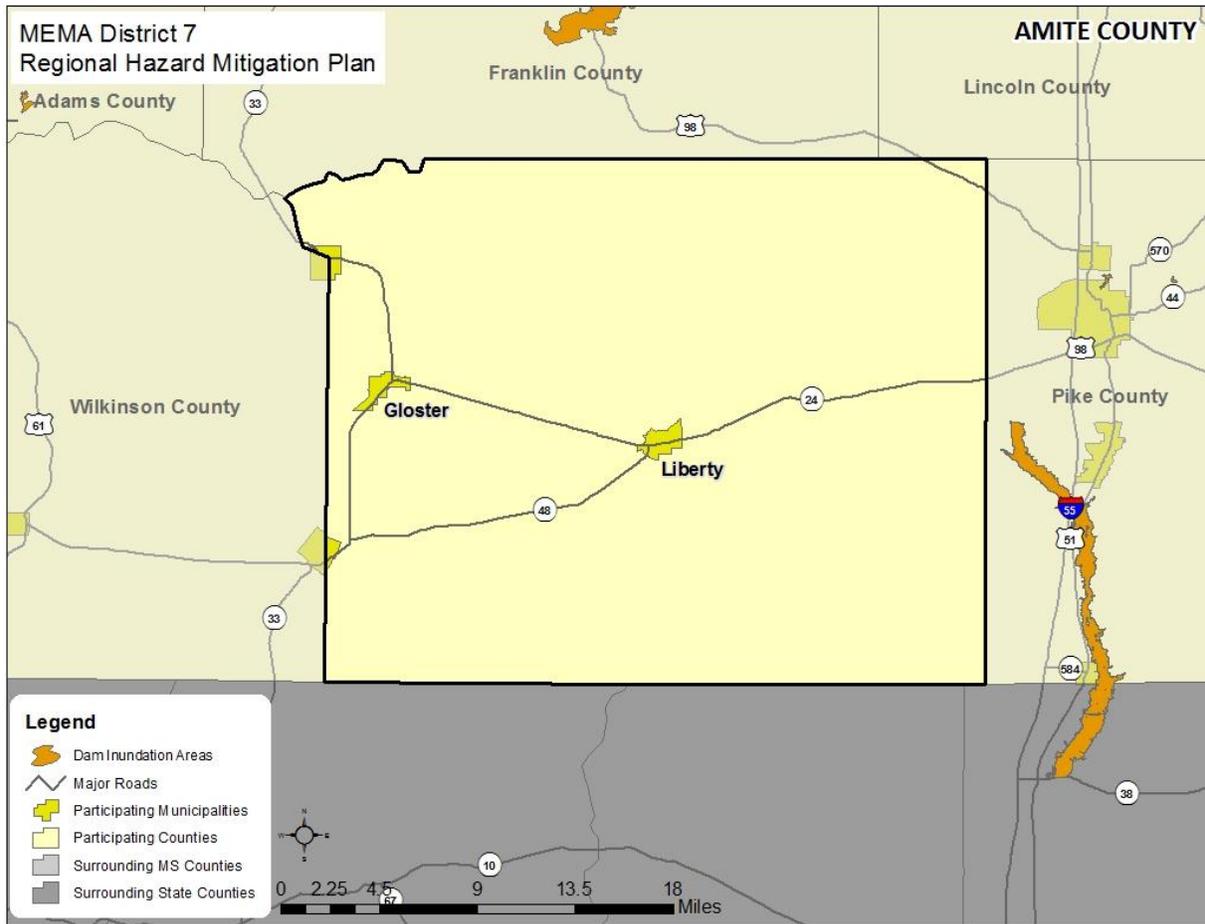
### **DAM/LEVEE FAILURE**

In order to assess risk to a dam or levee failure, a GIS-based analysis was used to estimate exposure to one of the areas delineated by the Mississippi Department of Environmental Quality as a potential inundation area in the event of a failure. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified inundation area. As mentioned previously, this type of inundation mapping has not been completed for every dam/levee in the region, so the results of this analysis likely underestimate the overall vulnerability to a dam or levee failure. However, the analysis is still useful as a sort of baseline minimum of property that is potentially at-risk. The identified inundation areas can be found in **Figure B.19**.

In general, building footprint and parcel data were used in this analysis. However, in some communities, due to a lack of digital parcel data, it was determined that analysis using the inventory from Hazus-MH 4.0 would be used to supplement the building/parcel data. It should be noted that this data will merely be an estimation and may not reflect actual counts or values located in dam inundation areas. Indeed, in almost all cases, this data likely overestimates the amount of property in the identified risk zones.

**Table B.38** presents the potential at-risk property. Both the number of buildings and the approximate improved value are presented.

**FIGURE B.19: DAM INUNDATION AREAS IN AMITE COUNTY**



Source: Mississippi Department of Environmental Quality

**TABLE B.38: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE DAM/LEVEE FAILURE HAZARD**

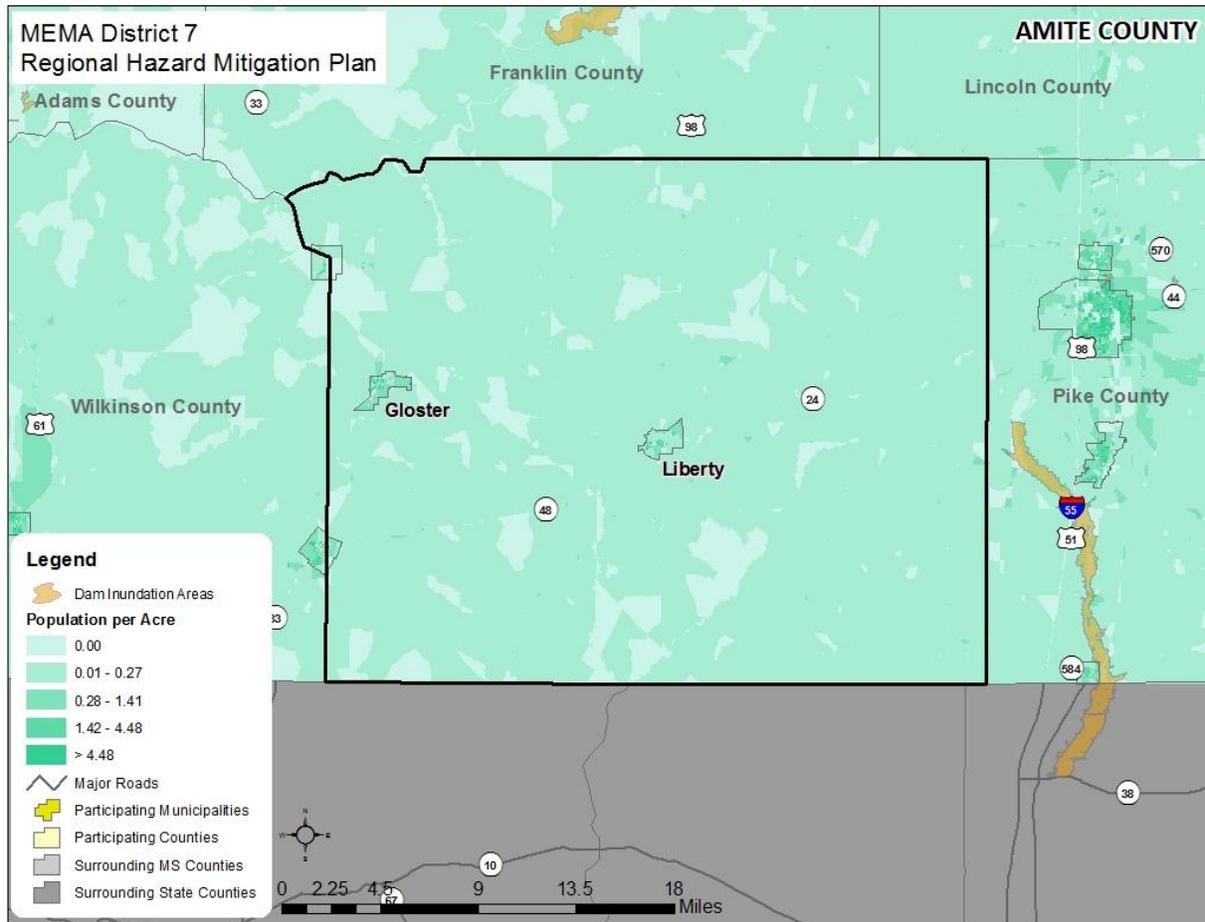
| Location                  | Dam Inundation Area            |                        |
|---------------------------|--------------------------------|------------------------|
|                           | Approx. Number of Improvements | Approx. Improved Value |
| Gloster                   | 0                              | \$0                    |
| Liberty                   | 0                              | \$0                    |
| Unincorporated Area       | 0                              | \$0                    |
| <b>AMITE COUNTY TOTAL</b> | <b>0</b>                       | <b>\$0</b>             |

Source: Mississippi Department of Environmental Quality; Hazus 4.0

**Social Vulnerability**

Figure B.20 is presented to gain a better understanding of at-risk population by evaluating census block level population data against dam inundation areas. Although there are no areas of concern located within the county, this does not indicate that there is no risk to a dam/levee failure, especially considering not all dams have delineated inundation areas.

**FIGURE B.20: POPULATION DENSITY NEAR DAM INUNDATION AREAS IN AMITE COUNTY**



Source: Mississippi Department of Environmental Quality; United States Census Bureau, 2010 Census

**Critical Facilities**

There are no critical facilities located within the identified dam inundation areas. Although there are no facilities located in the identified areas, this does not indicate that there is no risk to a dam/levee failure, especially considering not all dams have delineated inundation areas. A list of specific critical facilities and their associated risk can be found in **Table B.45** at the end of this section.

In conclusion, a dam/levee failure has the potential to impact existing and future buildings, facilities, and populations in Amite County, though structures located near or in the dam inundation areas are at highest risk. Specific vulnerabilities for Amite County assets will be greatly dependent on their individual design and the mitigation measures in place where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates if data becomes available.

## FLOOD

Historical evidence indicates that Amite County is susceptible to flood events. A total of six flood events have been reported by the National Climatic Data Center resulting in \$702,486 (2017 dollars) in property damage. On an annualized level, these damages amounted to \$46,832 for Amite County.

In order to assess flood risk, a GIS-based analysis was used to estimate exposure to flood events using Digital Flood Insurance Rate Map (DFIRM) data in combination with improved property records for the county. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified floodplain. Due to a lack of digital parcel data in most counties, it was determined that an analysis using the inventory from Hazus-MH 4.0 would be used, though it should be noted that the data will merely be an estimation and may not reflect actual counts or values located in the floodplain. Indeed, in almost all cases, this analysis likely overestimates the amount of property at risk. **Table B.39** presents the potential at-risk property. Both the number of parcels and the approximate value are presented.

**TABLE B.39: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE FLOOD HAZARD<sup>25</sup>**

| Location                  | 1.0-percent ACF                |                                | 0.2-percent ACF                |                                |
|---------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|                           | Approx. Number of Improvements |
| Gloster                   | 162                            | \$20,779,000                   | 0                              | \$0                            |
| Liberty                   | 194                            | \$24,416,000                   | 0                              | \$0                            |
| Unincorporated Area       | 3,470                          | \$456,534,000                  | 0                              | \$0                            |
| <b>AMITE COUNTY TOTAL</b> | <b>3,826</b>                   | <b>\$501,729,000</b>           | <b>0</b>                       | <b>\$0</b>                     |

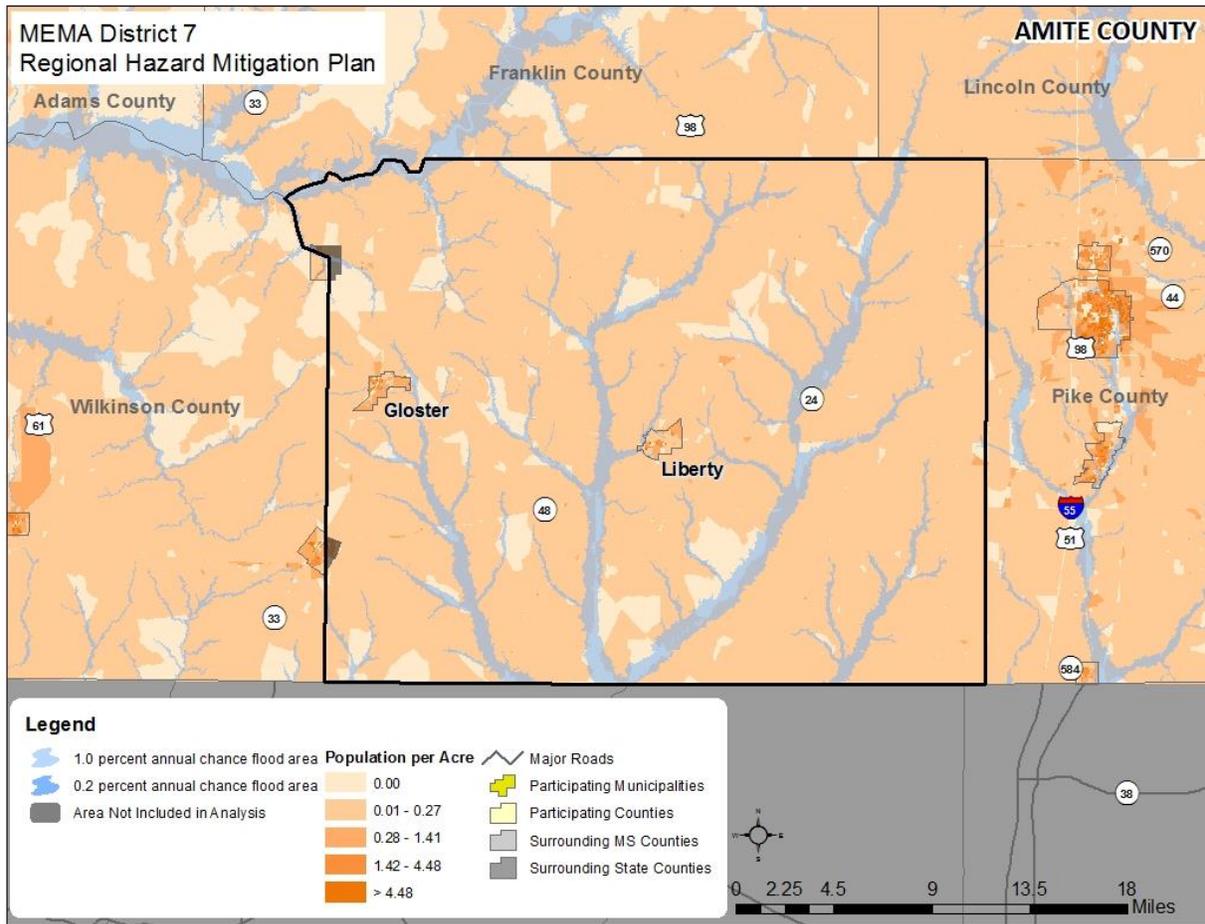
Source: Federal Emergency Management Agency DFIRM; Hazus MH 4.0

### Social Vulnerability

**Figure B.21** is presented to gain a better understanding of at-risk population by evaluating census block level population data against mapped floodplains. There are areas of concern in several of the population centers. Therefore, further investigation in these areas may be warranted.

<sup>25</sup> As noted in Section 6.4, no building-specific data, such as building footprints, was available to determine buildings at risk. As a result of this data limitation, at-risk census block building counts and values of the structures were used.

**FIGURE B.21 : POPULATION DENSITY NEAR FLOODPLAINS IN AMITE COUNTY**



Source: Federal Emergency Management Agency DFIRM; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are no critical facilities located in the floodplain. (Please note, as previously indicated, this analysis does not consider building elevation, which may negate risk.) A list of specific critical facilities and their associated risk can be found in **Table B.45** at the end of this subsection.

In conclusion, a flood has the potential to impact many existing and future buildings, facilities, and populations in Amite County, though some areas are at a higher risk than others. All types of structures in a floodplain are at-risk, though elevated structures will have a reduced risk. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. Furthermore, areas subject to repetitive flooding should be analyzed for potential mitigation actions.

**WILDFIRE**

Although historical evidence indicates that Amite County is susceptible to wildfire events, there are few reports which include information on historic dollar losses. Therefore, it is difficult to calculate a reliable

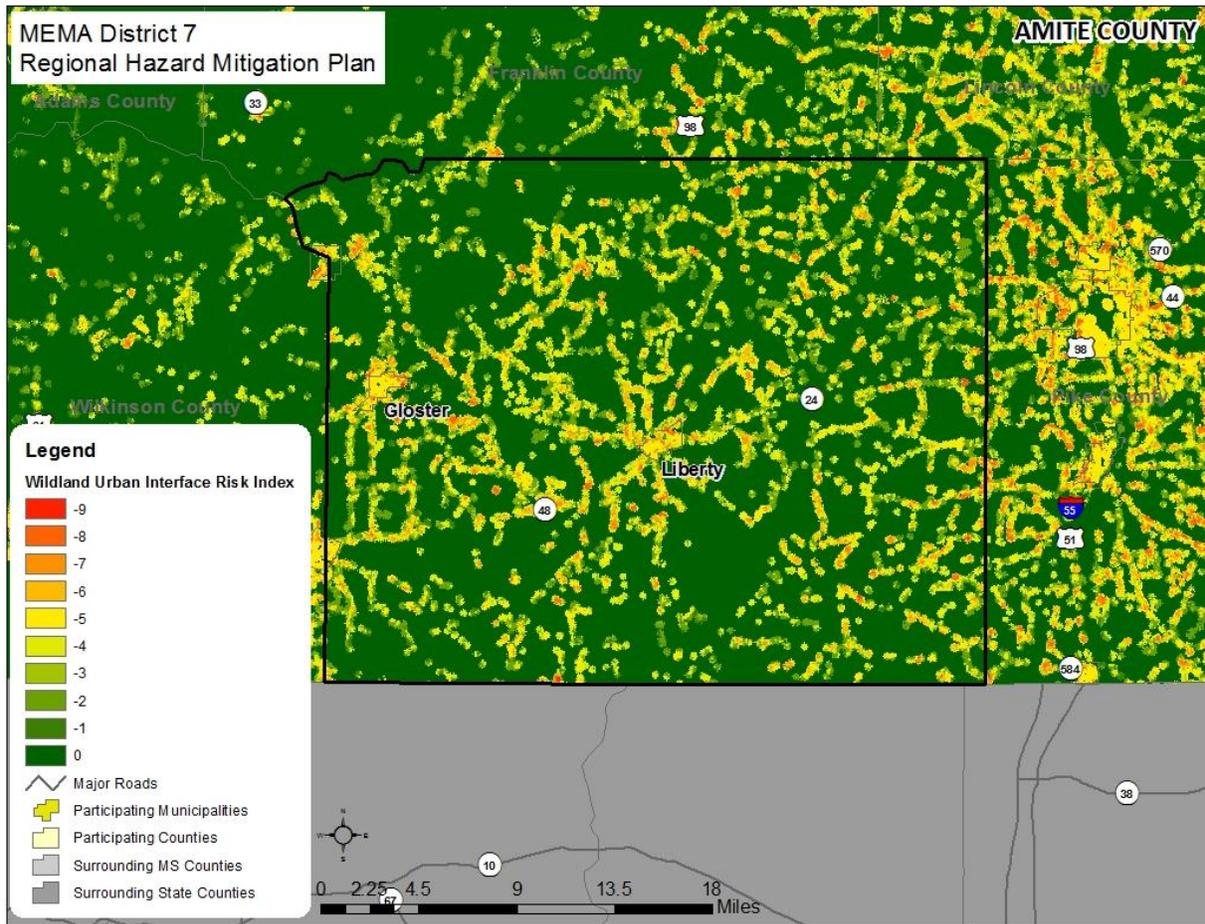
annualized loss figure. Annualized loss is considered negligible though it should be noted that a single event could result in significant damages throughout the county.

To estimate exposure to wildfire, building data was obtained from Hazus-MH 4.0 which includes information that has been aggregated at the census block level and which has been deemed useful for analyzing wildfire vulnerability. However, it should be noted that the accuracy of Hazus data is somewhat lower than that of parcel data. For the critical facility analysis, areas of concern were intersected with critical facility locations.

**Figure B.22** shows the Wildland Urban Interface Risk Index (WUIRI) data, which is a data layer that shows a rating of the potential impact of a wildfire on people and their homes. The key input, Wildland Urban Interface (WUI), reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the WUI and rural areas is key information for defining potential wildfire impacts to people and homes. Initially provided as raster data, it was converted to a polygon to allow for analysis. The Wildland Urban Interface Risk Index data ranges from 0 to -9 with lower values being most severe (as noted previously, this is only a measure of relative risk). **Figure B.23** shows the areas of analysis where any grid cell is less than -4. Areas with a value below -4 were chosen to be displayed as areas of risk because this showed the upper echelon of the scale and the areas at highest risk.

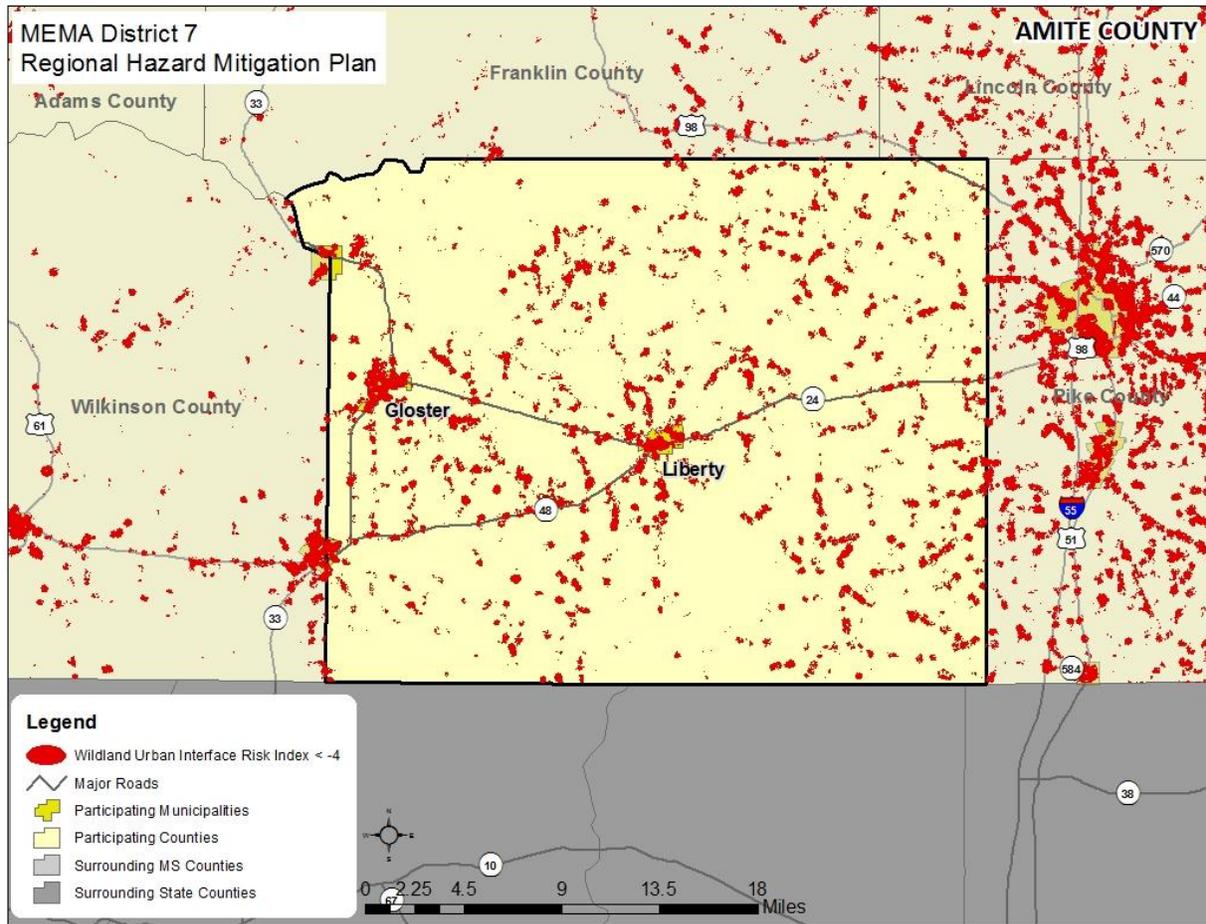
**Table B.40** shows the results of the analysis.

FIGURE B.22: WUI RISK INDEX AREAS IN AMITE COUNTY



Source: Southern Wildfire Risk Assessment Data

**FIGURE B.23: WILDFIRE RISK AREAS IN AMITE COUNTY**



Source: Southern Wildfire Risk Assessment Data

**TABLE B.40: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO WILDFIRE RISK AREAS<sup>26</sup>**

| Location                  | Wildfire Risk Area             |                        |
|---------------------------|--------------------------------|------------------------|
|                           | Approx. Number of Improvements | Approx. Improved Value |
| Gloster                   | 709                            | \$111,025,000          |
| Liberty                   | 453                            | \$80,122,000           |
| Unincorporated Area       | 5,678                          | \$739,140,000          |
| <b>AMITE COUNTY TOTAL</b> | <b>6,840</b>                   | <b>\$930,287,000</b>   |

Source: Southern Wildfire Risk Assessment; Hazus-MH 4.0

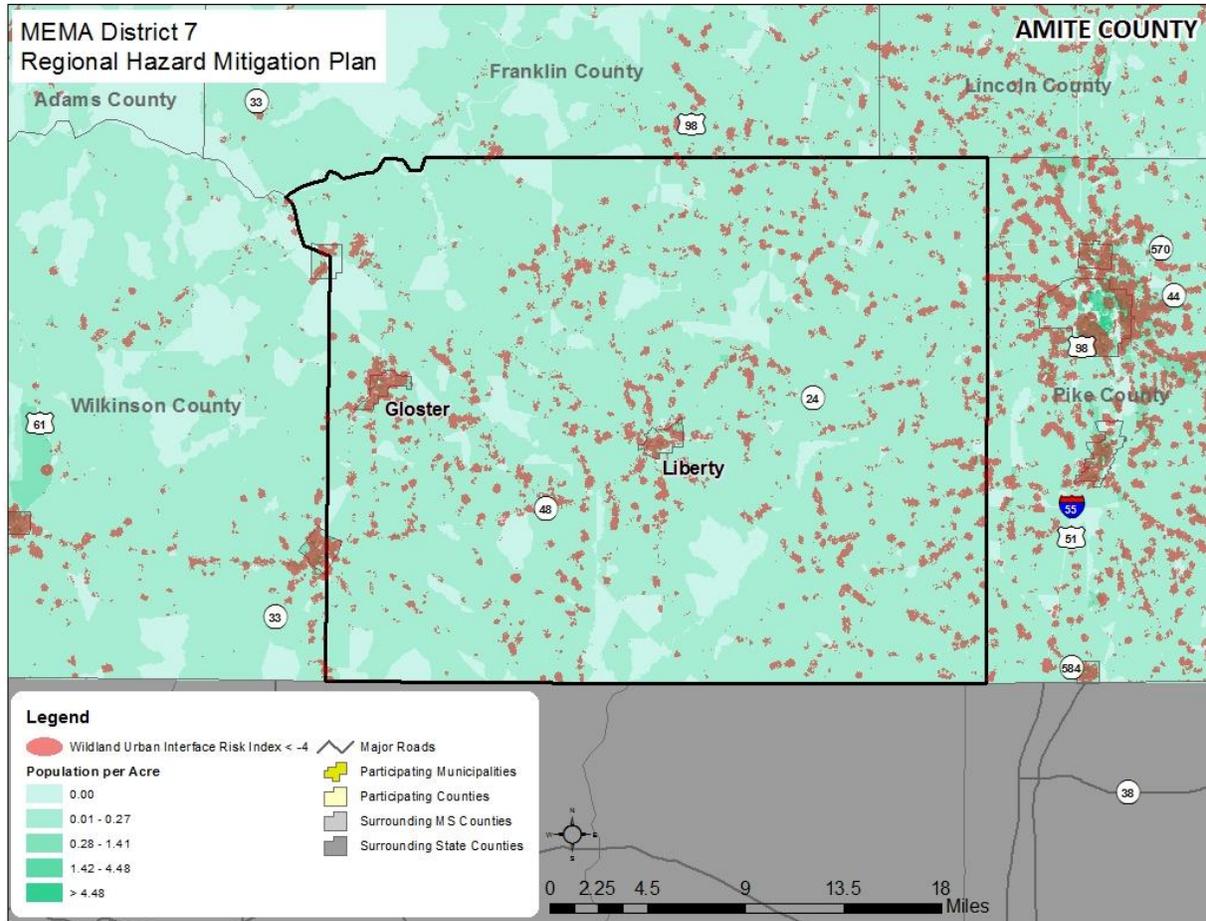
**Social Vulnerability**

Given some level of susceptibility across the entire county, it is assumed that the total population is at risk to the wildfire hazard. **Figure B.24** shows an overlay of the wildfire risk areas identified above with the

<sup>26</sup> Parcel/Building Footprint data was not available for Amite County. Therefore, building counts and values were pulled from Hazus-MH at the census block level and approximate improved value was calculated.

population density by census block. This shows that many of the areas of higher population concentration are susceptible to wildfire because of their proximity to the wildland urban interface.

**FIGURE B.24: WILDFIRE RISK AREAS IN AMITE COUNTY**



Source: Southern Wildfire Risk Assessment Data; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are 18 critical facilities located in wildfire areas of concern, including 1 EOC, 3 fire stations, 3 government/public buildings, 3 medical care facilities, 3 police stations, 3 private sector buildings, and 2 schools. It should be noted, that several factors could impact the spread of a wildfire putting all facilities at risk. A list of specific critical facilities and their associated risk can be found in **Table B.45** at the end of this subsection.

In conclusion, a wildfire event has the potential to impact many existing and future buildings, critical facilities, and populations in Amite County.

**EARTHQUAKE**

As the Hazus-MH model suggests below, and historical occurrences confirm, any significant earthquake activity in the area is likely to inflict minor damage to the county. Hazus-MH 4.0 estimates a total

annualized loss of \$5,000 which includes structural and non-structural damage to buildings, contents, and inventory throughout the county.

For the earthquake hazard vulnerability assessment, a probabilistic scenario was created to estimate the average annualized loss<sup>27</sup> for the county. The results of the analysis are generated at the census tract level within Hazus-MH and then aggregated to the county level. Since the scenario is annualized, no building counts are provided. Losses reported included losses due to structure failure, building loss, contents damage, and inventory loss. They do not include losses to business interruption, lost income, or relocation. **Table B.41** summarizes the findings with results rounded to the nearest thousand.

**TABLE B.41: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR EARTHQUAKE HAZARD**

| Location     | Structural Damage | Non-Structural Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|--------------|-------------------|-----------------------|-----------------|----------------|-----------------------|
| Amite County | \$1,000           | \$3,000               | \$1,000         | \$0            | \$5,000               |

Source: Hazus-MH 4.0

**Social Vulnerability**

It can be assumed that all existing and future populations are at risk to the earthquake hazard.

**Critical Facilities**

The Hazus-MH probabilistic analysis did not indicate that any critical facilities would sustain measurable damage in an earthquake event. However, all critical facilities should be considered at-risk to minor to moderate damage should an event occur. A list of specific critical facilities and their associated risk can be found in **Table B.45** at the end of this subsection.

In conclusion, an earthquake has the potential to impact all existing and future buildings, facilities, and populations in Amite County. Specific vulnerabilities for these assets will be greatly dependent on their individual design and the mitigation measures in place. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. The Hazus-MH scenario indicates that minimal to moderate damage is expected from an earthquake occurrence. While Amite County may not experience a catastrophic earthquake, localized damage is possible with a moderate to larger scale occurrence.

**HURRICANE AND TROPICAL STORM**

Historical evidence indicates that Amite County has significant risk to the hurricane and tropical storm hazard. There have been seven disaster declarations due to hurricanes as noted in pervious sections. Several tracks have come near or traversed through the county, as shown and discussed in Section B.2.10. Hazus-MH 4.0 estimates a total annualized loss of \$309,000 which includes buildings, contents, and inventory throughout the county.

Hurricanes and tropical storms can cause damage through numerous additional hazards such as flooding, erosion, tornadoes, and high winds, thus it is difficult to estimate total potential losses from these cumulative effects. The current Hazus-MH hurricane model only analyzes hurricane winds and is not capable of modeling and estimating cumulative losses from all hazards associated with hurricanes;

<sup>27</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

therefore, only hurricane winds are analyzed in this section. It can be assumed that all existing and future buildings and populations are at risk to the hurricane and tropical storm hazard. Hazus-MH 4.0 was used to determine average annualized losses<sup>28</sup> for the county as shown below in **Table B.42**. Only losses to buildings, inventory, and contents are included in the results.

**TABLE B.42: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR HURRICANE WIND HAZARD**

| Location     | Building Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|--------------|-----------------|-----------------|----------------|-----------------------|
| Amite County | \$209,000       | \$100,000       | \$0            | \$309,000             |

Source: Hazus-MH 4.0

**Social Vulnerability**

Given some equal susceptibility across the entire county, it is assumed that the total population, both current and future, is at risk to the hurricane and tropical storm hazard.

**Critical Facilities**

Given equal vulnerability across Amite County, all critical facilities are considered to be at risk. Some buildings may perform better than others in the face of such an event due to construction and age, among other factors. Determining individual building response is beyond the scope of this plan. However, this plan will consider mitigation action for especially vulnerable structures and/or critical facilities to mitigate against the effects of the hurricane hazard. A list of specific critical facilities can be found in **Table B.45** at the end of this subsection.

In conclusion, a hurricane event has the potential to impact many existing and future buildings, critical facilities, and populations in Amite County.

**RADIOLOGICAL EVENT**

The location of Grand Gulf and River Bend Nuclear Stations north and south of the region, respectively, demonstrate that the county is at some risk to the effects of a nuclear accident. Although there have not been any major events at these plants in the past, there have been major events at other nuclear stations around the country. Additionally, smaller scale incidents at both these nuclear stations have occurred.

In order to assess nuclear risk, a GIS-based analysis was used to estimate exposure during a nuclear event within each of the risk zones described in Section B.2.14. The determination of assessed value at-risk (exposure) was calculated using GIS analysis by summing the total values for those properties that were confirmed to be located within one of the risk zones. **Table B.43** presents potential at-risk properties in the 50-mile buffer zone (no property was located in the 10-mile buffer zone). The number of buildings, parcels, and the approximate value are presented.

<sup>28</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

**TABLE B.43: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO A NUCLEAR ACCIDENT**

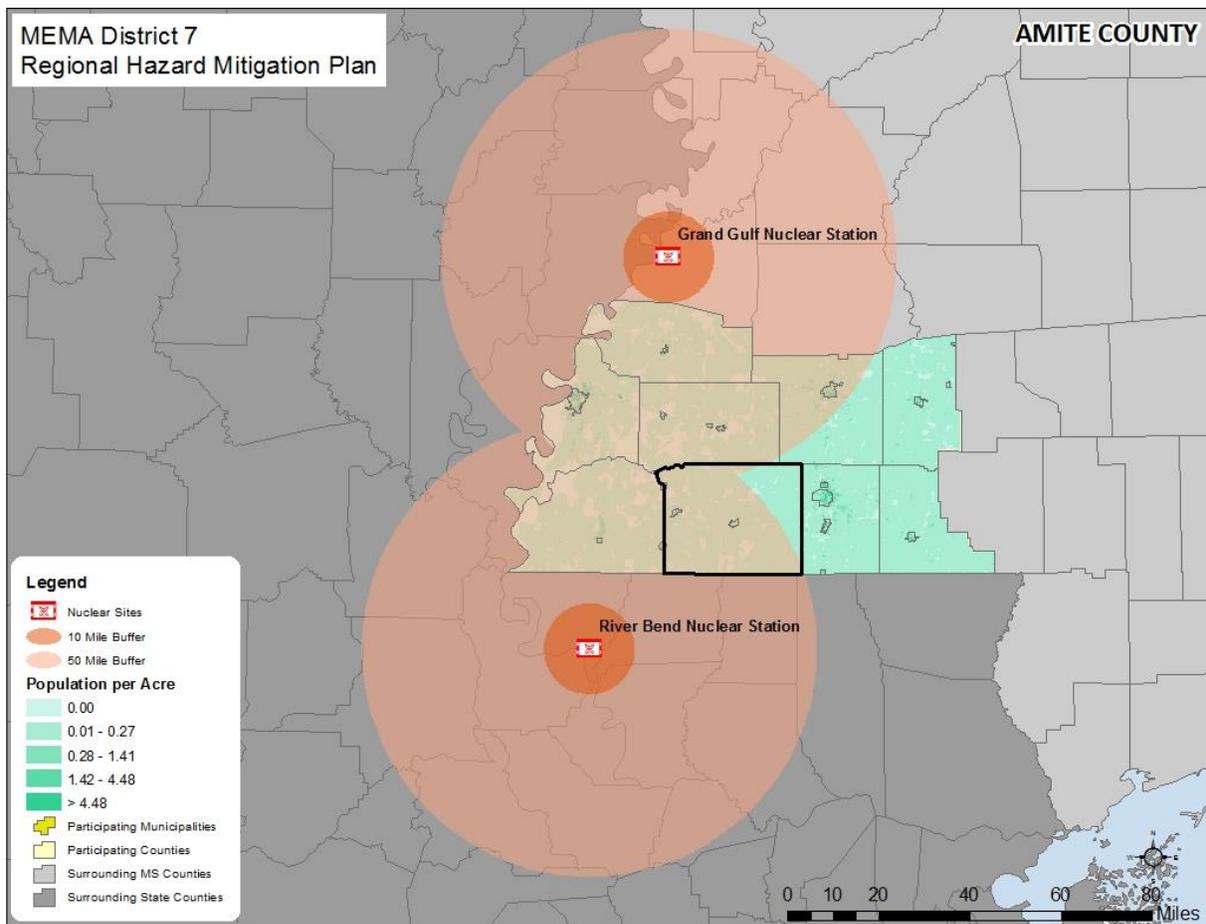
| Location                  | 50-mile Nuclear Buffer Area    |                        |
|---------------------------|--------------------------------|------------------------|
|                           | Approx. Number of Improvements | Approx. Improved Value |
| Gloster                   | 716                            | \$112,157,000          |
| Liberty                   | 453                            | \$80,122,000           |
| Unincorporated Area       | 4,515                          | \$577,343,000          |
| <b>AMITE COUNTY TOTAL</b> | <b>5,684</b>                   | <b>\$769,622,000</b>   |

Source: International Atomic Energy Agency; Hazus-MH 4.0

**Social Vulnerability**

Since most of the western part of county is within the 50-mile buffer area, this segment of the population is considered to be at high risk to a radiological event. However, other populations in the county may also be at some risk. This risk can be seen in **Figure B.25**.

**FIGURE B.25: POPULATION DENSITY NEAR NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN AMITE COUNTY**



Source: International Atomic Energy Agency; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are 28 critical facilities located in the 50-mile nuclear buffer area, including 1 EOC, 7 fire stations, 3 government/public buildings, 4 medical care facilities, 3 police stations, 3 private sector buildings, and 7 schools. No critical facilities are located in the 10-mile buffer area. A list of specific critical facilities and their associated risk can be found in **Table B.45** at the end of this section.

In conclusion, a nuclear accident has the potential to impact many existing and future buildings, facilities, and populations in Amite County.

**CONCLUSIONS ON HAZARD VULNERABILITY**

**Table B.44** presents a summary of annualized loss for each hazard in Amite County. Due to the reporting of hazard damages primarily at the county level, it was difficult to determine an accurate annualized loss estimate for each municipality. Therefore, an annualized loss was determined through the damage reported through historical occurrences at the county level. These values should be used as an additional planning tool or measure risk for determining hazard mitigation strategies throughout the county.

**TABLE B.44: ANNUALIZED LOSS FOR AMITE COUNTY**

| Event                         | Amite County |
|-------------------------------|--------------|
| <b>Flood-related Hazards</b>  |              |
| Dam and Levee Failure         | Negligible   |
| Erosion                       | Negligible   |
| Flood                         | \$46,832     |
| <b>Fire-related Hazards</b>   |              |
| Drought                       | Negligible   |
| Lightning                     | \$1,202      |
| Wildfire                      | Negligible   |
| <b>Geologic Hazards</b>       |              |
| Earthquake*                   | \$1,000      |
| <b>Wind-related Hazards</b>   |              |
| Extreme Heat                  | Negligible   |
| Hailstorm                     | \$0          |
| Hurricane & Tropical Storm    | \$6,245,984  |
| Severe Thunderstorm/High Wind | \$55,520     |
| Tornado                       | \$86,862     |
| Winter Storm & Freeze         | \$0          |
| <b>Human-caused Hazards</b>   |              |
| Radiological Event            | Negligible   |

\*No historic losses for earthquake were recorded, so Hazus estimates for annualized loss were used.

| Event | Amite County |
|-------|--------------|
|-------|--------------|

Note: In this table, the term “Negligible” is used to indicate that no records of dollar losses for the particular hazard were recorded. This could be the case either because there were no events that caused dollar damage or because documentation of that particular type of event is not well kept.

As noted previously, all existing and future buildings and populations (including critical facilities) are vulnerable to atmospheric hazards including drought, lightning, extreme heat, hailstorm, hurricane and tropical storm, severe thunderstorm/high wind, tornado, and winter storm and freeze. Some buildings may be more vulnerable to these hazards based on other factors such as construction and building type. **Table B.45** shows the critical facilities vulnerable to the hazards analyzed in this section. The table lists those assets that are determined to be exposed to each of the identified hazards (marked with an “X”).

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**TABLE B.45: AT-RISK CRITICAL FACILITIES IN AMITE COUNTY**

| FACILITY NAME                                 | FACILITY TYPE     | FLOOD-RELATED         |         |                | FIRE-RELATED   |         |           | GEO      | WIND-RELATED |              |           |                              |                                    |         | HUM                     |                                 |
|---|-------------------|-----------------------|---------|----------------|----------------|---------|-----------|----------|--------------|--------------|-----------|------------------------------|------------------------------------|---------|-------------------------|---------------------------------|
|   |                   | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought | Lightning | Wildfire | Earthquake   | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Lynch Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area |
| <b>Amite County</b>                           |                   |                       |         |                |                |         |           |          |              |              |           |                              |                                    |         |                         |                                 |
| Amite County EOC                              | EOC               |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| East Central Rural Volunteer Fire Department  | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Gillsburg Rural Volunteer Fire Department     | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Liberty Volunteer Fire Department             | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Mars Hill VFD                                 | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| North Central Amite Volunteer Fire Department | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| O'neil Volunteer Fire Department              | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Smithdale Volunteer Fire Department           | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Southwest Amite Volunteer Fire Department     | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Street Volunteer Fire Department              | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Amite County Courthouse Complex               | Government/Public |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Gloster Town Hall                             | Government/Public |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Liberty Town Hall                             | Government/Public |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Amite County Medical Services                 | Medical Care      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Field Health System                           | Medical Care      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Gloster Clinic                                | Medical Care      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Liberty Community Living Center               | Medical Care      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Amite County Law Enforcement Complex          | Police Station    |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |

ANNEX B: AMITE COUNTY

| FACILITY NAME                 | FACILITY TYPE  | FLOOD-RELATED         |         |                | FIRE-RELATED   |         |           | GEO      | WIND-RELATED |              |           |                              |                                    |         | HUM                     |                                 |                                 |
|-------------------------------|----------------|-----------------------|---------|----------------|----------------|---------|-----------|----------|--------------|--------------|-----------|------------------------------|------------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|                               |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought | Lightning | Wildfire | Earthquake   | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Light Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Gloster Police Dept           | Police Station |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 | X                               |
| Liberty Police Department     | Police Station |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 | X                               |
| Air Cruisers                  | Private Sector |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 | X                               |
| Freedom Industries            | Private Sector |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 | X                               |
| Mabry Lumber Company          | Private Sector |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 | X                               |
| Amite County High School      | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         |                                 | X                               |
| Amite County Voc-Tech Complex | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         |                                 | X                               |
| Amite School Center           | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         |                                 | X                               |
| Centreville Academy           | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         |                                 | X                               |
| Gloster Elementary School     | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 | X                               |
| Liberty Elementary School     | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         |                                 | X                               |
| Pine Hills Christian Academy  | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 | X                               |

## B.4 AMITE COUNTY CAPABILITY ASSESSMENT

This subsection discusses the capability of Amite County to implement hazard mitigation activities. More information on the purpose and methodology used to conduct the assessment can be found in Section 7: *Capability Assessment*.

### B.4.1 Planning and Regulatory Capability

**Table B.46** provides a summary of the relevant local plans, ordinances, and programs already in place or under development for Amite County. A checkmark (✓) indicates that the given item is currently in place and being implemented. An asterisk (\*) indicates that the given item is currently being developed for future implementation. A dagger (†) indicates that the given item is administered for that municipality by the county. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the MEMA District 7 Regional Hazard Mitigation Plan.

**TABLE B.46: RELEVANT PLANS, ORDINANCES, AND PROGRAMS**

| Planning Tool/Regulatory Tool | Hazard Mitigation Plan | Threat and Hazard Identification and Risk Assessment (THIRA) | Comprehensive Land Use Plan | Floodplain Management Plan/Flood Mitigation Plan | Open Space Management Plan (Parks & Rec/Greenway Plan) | Stormwater Management Plan/Ordinance | Natural Resource Protection Plan | Flood Response Plan | Emergency Operations Plan | Emergency Management Accreditation Program (EMAP Accreditation) | Continuity of Operations Plan | Evacuation Plan | Disaster Recovery Plan | Capital Improvements Plan | Economic Development Plan | Historic Preservation Plan | Flood Damage Prevention Ordinance | Zoning Ordinance | Subdivision Ordinance | Unified Development Ordinance | Post-Disaster Redevelopment/ Reconstruction Plan/ Ordinance | Building Code | Fire Code | National Flood Insurance Program (NFIP) | NFIP Community Rating System (CRS Program) |
|-------------------------------|------------------------|--|-----------------------------|--|--|--------------------------------------|----------------------------------|---------------------|---------------------------|---|-------------------------------|-----------------|------------------------|---------------------------|---------------------------|----------------------------|-----------------------------------|------------------|-----------------------|-------------------------------|---|---------------|-----------|---|--|
|                               | AMITE COUNTY           | Gloster  | Liberty                     |  |  |                                      |                                  |                     |                           |   |                               |                 |                        |                           |                           |                            |                                   |                  |                       |                               |   |               |           |   |  |
|                               | ✓                      |  |                             |  |  |                                      |                                  |                     | ✓                         |   |                               |                 |                        |                           | ✓                         |                            | ✓                                 |                  |                       |                               |   |               |           | ✓                                       |  |
|                               |                        |  |                             |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            | ✓                                 |                  |                       |                               |   |               |           | ✓                                       |  |
|                               |                        |  |                             |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            | ✓                                 |                  |                       |                               |   |               |           | ✓                                       |  |

A more detailed discussion on the county’s planning and regulatory capabilities follows.

### EMERGENCY MANAGEMENT

#### Hazard Mitigation Plan

Amite County has previously adopted a hazard mitigation plan. The Town of Gloster and Town of Liberty were also included in this plan.

#### Emergency Operations Plan

Amite County maintains an emergency operations plan through its Emergency Management Agency. The Town of Gloster and the Town of Liberty are also covered by this plan.

**FLOODPLAIN MANAGEMENT**

**Table B.47** provides NFIP policy and claim information for each participating jurisdiction in Amite County.

**TABLE B.47: NFIP POLICY AND CLAIM INFORMATION**

| Jurisdiction  | Date Joined NFIP | Current Effective Map Date | NFIP Policies in Force | Insurance in Force | Closed Claims | Total Payments to Date |
|---------------|------------------|----------------------------|------------------------|--------------------|---------------|------------------------|
| AMITE COUNTY† | 08/01/86         | 09/29/10                   | 18                     | \$3,595,700        | 0             | \$0                    |
| Gloster       | 06/17/86         | 09/29/10                   | 0                      | \$0                | 0             | \$0                    |
| Liberty       | 09/29/86         | 09/29/10                   | 0                      | \$0                | 2             | \$3,416                |

†Includes unincorporated areas of county only

Source: NFIP Community Status information as of 8/17/2017; NFIP claims and policy information as of 4/30/2017

All jurisdictions listed above that are participants in the NFIP will continue to comply with all required provisions of the program and will work to adequately comply in the future utilizing a number of strategies. For example, the jurisdictions will coordinate with MEMA and FEMA to develop maps and regulations related to special flood hazard areas within their jurisdictional boundaries and, through a consistent monitoring process, will design and improve their floodplain management program in a way that reduces the risk of flooding to people and property.

**Flood Damage Prevention Ordinance**

All communities participating in the NFIP are required to adopt a local flood damage prevention ordinance. Amite County, Town of Gloster, and Town of Liberty all participate in the NFIP and have adopted flood damage prevention regulations.

**B.4.2 Administrative and Technical Capability**

**Table B.48** provides a summary of the capability assessment results for Amite County with regard to relevant staff and personnel resources. A checkmark (✓) indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill. A dagger (†) indicates a county-level staff member(s) provides the specified knowledge or skill to that municipality.

**TABLE B.48: RELEVANT STAFF/PERSONNEL RESOURCES**

| Staff/Personnel Resource | Planners with knowledge of land development/land management practices | Engineers or professionals trained in construction practices related to buildings and/or infrastructure | Planners or engineers with an understanding of natural and/or human-caused hazards | Emergency Manager | Floodplain Manager | Land Surveyors | Scientists familiar with the hazards of the community | Staff with education or expertise to assess the community's vulnerability to hazards | Personnel skilled in GIS and/or Hazus | Resource development staff or grant writers |
|--------------------------|---|---|--|-------------------|--------------------|----------------|---|--|---------------------------------------|---|
| AMITE COUNTY             |   |   |  | ✓                 | ✓                  |                | ✓   | ✓  | ✓                                     |   |
| Gloster                  |   |   |  | †                 | ✓                  |                | †   | †  | †                                     |   |
| Liberty                  |   |   |  | †                 | †                  |                | †   | †  | †                                     |   |

Credit for having a floodplain manager was given to those jurisdictions that have a flood damage prevention ordinance, and therefore an appointed floodplain administrator, regardless of whether the appointee was dedicated solely to floodplain management. Credit was given for having a scientist familiar with the hazards of the community if a jurisdiction has a Cooperative Extension Service or Soil and Water Conservation Department. Credit was also given for having staff with education or expertise to assess the community's vulnerability to hazards if a staff member from the jurisdiction was a participant on the existing hazard mitigation plan's planning committee.

### B.4.3 Fiscal Capability

**Table B.49** provides a summary of the results for Amite County with regard to relevant fiscal resources. A checkmark (✓) indicates that the given fiscal resource has previously been used to implement hazard mitigation actions. A dagger (†) indicates that the given fiscal resource is locally available for hazard mitigation purposes (including match funds for state and federal mitigation grant funds).

**TABLE B.49: RELEVANT FISCAL RESOURCES**

| Fiscal Tool/Resource | Capital Improvement Programming | Community Development Block Grants (CDBG) | Special Purpose Taxes (or taxing districts) | Gas/Electric Utility Fees | Water/Sewer Fees | Stormwater Utility Fees | Development Impact Fees | General Obligation, Revenue, and/or Special Tax Bonds | Partnering Arrangements or Intergovernmental Agreements | Other: FEMA Hazard Mitigation Grants, Homeland Security Grants, USDA Rural Development Agency Grants, and US Economic Development Administration Grants |
|----------------------|---------------------------------|---|---|---------------------------|------------------|-------------------------|-------------------------|---|---|---|
| AMITE COUNTY         |                                 | †   |   |                           |                  |                         |                         |   | †   | †   |
| Gloster              |                                 | †   |   |                           |                  |                         |                         |   |   | †   |
| Liberty              |                                 | †   |   |                           |                  |                         |                         |   |   | †   |

### B.4.4 Political Capability

During the months immediately following a disaster, local public opinion in Amite County is more likely to shift in support of hazard mitigation efforts.

Table B.50 provides a summary of the results for Amite County with regard to political capability. A checkmark (✓) indicates the expected degree of political support by local elected officials in terms of adopting/funding information.

**TABLE B.50: LOCAL POLITICAL SUPPORT**

| Political Support | Limited | Moderate | High |
|-------------------|---------|----------|------|
| AMITE COUNTY      |         | ✓        |      |
| Gloster           |         | ✓        |      |
| Liberty           |         | ✓        |      |

### B.4.5 Conclusions on Local Capability

Table B.51 shows the results of the capability assessment using the designed scoring methodology described in Section 7: *Capability Assessment*. The capability score is based solely on the information found in existing hazard mitigation plans and readily available on the jurisdictions’ government websites. This information was reviewed by all jurisdictions and each jurisdiction provided feedback on the information included in the capability assessment. Local government input was vital to identifying

capabilities. According to the assessment, the average local capability score for the county and its jurisdictions is 19.3, which falls into the limited capability ranking.

**TABLE B.51: CAPABILITY ASSESSMENT RESULTS**

| Jurisdiction | Overall Capability Score | Overall Capability Rating |
|--------------|--------------------------|---------------------------|
| AMITE COUNTY | 23                       | Limited                   |
| Gloster      | 18                       | Limited                   |
| Liberty      | 17                       | Limited                   |

## B.5 AMITE COUNTY MITIGATION STRATEGY

This subsection provides the blueprint for Amite County to follow in order to become less vulnerable to its identified hazards. It is based on general consensus of the Regional Hazard Mitigation Council and the findings and conclusions of the capability assessment and risk assessment. Additional Information can be found in Section 8: *Mitigation Strategy* and Section 9: *Mitigation Action Plan*.

### B.5.1 Mitigation Goals

Amite County developed six mitigation goals in coordination with the other participating MEMA District 7 Region jurisdictions. The regional mitigation goals are presented in **Table B.52**.

**TABLE B.52: MEMA DISTRICT 7 REGIONAL MITIGATION GOALS**

|         | Goal   |
|---------|--|
| Goal #1 | Increase the overall public awareness of natural hazards that face the region.   |
| Goal #2 | Retrofit of critical facilities and/or critical infrastructure to lower the risk of damage from natural hazards.   |
| Goal #3 | General improvement of regional or local mitigation planning and capability.   |
| Goal #4 | Support State Identified Mitigation Initiatives such as saferooms and storm shelters, severe weather warning systems for universities and colleges, and severe weather notification systems for local communities. |
| Goal #5 | Reduce loss of life, damage and loss of property and infrastructure, economic costs, including response, recovery and disruption of economic activity.   |
| Goal #6 | Foster cooperation among all levels of governments and the private sector with respect to improving, updating, and implementing the hazard mitigation plan.  |

### B.5.2 Mitigation Action Plan

The mitigation actions proposed by Amite County, Town of Gloster, and Town of Liberty are listed in the following individual Mitigation Action Plans.

## Amite County Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------------|-------------------|---|---|-------------------------|---|
| <b>Prevention</b> |  |                           |                   |   |   |                         |   |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning</b> – The Amite County Board of Supervisors/Towns of Liberty, and Gloster should have a Comprehensive Plan developed to guide long term recovery and development.  | Hurricane or other hazard | High              | Amite County Board of Supervisors/ Towns of Liberty and Gloster | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Amite County Board of Supervisors/Towns of Liberty and Gloster recognize that comprehensive land use planning yields many benefits for both the county and towns. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. The county and towns have not developed a Comprehensive Plan. Therefore, this action will remain in the plan. |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction. | Flood                     | Moderate          | Southwest Mississippi Planning and Development District, Inc.   | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

| Action #                           | Description  | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---|-------------------|--|---|-------------------------|--|
| <b>Property Protection</b>         |  |   |                   |  |   |                         |  |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Amite County Board of Supervisors/Towns of Liberty and Gloster should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Amite County Board of Supervisors/ Towns of Liberty and, Gloster | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Amite County Board of Supervisors/Towns of Liberty and Gloster recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/town government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |
| <b>Natural Resource Protection</b> |  |   |                   |  |   |                         |  |
| NRP-1                              |  |   |                   |  |   |                         |  |
| <b>Structural Projects</b>         |  |   |                   |  |   |                         |  |
| SP-1                               |  |   |                   |  |   |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions.</p> |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                  | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|--|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Amite County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Since 2005, Amite County has added generators to the following critical facilities: Amite County Central Repair Facility, the repeater/communications tower, Justice Court and all supervisor district barns. Amite County will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department           | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|-----------------------------------|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Amite County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The county did purchase a generator for the repeater/communications tower to keep cell phones operational through disaster situations. Amite County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department           | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|-----------------------------------|---|-------------------------|---|
| ES-4     | <b>Construct New Emergency Shelter</b> – The county should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions.                              | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Amite County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Amite County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. Since a new emergency shelter has not been constructed in Amite County, this action will remain in the plan. |
| ES-5     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system. | Tornado  | High              | Amite County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County and/or Town General Fund  | 2022                    | Many citizens in Amite County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. Amite County added sirens to the Town of Liberty and Gloster. Additional sirens can be installed/upgraded to further improve the warning system in Amite County, so this action will remain in the plan.   |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---|---------------------------|-------------------------|--|
| ES-6                                  | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA                | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |
| <b>Public Education and Awareness</b> |   |                     |                   |   |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Amite County Board of Supervisors       | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|---|
| PEA-2    | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP. |
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                           |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.  | Dam Failure         | Moderate          | MDEQ, Dam Safety Division | N/A                       | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Amite County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others</b> – Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.                  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                      | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan.  |

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan. |

## Town of Gloster Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---|---|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | Town of Gloster Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Gloster will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                           | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|---|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Gloster Board of Aldermen and Mayor       | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The county did purchase a generator for the repeater/communications tower to keep cell phones operational through disaster situations. The Town of Gloster continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Gloster/Amite County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County and/or Town General Fund  | 2022                    | Many citizens in Amite County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. One siren was added to the Town of Gloster since 2005. Additional sirens can be installed/upgraded to further improve the warning system in the Town of Gloster, so this action will remain in the plan.   |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency     | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Gloster Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Gloster           | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Gloster will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Liberty Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions.</p> |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                            | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|--|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of Liberty Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Liberty purchased and installed a generator at the Liberty Fire Station. The Town of Liberty will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                           | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|---|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Liberty Board of Aldermen and Mayor       | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The county did purchase a generator for the repeater/communications tower to keep cell phones operational through disaster situations. The Town of Liberty continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Liberty/Amite County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County and/or Town General Fund  | 2022                    | Many citizens in Amite County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. One siren was added to the town since 2005. Additional sirens can be installed/upgraded to further improve the warning system in the Town of Liberty, so this action will remain in the plan.  |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency     | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Liberty Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Liberty           | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Liberty will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

# ANNEX C

## FRANKLIN COUNTY

This annex includes jurisdiction-specific information for Franklin County and its participating municipalities. It consists of the following five subsections:

- C.1 Franklin County Community Profile
  - C.2 Franklin County Risk Assessment
  - C.3 Franklin County Vulnerability Assessment
  - C.4 Franklin County Capability Assessment
  - C.5 Franklin County Mitigation Strategy
- 

### C.1 FRANKLIN COUNTY COMMUNITY PROFILE

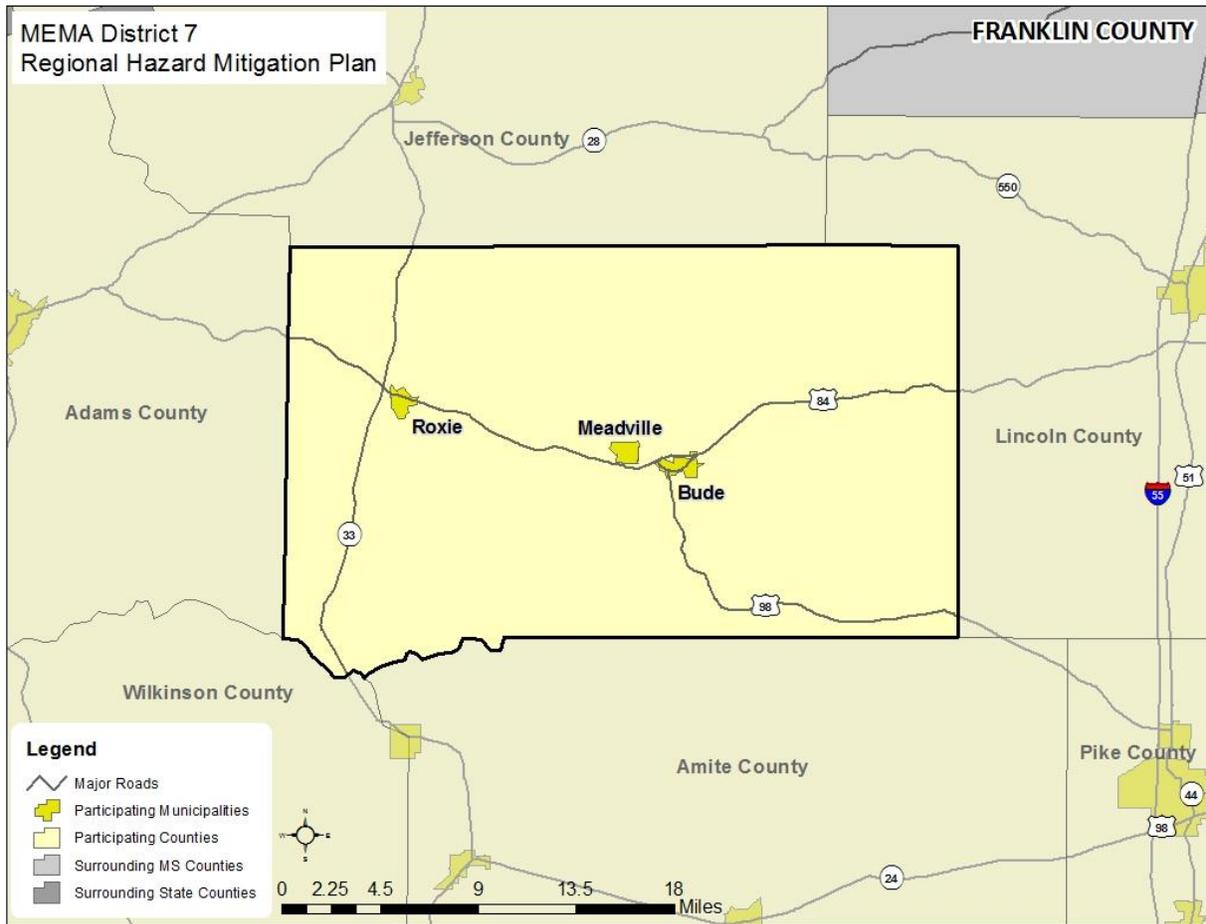
#### C.1.1 Geography and the Environment

Franklin County is located in southwestern Mississippi. It comprises three towns, Town of Bude, Town of Meadville, and Town of Roxie, as well as many small unincorporated communities. An orientation map is provided as **Figure C.1**.

The county is located to the east of the Mississippi River suppling diverse recreational activities. The total area of the county is 567 square miles, 3 square miles of which is water area.

Franklin County enjoys four distinct seasons but the climate in the region is generally hot and humid compared to the rest of the United States given its latitude and relative proximity to the Gulf Coast. Precipitation is generally highest in winter months when the temperatures are moderately lower, but the likelihood of precipitation remains relatively constant throughout the year. Summers in the region can become fairly hot with average highs in the nineties and lows in the seventies. The region is also often susceptible to turbulent weather when warm, wet air from the Gulf of Mexico is pushed up into the region to mix with cooler air coming down from across the continent which can result in severe weather conditions. This is particularly true in the spring when seasons are changing and diverse weather patterns interact.

**FIGURE C.1: FRANKLIN COUNTY ORIENTATION MAP**



### C.1.2 Population and Demographics

According to the 2015 American Community Survey, Franklin County has a population of 7,857 people. The county has seen a decrease in population between 2000 and 2015, and the population density is 14 people per square mile. Population counts from the U.S. Census Bureau for 2000 and 2010 and from the American Community Survey for 2015 for the county and participating jurisdictions are presented in **Table C.1**.

**TABLE C.1: POPULATION COUNTS FOR FRANKLIN COUNTY**

| Jurisdiction           | 2000 Census Population | 2010 Census Population | 2015 American Community Survey Estimate | % Change 2000-2015 |
|------------------------|------------------------|------------------------|---|--------------------|
| <b>Franklin County</b> | <b>8,448</b>           | <b>8,118</b>           | <b>7,857</b>                            | <b>-7.0%</b>       |
| Bude                   | 1,037                  | 1,063                  | 905                                     | -12.7%             |
| Meadville              | 519                    | 449                    | 454                                     | -12.5%             |
| Roxie                  | 569                    | 497                    | 551                                     | -3.2%              |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

Based on the 2010 Census, the median age of residents of Franklin County is 40.1 years. The racial characteristics of the county are presented in **Table C.2**. Whites make up the majority of the population in the county, accounting for almost 64 percent of the population, while the Black and African American population makes up 36 percent.

**TABLE C.2: DEMOGRAPHICS OF FRANKLIN COUNTY**

| Jurisdiction           | White, Percent | Black or African American, Percent | American Indian or Alaska Native, Percent | Asian, Percent | Native Hawaiian or Other Pacific Islander, Percent | Other Race, Percent | Two or More Races, percent | Persons of Hispanic Origin, Percent* |
|------------------------|----------------|------------------------------------|---|----------------|--|---------------------|----------------------------|--------------------------------------|
| <b>Franklin County</b> | <b>63.6%</b>   | <b>35.8%</b>                       | <b>0.1%</b>                               | <b>0.1%</b>    | <b>0.0%</b>  | <b>0.0%</b>         | <b>0.4%</b>                | <b>0.5%</b>                          |
| Bude                   | 36.0%          | 64.0%                              | 0.0%                                      | 0.0%           | 0.0%   | 0.0%                | 0.0%                       | 0.0%                                 |
| Meadville              | 78.0%          | 21.6%                              | 0.0%                                      | 0.0%           | 0.0%   | 0.0%                | 0.4%                       | 0.4%                                 |
| Roxie                  | 45.7%          | 53.2%                              | 1.1%                                      | 0.0%           | 0.0%   | 0.0%                | 0.0%                       | 0.0%                                 |

\*Hispanics may be of any race, so also are included in applicable race categories

Source: 2011-2015 American Community Survey 5-Year Estimates

### C.1.3 Housing

According to the 2010 U.S. Census, there are 4,154 housing units in Franklin County, the majority of which are single family homes or mobile homes. Housing information for the county and municipalities is presented in **Table C.3**. As shown in the table, the incorporated municipalities have a lower percentage of seasonal housing units compared to the unincorporated county.

**TABLE C.3: HOUSING CHARACTERISTICS OF FRANKLIN COUNTY**

| Jurisdiction           | Housing Units (2000) | Housing Units (2010) | Seasonal Units, Percent (2010) | Median Home Value (2011-2015) |
|------------------------|----------------------|----------------------|--------------------------------|-------------------------------|
| <b>Franklin County</b> | <b>4,119</b>         | <b>4,154</b>         | <b>11.2%</b>                   | <b>\$73,200</b>               |
| Bude                   | 505                  | 525                  | 2.3%                           |                               |
| Meadville              | 220                  | 207                  | 1.4%                           |                               |
| Roxie                  | 245                  | 215                  | 1.9%                           |                               |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

### C.1.4 Infrastructure

#### TRANSPORTATION

In Franklin County, U.S. Highways 84 and 98 provide access to the east and west. Mississippi Highway 33 provides access to the north and south.

There are no general aviation airports located in Franklin County.

A major freight rail line operates within Franklin County. Natchez Railroad is a Class III Local railway that operates and runs east to west in the county. Business and industries rely on this line along with various other major highway routes as distribution of merchandises.

## **UTILITIES**

Electrical power in Franklin County is provided by Entergy Mississippi Inc., Magnolia Electric Power Association, South Mississippi Electric Power Association, and Southwest Mississippi Electric Power Association.

Water and sewer service is provided by participating jurisdictions and/or community based associations, but unincorporated areas often rely on septic systems and wells in Franklin County.

## **COMMUNITY FACILITIES**

There are a number of buildings and community facilities located throughout Franklin County. According to the data collected for the vulnerability assessment (Section 6.4.1), there are 2 fire stations, 3 police stations, and 3 schools located within the county.

There are also 4 hospitals and medical care facilities located in Franklin County.

Recreational opportunities exist throughout Franklin County. The Homochitto National Forest comprises almost 200,000 acres of land and is partially located in Franklin County. Visitors can camp, hike, hunt, and fish in the forest.

The Mississippi River, which runs to the east of the county, has played an integral part in the history of the county. The river acted as a major conduit for trade in the 19<sup>th</sup> century as plantations produced large quantities of cotton that could be easily shipped down to ports such as New Orleans. Today, the river is still an important part of the local economy as products are shipped worldwide out of the Natchez port. Apart from the Mississippi River there are multiple water based refuges, activities, and recreational features focused on local water bodies in the region. For instance, as part of the Homochitto National Forest, Okhissa Lake in Franklin County offers over 1,000 acres of lake area for fishing, boating and leisure activities. There are also numerous other small lakes, creeks, and other water bodies throughout the region that offer the outstanding outdoor recreational opportunities for which the region is known.

### **C.1.5 Land Use**

Franklin County has a blend of old and new development that contributes to physical, cultural, and economic attributes throughout the region. There are three incorporated municipalities located in the county. These areas are where the county's population is generally concentrated. The incorporated areas are also where many of the businesses, commercial uses, and institutional uses are located. Land uses in the balance of the county generally consist of rural residential development, agricultural uses, and recreational areas. There are multiple county- and regional-based agencies that serve to coordinate growth and promote economic development. Local land use and associated regulations are further discussed in *Section 7: Capability Assessment*.

### **C.1.6 Employment and Industry**

According to the U.S. Census Bureau's American Community Survey (ACS), in 2015, Franklin County had an average annual employment of 6,074 workers and an average unemployment rate of 8.9 percent

(compared to 10.3 percent for the state). In 2015, the Educational services, and health care and social assistance employed 22.7 percent of the workforce followed by Agriculture, forestry, fishing, and hunting (14.4%) and Manufacturing (13.0%). The average annual median household in 2015 for Franklin County was \$38,170 compared to \$39,665 in the state of Mississippi.

## **C.2 FRANKLIN COUNTY RISK ASSESSMENT**

This subsection includes hazard profiles for each of the significant hazards identified in Section 4: *Hazard Identification* as they pertain to Franklin County. Each hazard profile includes a description of the hazard's location and extent, notable historical occurrences, and the probability of future occurrences. Additional information can be found in Section 5: *Hazard Profiles*.

### ***FLOOD-RELATED HAZARDS***

#### **C.2.1 Dam and Levee Failure**

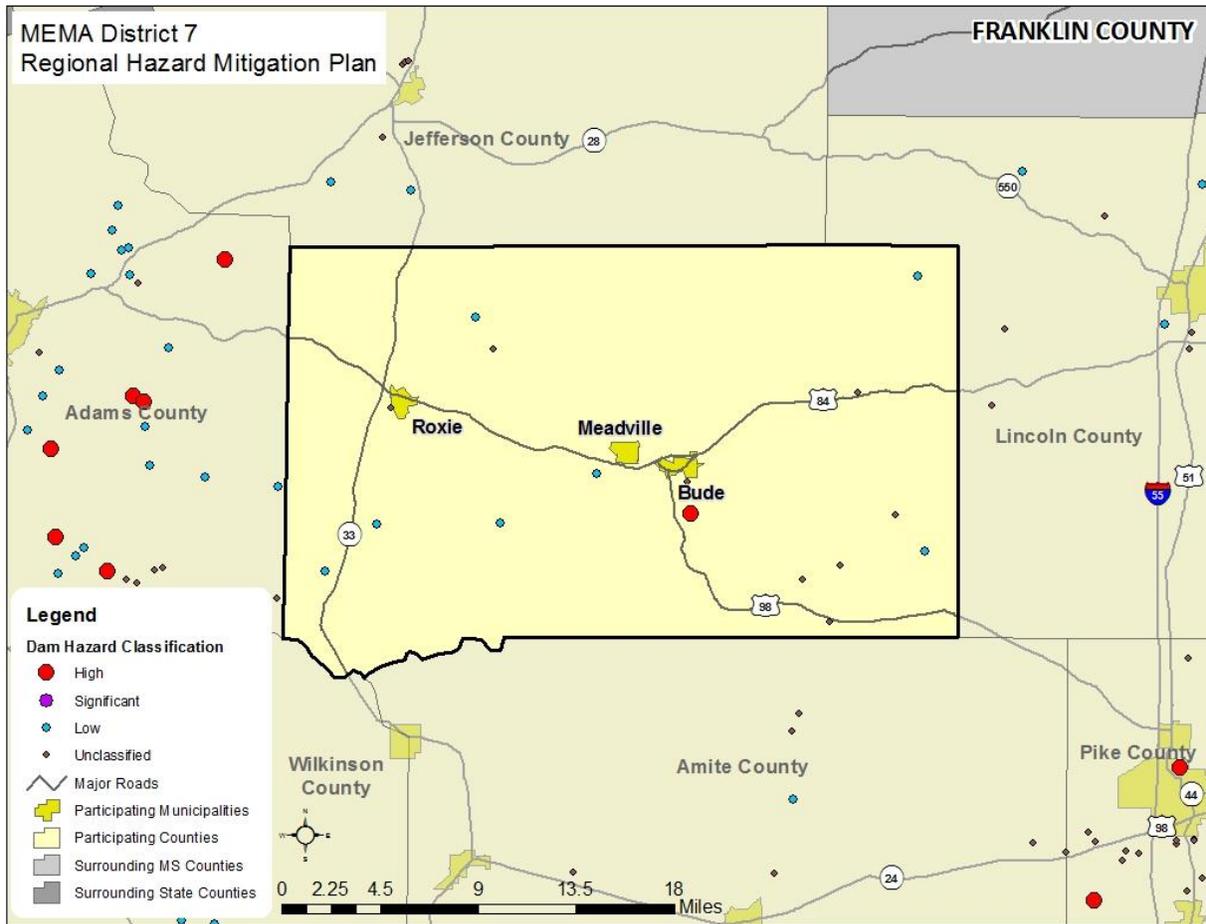
##### ***LOCATION AND SPATIAL EXTENT***

According to the Mississippi Department of Environmental Quality, there is one high hazard dam in Franklin County.<sup>1</sup> **Figure C.2** and **Figure C.3** show the location of this high hazard dam as well as mapped inundation areas, and **Table C.4** lists it by name.

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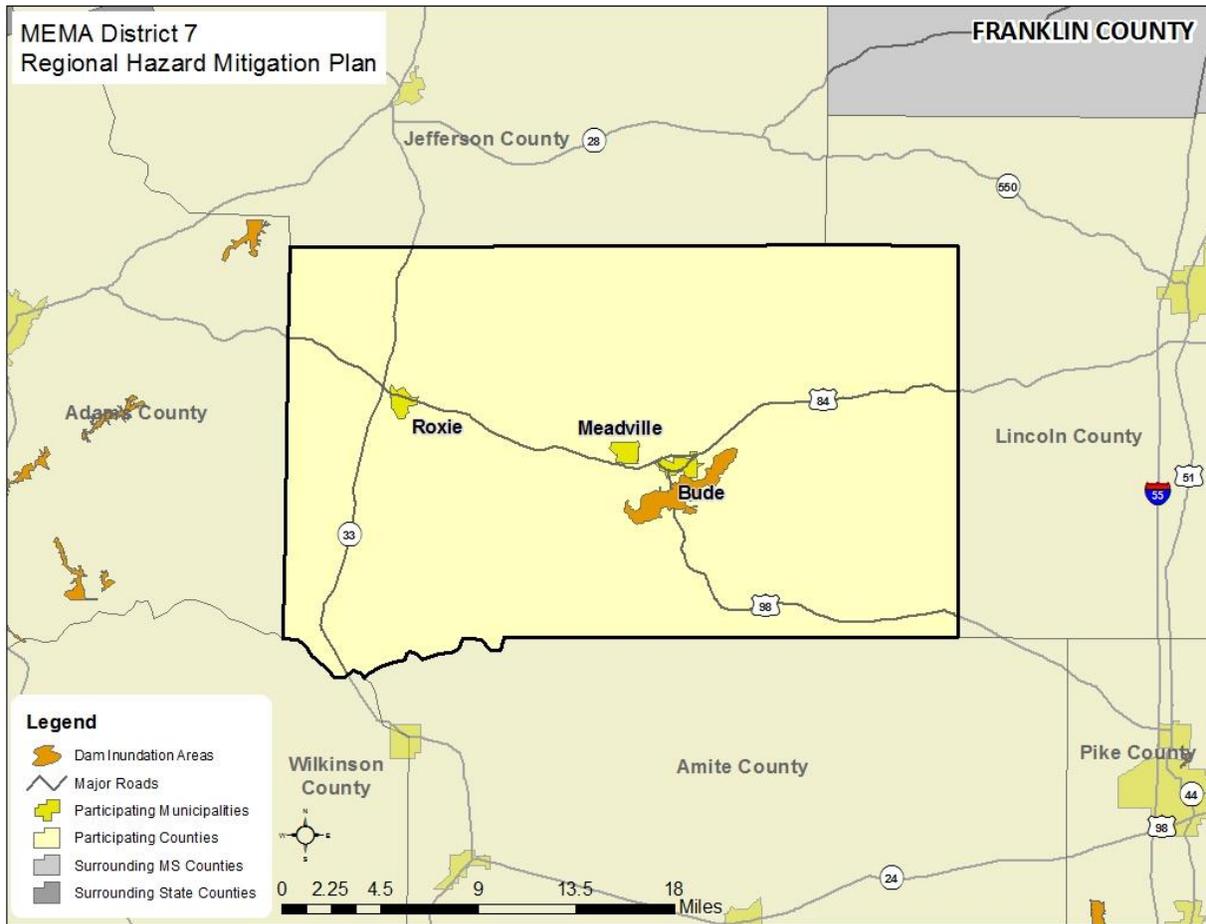
<sup>1</sup> The list of high hazard dams obtained from the Mississippi Department of Environmental Quality was reviewed and amended by local officials to the best of their knowledge.

FIGURE C.2: FRANKLIN COUNTY HIGH HAZARD DAM LOCATIONS



Source: Mississippi Department of Environmental Quality

**FIGURE C.3: FRANKLIN COUNTY DAM INUNDATION AREAS**



Source: Mississippi Department of Environmental Quality

**TABLE C.4: FRANKLIN COUNTY HIGH HAZARD DAMS**

| Dam Name               | Hazard Potential | Max Storage (ac/ft) | Dam Height (ft) |
|------------------------|------------------|---------------------|-----------------|
| <b>Franklin County</b> |                  |                     |                 |
| LAKE OKHISSA           | High             | 44,065              | 98.0            |

Source: Mississippi Department of Environmental Quality

**HISTORICAL OCCURRENCES**

According to the Mississippi State Hazard Mitigation Plan, there have been no dam failures reported in Franklin County (Table C.5). However, several breach scenarios in the region could be catastrophic.

**TABLE C.5: FRANKLIN COUNTY DAM FAILURES (1982-2012)**

| Date          | County   | Structure Name | Cause of Failure |
|---------------|----------|----------------|------------------|
| None reported | Franklin | --             | --               |

Source: Mississippi Department of Environmental Quality

## **PROBABILITY OF FUTURE OCCURRENCES**

Given the current dam inventory and historic data, a dam breach is unlikely (less than 1 percent annual probability) in the future. As has been demonstrated in the past, regular monitoring is necessary to prevent these events.

### **C.2.2 Erosion**

#### **LOCATION AND SPATIAL EXTENT**

Erosion in Franklin County is typically caused by flash flooding events. Unlike coastal areas, areas of concern for erosion in Franklin County are primarily rivers/streams and reservoirs. Generally, vegetation also helps to prevent erosion in the area, but in recent years, erosion has become a growing threat to many of the participating counties and jurisdictions.

At this time, there is no regional or state-level data available on localized areas of erosion so it is a challenge to identify particularly prone areas on a wider geographic scale. However, a few areas of concern were reported by members of the hazard mitigation council and other local sources. Locations along the Mississippi River are known to be especially at-risk, but there are locations in many areas within the region where erosion is prominent.

#### **HISTORICAL OCCURRENCES**

Several sources were vetted to identify areas of erosion in Franklin County. This includes searching local newspapers, interviewing local officials, and reviewing previous hazard mitigation plans. The locations identified above are representative of areas where erosion has taken place in the past.

These incidents have caused major problems as bridges have become damaged in many instances and made unsafe for emergency services vehicles to cross during and after storm events. This delays response times and critical life-safety support. In addition, the shutdown of roads has hurt local communities economically as trade and commerce are temporarily shut down as bridges are repaired. It has also caused disruption to daily activities for local school boards who must re-route buses around affected areas, causing additional fuel resources to be expended and increasing drive times for students.

#### **PROBABILITY OF FUTURE OCCURRENCES**

Erosion remains a natural, dynamic, and continuous process for Franklin County, and it will continue to occur. The annual probability level assigned for erosion is possible (between 1 and 10 percent annually).

### **C.2.3 Flood**

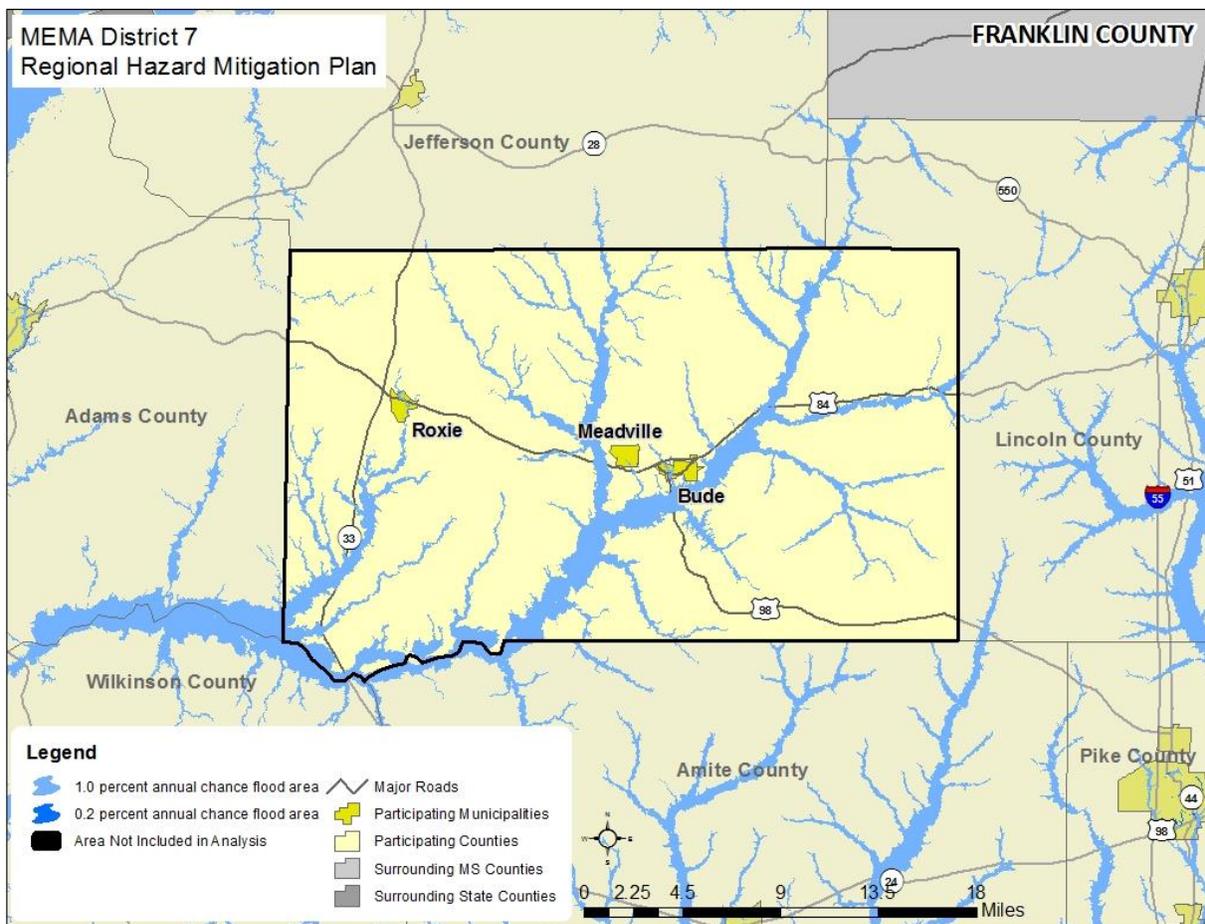
#### **LOCATION AND SPATIAL EXTENT**

There are areas in Franklin County that are susceptible to flood events. Special flood hazard areas in the county were mapped using Geographic Information System (GIS) and FEMA Digital Flood Insurance Rate

Maps (DFIRM).<sup>2</sup> This includes Zone A (1-percent annual chance floodplain), Zone AE (1-percent annual chance floodplain with elevations), and Zone X-500 (0.2-percent annual chance floodplain). According to GIS analysis, of the 563 square miles that make up Franklin County, there are 70.39 square miles of land in zones A and AE (1-percent annual chance floodplain/100-year floodplain) and 0.00 square miles of land in zone X-500 (0.2 percent annual change floodplain/500-year floodplain).

These flood zone values account for 12.5 percent of the total land area in Franklin County. It is important to note that while FEMA digital flood data is recognized as best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Flooding and flood-related losses often do occur outside of delineated special flood hazard areas. **Figure C.4** illustrates the location and extent of currently mapped special flood hazard areas for Franklin County based on best available FEMA Digital Flood Insurance Rate Map (DFIRM) data.

**FIGURE C.4: SPECIAL FLOOD HAZARD AREAS IN FRANKLIN COUNTY**



Source: Federal Emergency Management Agency

<sup>2</sup> The county-level DFIRM data used for Franklin County were updated in 2010.

**HISTORICAL OCCURRENCES**

Floods were at least partially responsible for five disaster declarations in Franklin County in 1972, 1973, 1974, 1983, and 2003.<sup>3</sup> Information from the National Climatic Data Center was used to ascertain additional historical flood events. The National Climatic Data Center reported a total of 22 events in Franklin County since 1998.<sup>4</sup> A summary of these events is presented in **Table C.6**. These events accounted for almost \$3.1 million (2017 dollars) in property damage.<sup>5</sup> Specific information on flood events, including date, type of flooding, and deaths and injuries, can be found in **Table C.7**.

**TABLE C.6: SUMMARY OF FLOOD OCCURRENCES IN FRANKLIN COUNTY**

| Location                     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Bude                         | 5                     | 0/0             | \$1,389,425            | \$154,381                  |
| Meadville                    | 6                     | 0/0             | \$1,159,389            | \$61,020                   |
| Roxie                        | 0                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area          | 11                    | 0/0             | \$512,599              | \$32,037                   |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>22</b>             | <b>0/0</b>      | <b>\$3,061,413</b>     | <b>\$247,438</b>           |

Source: National Climatic Data Center

**TABLE C.7: HISTORICAL FLOOD EVENTS IN FRANKLIN COUNTY**

| Location                   | Date       | Type        | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-------------|-----------------|------------------|
| <b>Bude</b>                |            |             |                 |                  |
| BUDE                       | 2/22/2008  | Flash Flood | 0/0             | \$1,155,088      |
| BUDE                       | 9/2/2008   | Flash Flood | 0/0             | \$55,883         |
| BUDE                       | 9/3/2008   | Flash Flood | 0/0             | \$5,588          |
| BUDE                       | 12/14/2009 | Flash Flood | 0/0             | \$13,588         |
| BUDE                       | 1/10/2013  | Flash Flood | 0/0             | \$159,278        |
| <b>Meadville</b>           |            |             |                 |                  |
| MEADVILLE                  | 7/14/1998  | Flash Flood | 0/0             | \$0              |
| MEADVILLE                  | 2/5/2004   | Flash Flood | 0/0             | \$26,265         |
| MEADVILLE                  | 5/14/2004  | Flash Flood | 0/0             | \$0              |
| MEADVILLE                  | 9/2/2008   | Flash Flood | 0/0             | \$1,117,655      |
| MEADVILLE                  | 2/2/2016   | Flash Flood | 0/0             | \$10,313         |
| MEADVILLE                  | 2/3/2016   | Flood       | 0/0             | \$5,156          |
| <b>Roxie</b>               |            |             |                 |                  |
| None reported              | --         | --          | --              | --               |
| <b>Unincorporated Area</b> |            |             |                 |                  |
| COUNTYWIDE                 | 3/2/2001   | Flash Flood | 0/0             | \$13,878         |

<sup>3</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>4</sup> These flood events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported. As additional local data becomes available, this hazard profile will be amended.

<sup>5</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| Location    | Date       | Type        | Deaths/Injuries | Property Damage* |
|-------------|------------|-------------|-----------------|------------------|
| COUNTYWIDE  | 9/26/2002  | Flash Flood | 0/0             | \$1,351          |
| LITTLE SPGS | 2/21/2003  | Flash Flood | 0/0             | \$6,677          |
| COUNTYWIDE  | 2/21/2003  | Flash Flood | 0/0             | \$4,006          |
| LUCIEN      | 2/21/2008  | Flash Flood | 0/0             | \$346,526        |
| HAMBURG     | 9/2/2008   | Flash Flood | 0/0             | \$111,766        |
| LITTLE SPGS | 3/8/2011   | Flash Flood | 0/0             | \$8,754          |
| LITTLE SPGS | 9/29/2012  | Flash Flood | 0/0             | \$4,227          |
| HAMBURG     | 10/31/2015 | Flash Flood | 0/0             | \$2,056          |
| EDDICETON   | 2/2/2016   | Flash Flood | 0/0             | \$10,313         |
| FRANKLIN    | 8/12/2016  | Flash Flood | 0/0             | \$3,046          |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

**HISTORICAL SUMMARY OF INSURED FLOOD LOSSES**

According to FEMA flood insurance policy records as of March 31, 2017, there has been one flood loss reported in Franklin County through the National Flood Insurance Program (NFIP) since 1978, totaling almost \$7,000 in claims payments. A summary of these figures for the county is provided in **Table C.8**. It should be emphasized that these numbers include only those losses to structures that were insured through the NFIP policies, and for losses in which claims were sought and received. It is likely that many additional instances of flood loss in Franklin County were either uninsured, denied claims payment, or not reported.

**TABLE C.8: SUMMARY OF INSURED FLOOD LOSSES IN FRANKLIN COUNTY**

| Location                     | Number of Policies | Flood Losses | Claims Payments   |
|------------------------------|--------------------|--------------|-------------------|
| Bude*                        | --                 | --           | --                |
| Meadville*                   | --                 | --           | --                |
| Roxie                        | 1                  | 0            | \$0.00            |
| Unincorporated Area          | 9                  | 1            | \$6,854.25        |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>10</b>          | <b>1</b>     | <b>\$6,854.25</b> |

\*These communities do not participate in the NFIP. Therefore, no values are reported.

Source: National Flood Insurance Program

**REPETITIVE LOSS PROPERTIES**

According to the Mississippi Emergency Management Agency, there is one non-mitigated repetitive loss property located in Franklin County, which accounted for three losses and more than \$18,000 in claims payments under the NFIP. The average claim amount for this property is \$6,090. The property is single family. Without mitigation, this property will likely continue to experience flood losses. **Table C.9** presents detailed information on repetitive loss properties and NFIP claims and policies for Franklin County.

**TABLE C.9: REPETITIVE LOSS PROPERTIES IN FRANKLIN COUNTY**

| Location | Number of Properties | Types of Properties | Number of Losses | Building Payments | Content Payments | Total Payments | Average Payment |
|----------|----------------------|---------------------|------------------|-------------------|------------------|----------------|-----------------|
| Bude*    | --                   | --                  | --               | --                | --               | --             | --              |

| Location                     | Number of Properties | Types of Properties | Number of Losses | Building Payments  | Content Payments | Total Payments     | Average Payment   |
|------------------------------|----------------------|---------------------|------------------|--------------------|------------------|--------------------|-------------------|
| Meadville*                   | --                   | --                  | --               | --                 | --               | --                 | --                |
| Roxie                        | 0                    | --                  | 0                | \$0.00             | \$0.00           | \$0.00             | \$0.00            |
| Unincorporated Area          | 1                    | 1 single family     | 3                | \$18,268.81        | \$0.00           | \$18,268.81        | \$6,089.60        |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>1</b>             |                     | <b>3</b>         | <b>\$18,268.81</b> | <b>\$0.00</b>    | <b>\$18,268.81</b> | <b>\$6,089.60</b> |

\*These communities do not participate in the NFIP. Therefore, no values are reported.

Source: National Flood Insurance Program

**PROBABILITY OF FUTURE OCCURRENCES**

Flood events will remain a threat in Franklin County, and the probability of future occurrences will remain highly likely (100 percent annual probability). The probability of future flood events based on magnitude and according to best available data is illustrated in the figure above, which indicates those areas susceptible to the 1-percent annual chance flood (100-year floodplain).

It can be inferred from the floodplain location maps, previous occurrences, and repetitive loss properties that risk varies throughout the county. For example, areas in the southwestern and central portions of the county have more floodplain and thus a higher risk of flood than the rest of the county. Flood is not the greatest hazard of concern but will continue to occur and cause damage. Therefore, mitigation actions may be warranted, particularly for repetitive loss properties.

**FIRE-RELATED HAZARDS**

**C.2.4 Drought**

**LOCATION AND SPATIAL EXTENT**

Drought typically covers a large area and cannot be confined to any geographic or political boundaries. Furthermore, it is assumed that Franklin County would be uniformly exposed to drought, making the spatial extent potentially widespread. It is also notable that drought conditions typically do not cause significant damage to the built environment but may exacerbate wildfire conditions.

**HISTORICAL OCCURRENCES**

According to the U.S. Drought Monitor, Franklin County had drought levels of Severe or worse in 8 of the last 17 years (January 2000-December 2016). **Table C.10** shows the most severe drought classification for each year, according to U.S. Drought Monitor classifications. It should be noted that the U.S. Drought Monitor also estimates what percentage of the county is in each classification of drought severity. For example, the most severe classification reported may be exceptional but a majority of the county may actually be in a less severe condition.

**TABLE C.10: HISTORICAL DROUGHT OCCURRENCES IN FRANKLIN COUNTY**

Abnormally Dry (D0) Moderate Drought (D1) Severe Drought (D2) Extreme Drought (D3) Exceptional Drought (D4)



| Year | Franklin County |
|------|-----------------|
| 2000 | EXCEPTIONAL     |
| 2001 | MODERATE        |
| 2002 | MODERATE        |
| 2003 | ABNORMAL        |
| 2004 | ABNORMAL        |
| 2005 | MODERATE        |
| 2006 | SEVERE          |
| 2007 | SEVERE          |
| 2008 | SEVERE          |
| 2009 | MODERATE        |
| 2010 | SEVERE          |
| 2011 | EXTREME         |
| 2012 | ABNORMAL        |
| 2013 | ABNORMAL        |
| 2014 | MODERATE        |
| 2015 | SEVERE          |
| 2016 | SEVERE          |

Source: United States Drought Monitor

Some additional anecdotal information was provided from the National Climatic Data Center on droughts in Franklin County.

**Summer to Fall 2006** – During a four and a half month period, from June to the middle of October, abnormally dry conditions prevailed across most of the Jackson, MS County Warning Area (CWA). Widespread drought conditions were reported across the area during this time period. The U.S. Drought Monitor classified the drought as extreme (D3) over Southeast Mississippi. Drought conditions in the region peaked in intensity during early August over this area.

**Summer 2007** – During the month of June, the drought peaked across the region. It held firm across the same areas since May with no expansion. What did expand was the severity as by the end of June, most of Central and East-Central Mississippi was now in extreme drought (D3) with some locations across Northeast Mississippi now experiencing exceptional drought (D4). The month of June did not offer much rain as most of the forecast area saw less than 40% of the normal rainfall.

**Summer to Fall 2010** – Very dry conditions continued across central Mississippi during most of October. There were some rains that came late in the month which provided some temporary relief. Rainfall amounts ranged from a half to two inches with locally higher amounts. Most locations were 1 to 3 inches below normal for the month. The dry stretch resulted in severe (D2) drought conditions to expand during the month with even the portions of extreme (D3) drought conditions expanding as well. Crops were put under stress under the warm and dry conditions.

**Fall 2015** – The very dry conditions continued across Central Mississippi in October. The extended dry stretch resulted in an area of Severe (D2) drought developing across the area by October 6th. The drought intensified and Extreme (D3) drought conditions developed by October 13th. Approximately 25 to 50 percent of normal rainfall occurred across this area from August into mid-October. Crops were put under more stress from the dry and hot conditions.

**Fall to Winter 2016** – Dry conditions continued into November, which created continued stress on crops. The drought continued to get worse across the state through the month before some relief came in the form of showers and thunderstorms near the end of November.

**PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that Franklin County has a probability level of possible (between 1 and 10 percent annual probability) for future drought events. However, the extent (or magnitude) of drought and the amount of geographic area covered by drought, varies with each year. Historic information indicates that there is a much lower probability for extreme, long-lasting drought conditions.

**C.2.5 Lightning**

**LOCATION AND SPATIAL EXTENT**

Lightning occurs randomly, therefore it is impossible to predict where and with what frequency it will strike. It is assumed that all of Franklin County is uniformly exposed to lightning.

**HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, there have been three recorded lightning events in Franklin County since 2002.<sup>6</sup> These events resulted in almost \$95,000 (2017 dollars) in damages, as listed in summary **Table C.11**.<sup>7</sup> Detailed information on historical lightning events can be found in **Table C.12**.

It is certain that more than three events have impacted the county. Many of the reported events are those that cause damage, and it should be expected that damages are likely much higher for this hazard than what is reported.

**TABLE C.11: SUMMARY OF LIGHTNING OCCURRENCES IN FRANKLIN COUNTY**

| Location  | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-----------|-----------------------|-----------------|------------------------|----------------------------|
| Bude      | 1                     | 0/0             | \$34,190               | \$2,279                    |
| Meadville | 1                     | 0/0             | \$8,215                | \$822                      |

<sup>6</sup> These lightning events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is certain that additional lightning events have occurred in Franklin County. As additional local data becomes available, this hazard profile will be amended.

<sup>7</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| Location                     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Roxie                        | 0                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area          | 1                     | 0/0             | \$52,339               | \$13,085                   |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>3</b>              | <b>0/0</b>      | <b>\$94,744</b>        | <b>\$16,186</b>            |

Source: National Climatic Data Center

**TABLE C.12: HISTORICAL LIGHTNING OCCURRENCES IN FRANKLIN COUNTY**

| Location                   | Date      | Deaths/Injuries | Property Damage* | Details  |
|----------------------------|-----------|-----------------|------------------|--|
| <b>Bude</b>                |           |                 |                  |  |
| BUDE                       | 3/26/2002 | 0/0             | \$34,190         | Lightning struck a barn and caught it on fire. Barn was destroyed.   |
| <b>Meadville</b>           |           |                 |                  |  |
| MEADVILLE                  | 6/11/2007 | 0/0             | \$8,215          | Lightning struck a tree and caused a power surge to the house adjacent to it. Some interior electrical damage was done. The bark from the tree also exploded and broke out several windows at the house. |
| <b>Roxie</b>               |           |                 |                  |  |
| None reported              | --        | --              | --               | --   |
| <b>Unincorporated Area</b> |           |                 |                  |  |
| LITTLE SPGS                | 7/20/2013 | 0/0             | \$52,339         | Lightning set a residence on fire just north of the Smithdale community.   |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

### **PROBABILITY OF FUTURE OCCURRENCES**

Although there was not a high number of historical lightning events reported in Franklin County via NCDC data, it is a regular occurrence accompanied by thunderstorms. In fact, lightning events will assuredly happen on an annual basis, though not all events will cause damage. According to Vaisala's U.S. National Lightning Detection Network (NLDN), Franklin County is located in an area of the country that experienced an average of 12 to 20 lightning flashes per square mile per year between 2007 and 2016. Therefore, the probability of future events is highly likely (100 percent annual probability). It can be expected that future lightning events will continue to threaten life and cause minor property damages throughout the county.

## **C.2.6 Wildfire**

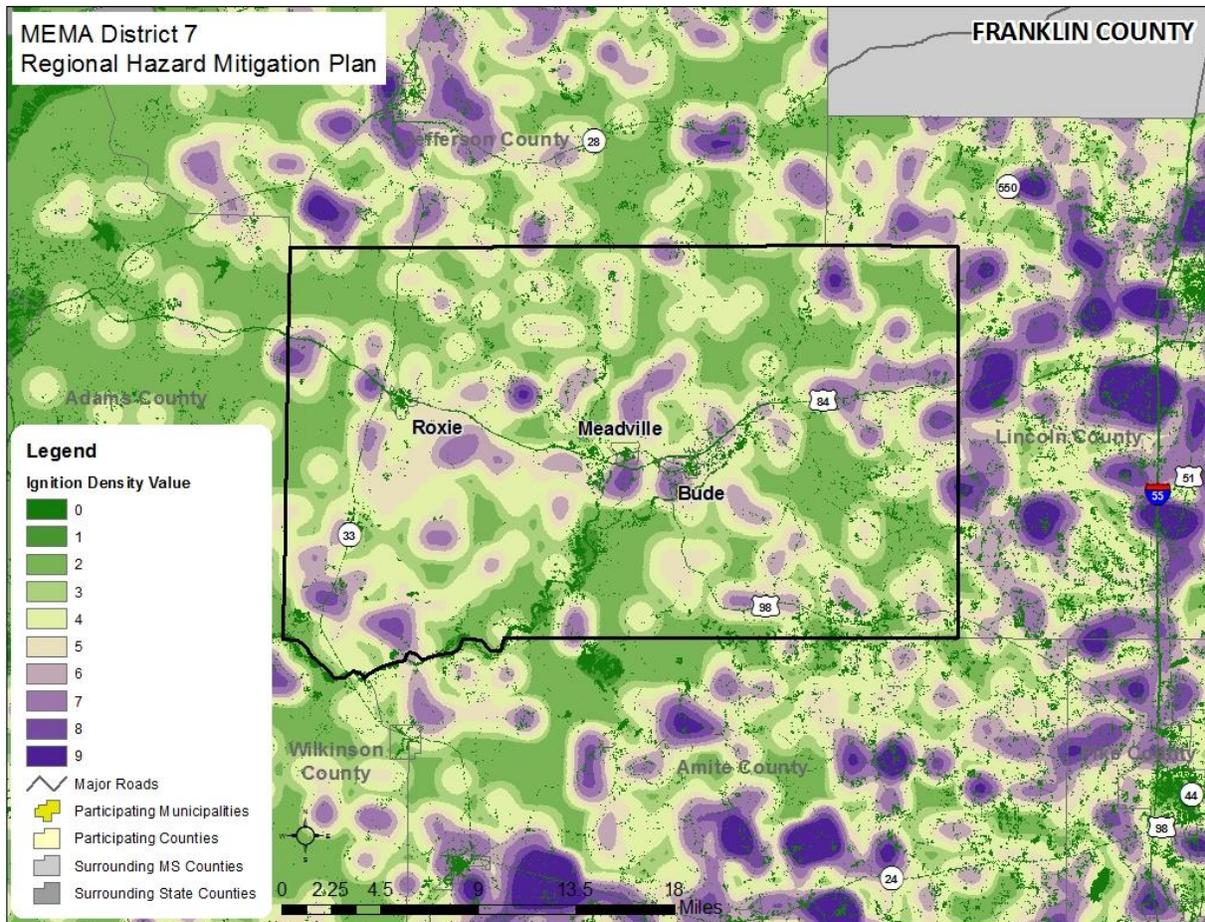
### **LOCATION AND SPATIAL EXTENT**

The entire county is at risk to a wildfire occurrence. However, several factors such as drought conditions or high levels of fuel on the forest floor, may make a wildfire more likely. Furthermore, areas in the urban-wildland interface are particularly susceptible to fire hazard as populations abut formerly undeveloped areas. The Wildfire Ignition Density data shown in the figure below give an indication of historic location.

**HISTORICAL OCCURRENCES**

**Figure C.5** shows the Wildfire Ignition Density in Franklin County based on data from the Southern Wildfire Risk Assessment. This data is based on historical fire ignitions and the likelihood of a wildfire igniting in an area. Occurrence is derived by modeling historic wildfire ignition locations to create an average ignition rate map. This is measured in the number of fires per year per 1,000 acres.<sup>8</sup>

**FIGURE C.5: WILDFIRE IGNITION DENSITY IN FRANKLIN COUNTY**



Source: Southern Wildfire Risk Assessment

Based on data from the Mississippi Forestry Commission from 2007 to 2016, Franklin County experienced an average of 14.5 wildfires annually which burned a combined 116.1 acres per year. The data indicate that most of these fires were small to moderate in size, averaging about 8.0 acres per fire. **Table C.13** provides a summary of wildfire occurrences in Franklin County and **Table C.14** lists the number of reported wildfire occurrences in the county between the years 2007 and 2016.

<sup>8</sup> Southern Wildfire Risk Assessment, 2014.

**TABLE C.13: SUMMARY TABLE OF ANNUAL WILDFIRE OCCURRENCES (2007-2016)\***

|   | Franklin County |
|---|-----------------|
| Average Number of Fires per year        | 14.5            |
| Average Number of Acres Burned per year | 116.1           |
| Average Number of Acres Burned per fire | 8.0             |

\*These values reflect averages over a 10-year period.

Source: Mississippi Forestry Commission

**TABLE C.14: HISTORICAL WILDFIRE OCCURRENCES IN FRANKLIN COUNTY**

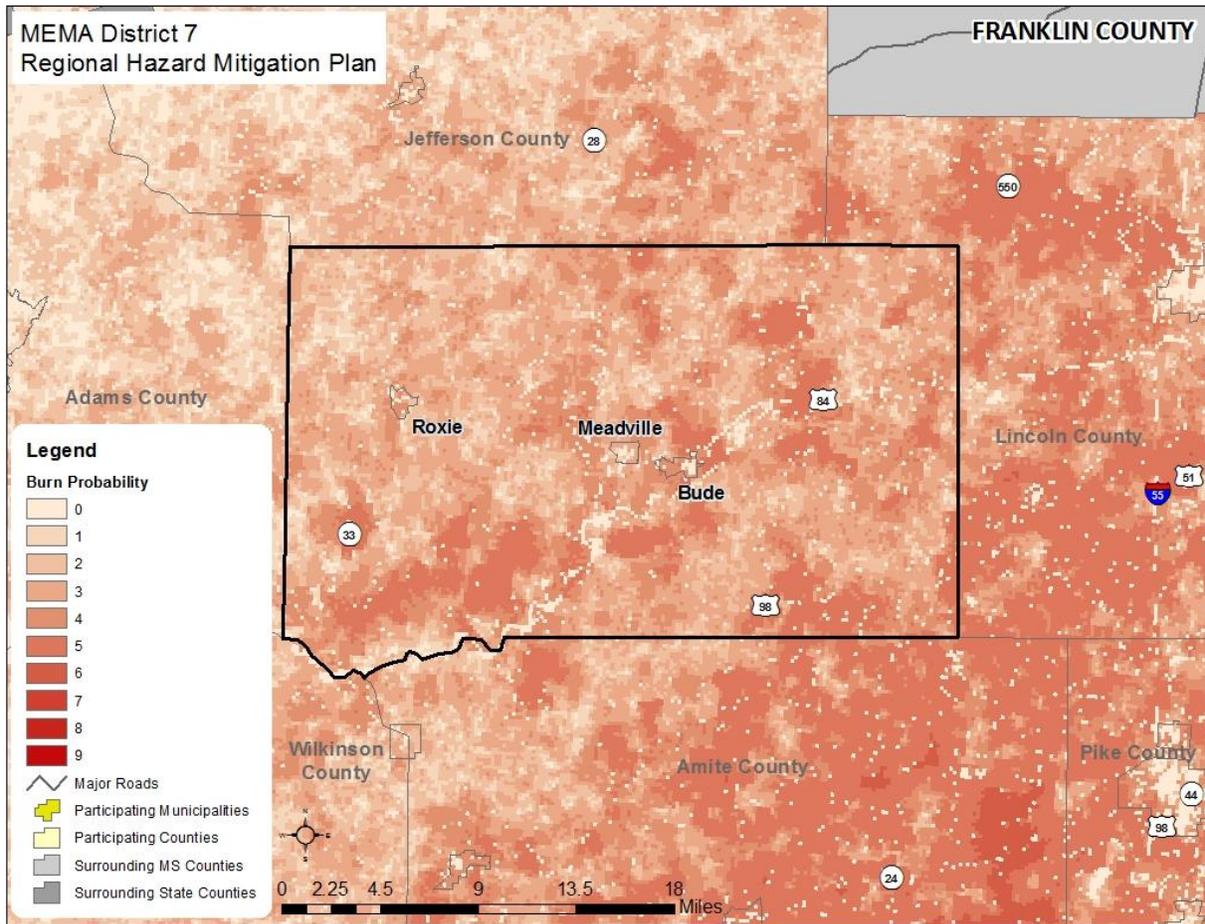
| Year                   | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|------------------------|------|------|------|------|------|------|------|------|------|------|
| <b>Franklin County</b> |      |      |      |      |      |      |      |      |      |      |
| Number of Fires        | 22   | 24   | 20   | 9    | 39   | 9    | 8    | 3    | 3    | 8    |
| Number of Acres Burned | 237  | 248  | 147  | 111  | 247  | 51   | 33   | 22   | 45   | 20   |

Source: Mississippi Forestry Commission

### **PROBABILITY OF FUTURE OCCURRENCES**

Wildfire events will be an ongoing occurrence in Franklin County. **Figure C.6** shows that there is some probability a wildfire will occur throughout the county. However, the likelihood of wildfires increases during drought cycles and abnormally dry conditions. Fires are likely to stay small in size but could increase due to local climate and ground conditions. Dry, windy conditions with an accumulation of forest floor fuel (potentially due to ice storms or lack of fire) could create conditions for a large fire that spreads quickly. It should also be noted that some areas do vary somewhat in risk. For example, highly developed areas are less susceptible unless they are located near the urban-wildland boundary. The risk will also vary due to assets. Areas in the urban-wildland interface will have much more property at risk, resulting in increased vulnerability and need to mitigate compared to rural, mainly forested areas. The probability assigned to Franklin County for future wildfire events is highly likely (100 percent annual probability).

**FIGURE C.6: BURN PROBABILITY IN FRANKLIN COUNTY**



Source: Southern Wildfire Risk Assessment

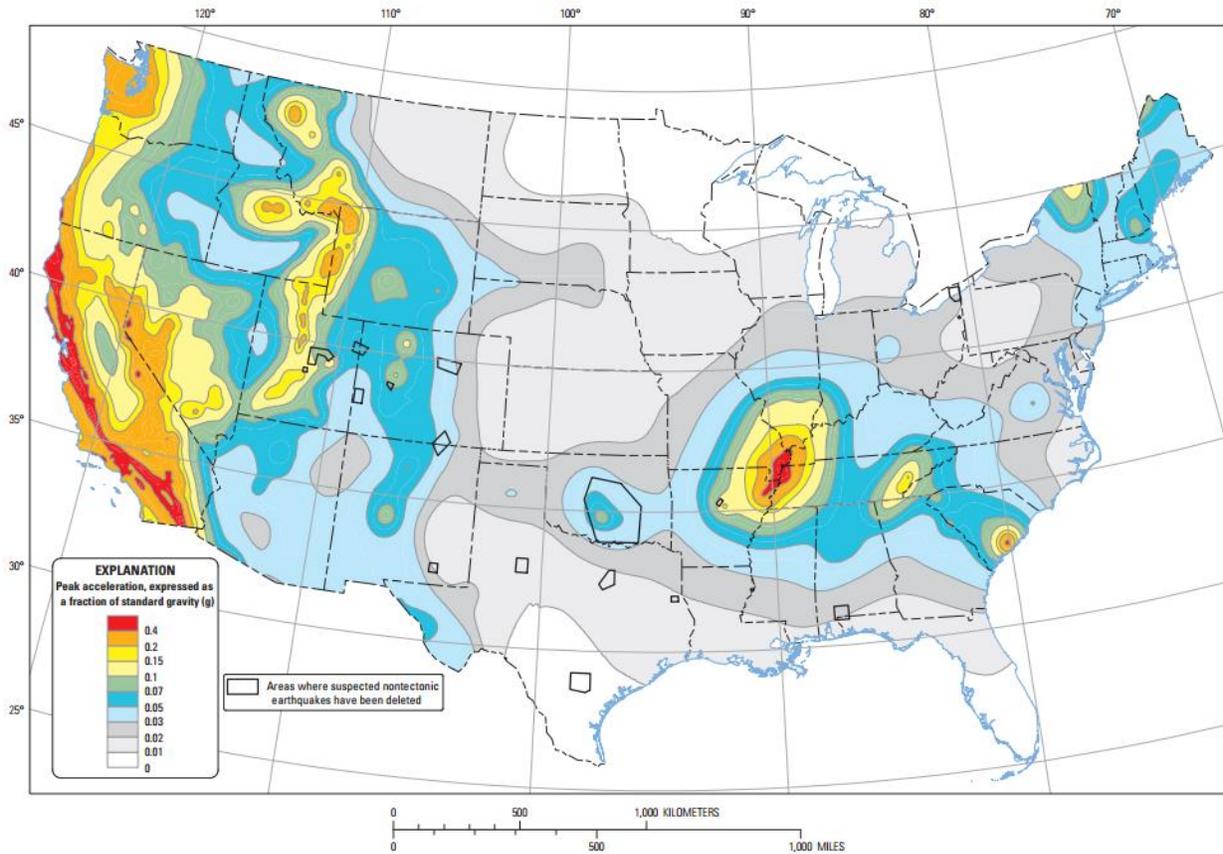
## ***GEOLOGIC HAZARDS***

### **C.2.7 Earthquake**

#### ***LOCATION AND SPATIAL EXTENT***

Figure C.7 shows the intensity level associated with Franklin County, based on the national USGS map of peak acceleration with 10 percent probability of exceedance in 50 years. It is the probability that ground motion will reach a certain level during an earthquake. The data show peak horizontal ground acceleration (the fastest measured change in speed, for a particle at ground level that is moving horizontally due to an earthquake) with a 10 percent probability of exceedance in 50 years. The map was compiled by the U.S. Geological Survey (USGS) Geologic Hazards Team, which conducts global investigations of earthquake, geomagnetic, and landslide hazards. According to this map, Franklin County lies within an approximate zone of level “0.01” to “0.03” ground acceleration. This indicates that the county exists within an area of low seismic risk.

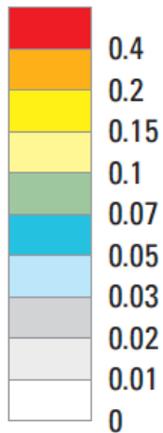
**FIGURE C.7: PEAK ACCELERATION WITH 10 PERCENT PROBABILITY OF EXCEEDANCE IN 50 YEARS**



**Ten-percent probability of exceedance in 50 years map of peak ground acceleration**

**EXPLANATION**

Peak acceleration, expressed as a fraction of standard gravity (g)



**Areas where suspected nontectonic earthquakes have been deleted**

Source: United States Geological Survey, 2014

The primary source of potential damage to Franklin County from an earthquake is the New Madrid Seismic Zone (NMSZ). Historically, a series of earthquakes in 1811 and 1812 demonstrated that this fault zone can produce high magnitude seismic events, sometimes on the scale of a 7.5-8.0 on the Richter scale. The biggest challenge with earthquakes that occur in this area of seismic activity is predicting the recurrence of earthquakes emanating from this zone. Although the magnitude of earthquakes from the NMSZ can be large, they occur very irregularly and fairly infrequently. This makes it extremely difficult to project when they will occur.

It should also be noted that the State of Mississippi Hazard Mitigation Plan identifies certain areas of concern for liquefaction and lists the counties and corresponding zones within those counties that have the highest liquefaction potential. Franklin County does not have any identified liquefaction potential risk.

**HISTORICAL OCCURRENCES**

No earthquakes are known to have affected Franklin County since 1638. **Table C.15** provides a summary of earthquake events reported by the National Centers for Environmental Information (formerly National Geophysical Data Center) between 1638 and 1985, and **Figure C.8** presents a map showing earthquakes whose epicenters have occurred near the county between 1985 and 2015 (no earthquakes occurred within the county’s boundaries during this period). **Table C.16** presents a detailed occurrence of each event including the date, distance for the epicenter, magnitude and Modified Mercalli Intensity (if known).<sup>9</sup>

**TABLE C.15: SUMMARY OF SEISMIC ACTIVITY IN FRANKLIN COUNTY**

| Location                     | Number of Occurrences | Greatest MMI Reported | Greatest Richter Scale Reported |
|------------------------------|-----------------------|-----------------------|---------------------------------|
| Bude                         | 0                     | --                    | --                              |
| Meadville                    | 0                     | --                    | --                              |
| Roxie                        | 0                     | --                    | --                              |
| Unincorporated Area          | 0                     | --                    | --                              |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>0</b>              | <b>--</b>             | <b>--</b>                       |

Source: National Centers for Environmental Information

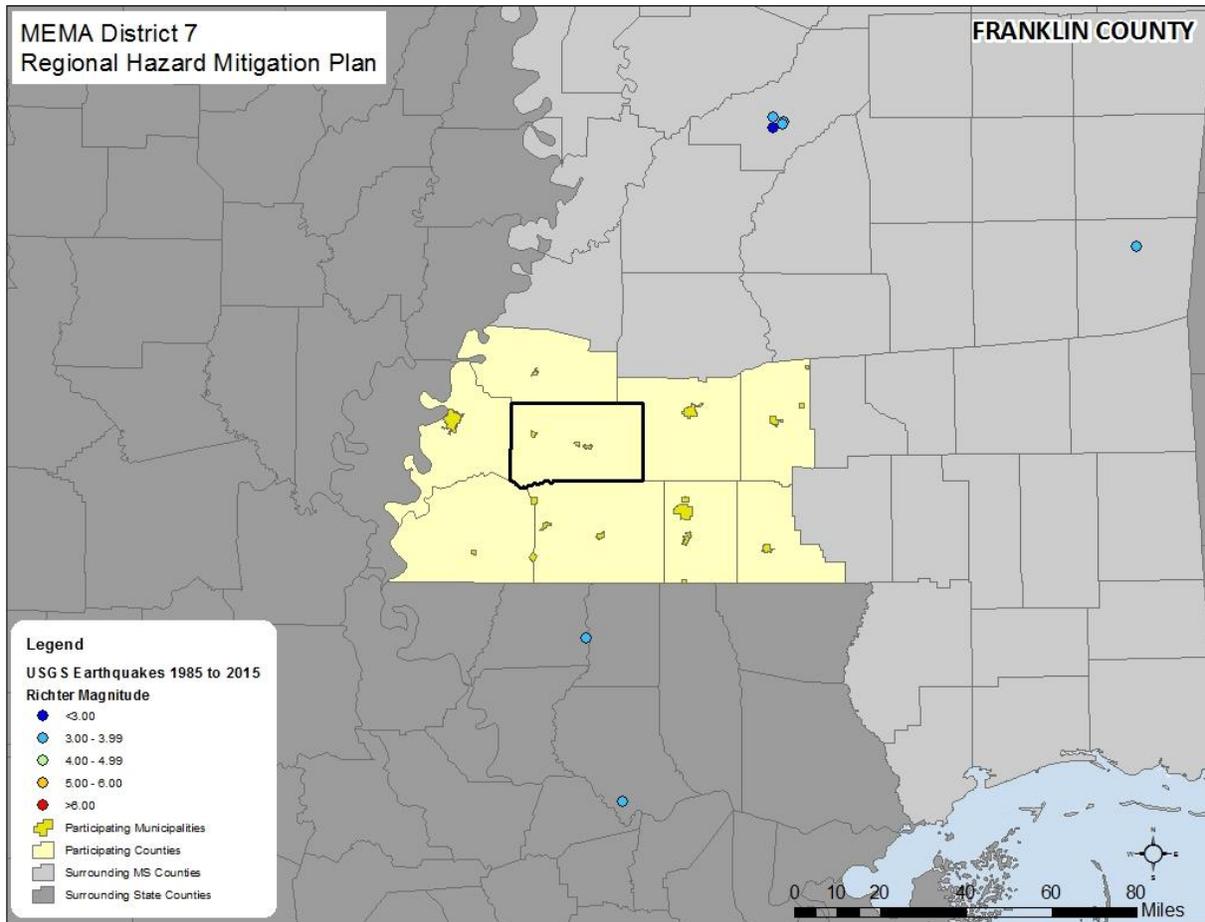
**TABLE C.16: SIGNIFICANT SEISMIC EVENTS IN FRANKLIN COUNTY (1638 -1985)**

| Location                   | Date | Epicentral Distance | Magnitude | MMI |
|----------------------------|------|---------------------|-----------|-----|
| <b>Bude</b>                |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |
| <b>Meadville</b>           |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |
| <b>Roxie</b>               |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |
| <b>Unincorporated Area</b> |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |

Source: National Centers for Environmental Information

<sup>9</sup> Due to reporting mechanisms, not all earthquakes events were recorded during this time. Furthermore, some are missing data, such as the epicenter location, due to a lack of widely used technology. In these instances, a value of “unknown” is reported.

**FIGURE C.8: HISTORIC EARTHQUAKES WITH EPICENTERS NEAR FRANKLIN COUNTY (1985-2015)**



Source: United States Geological Survey

**PROBABILITY OF FUTURE OCCURRENCES**

The probability of significant, damaging earthquake events affecting Franklin County is unlikely. However, it is certainly possible that future earthquakes resulting in light or moderate perceived shaking and damages will affect the county much more frequently. The annual probability level for the county is estimated to be less than 1 percent (unlikely).

**WIND-RELATED HAZARDS**

**C.2.8 Extreme Heat**

**LOCATION AND SPATIAL EXTENT**

Heat waves typically impact a large area and cannot be confined to any geographic or political boundaries. Therefore, the entire county is considered to be equally susceptible to extreme heat.

## **HISTORICAL OCCURRENCES**

The National Climatic Data Center was used to determine historical heat wave occurrences in the county.

**August 2005** – A "HOT" stretch of weather occurred during the middle to later part of August 2005. This "Heat Wave" covered a large portion of the south and lasted for a period of about 10 days. Each of these days had high temperatures consistently between 95 and 100 degrees, with 1 or 2 of these days actually reaching 100 degrees or more. Additionally, overnight lows remained warm with lower and middle 70s recorded. This is the first time since August 2000 where 100 degree temperatures were reached in this area as well as having such an extended period of "HOT" weather.

**July 2006** – A small "heat wave" gripped the region during the middle of July with high temperature ranging from the upper 90s to around 100 degrees for five days with overnight lows only reaching the middle 70s. The hottest temperatures during this period occurred from the Mississippi Delta, across northern Mississippi and then down to the Jackson Metro and toward Meridian. This area peaked between 100 and 102 degrees for at least two days during the hot five day stretch.

**August 2007** – During the first half of August, a heat wave took hold of the region and brought some of the warmest temperatures since the summer of 2000. This heat wave began around August 5th and lasted until the 16th. Between August 10th and 15th, the entire area reached 100 degrees or higher. Twenty-three record highs were also set during this time. As the temperature soared each day, high relative humidities resulted in heat index values between 105 and 112 degrees.

**August 2010** – A four day stretch of extreme temperatures occurred across the region to start off the month of August. High pressure was firmly entrenched across the southeast and allowed temperatures to soar into the triple digits across much of the region. Across the NWS Jackson, MS forecast area, 19 record highs were set between August 1st and 4th. On August 2nd, the 2nd warmest average temperature was recorded. The low was 78 and the high 105, this resulted in an average temperature of 91.5 degrees. Additionally, relatively high humidity levels made conditions even more oppressive, with heat index readings surpassing 110 degrees in many areas. This extreme heat resulted in 3 fatalities across the forecast area.

## **PROBABILITY OF FUTURE OCCURRENCES**

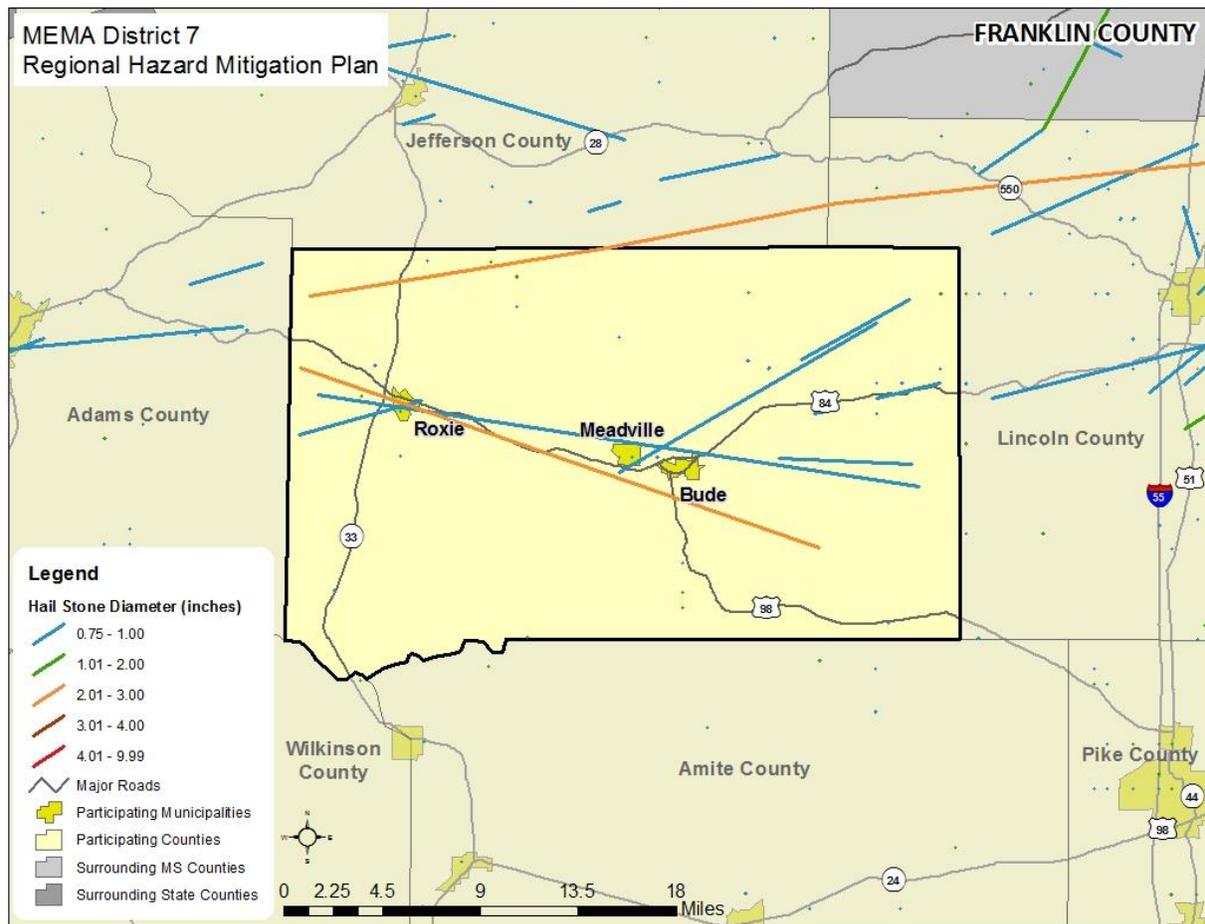
Based on historical occurrence information, it is assumed that all of Franklin County has a probability level of likely (between 10 and 100 percent annual probability) for future heat wave events.

## **C.2.9 Hailstorm**

### **LOCATION AND SPATIAL EXTENT**

Hailstorms frequently accompany thunderstorms, so their locations and spatial extents coincide. It is assumed that Franklin County is uniformly exposed to severe thunderstorms; therefore, all areas of the county are equally exposed to hail which may be produced by such storms. With that in mind, **Figure C.9** shows the location of hail events that have impacted the county between 1955 and 2015.

FIGURE C.9: HAILSTORM TRACKS IN FRANKLIN COUNTY



Source: National Weather Service Storm Prediction Center

### HISTORICAL OCCURRENCES

According to the National Climatic Data Center, 65 recorded hailstorm events have affected Franklin County since 1969.<sup>10</sup> **Table C.17** is a summary of the hail events in Franklin County. **Table C.18** provides detailed information about each event that occurred in the county. In all, hail occurrences resulted in approximately \$602,000 (2017 dollars) in property damages.<sup>11</sup> Hail ranged in diameter from 0.75 inches to 2.75 inches. It should be noted that hail is notorious for causing substantial damage to cars, roofs, and other areas of the built environment that may not be reported to the National Climatic Data Center. Therefore, it is likely that damages are greater than the reported value.

<sup>10</sup> These hail events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017. It is likely that additional hail events have affected Franklin County. As additional local data becomes available, this hazard profile will be amended.

<sup>11</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE C.17: SUMMARY OF HAIL OCCURRENCES IN FRANKLIN COUNTY**

| Location                     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Bude                         | 13                    | 0/0             | \$61,460               | \$2,561                    |
| Meadville                    | 14                    | 0/0             | \$21,050               | \$915                      |
| Roxie                        | 8                     | 0/0             | \$242,586              | \$14,270                   |
| Unincorporated Area          | 30                    | 0/0             | \$277,212              | \$5,775                    |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>65</b>             | <b>0/0</b>      | <b>\$602,308</b>       | <b>\$23,521</b>            |

Source: National Climatic Data Center

**TABLE C.18: HISTORICAL HAIL OCCURRENCES IN FRANKLIN COUNTY**

| Location         | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|------------------|------------|-----------|-----------------|------------------|
| <b>Bude</b>      |            |           |                 |                  |
| Bude             | 3/31/1993  | 0.75 in.  | 0/0             | \$0              |
| BUDE             | 2/19/1996  | 0.75 in.  | 0/0             | \$0              |
| BUDE             | 5/19/1997  | 0.75 in.  | 0/0             | \$0              |
| BUDE             | 5/3/1998   | 0.75 in.  | 0/0             | \$0              |
| BUDE             | 3/26/2002  | 1.00 in.  | 0/0             | \$0              |
| BUDE             | 3/22/2005  | 1.00 in.  | 0/0             | \$0              |
| BUDE             | 4/6/2005   | 1.75 in.  | 0/0             | \$25,131         |
| BUDE             | 5/8/2006   | 2.00 in.  | 0/0             | \$36,226         |
| BUDE             | 5/11/2007  | 0.88 in.  | 0/0             | \$0              |
| BUDE             | 5/6/2009   | 0.75 in.  | 0/0             | \$0              |
| BUDE             | 4/8/2014   | 0.88 in.  | 0/0             | \$0              |
| BUDE             | 12/23/2014 | 0.75 in.  | 0/0             | \$0              |
| BUDE             | 1/21/2016  | 1.75 in.  | 0/0             | \$103            |
| <b>Meadville</b> |            |           |                 |                  |
| Meadville        | 6/10/1994  | 0.75 in.  | 0/0             | \$0              |
| MEADVILLE        | 5/3/1998   | 0.75 in.  | 0/0             | \$0              |
| MEADVILLE        | 2/27/1999  | 0.75 in.  | 0/0             | \$0              |
| MEADVILLE        | 3/10/2000  | 1.75 in.  | 0/0             | \$7,141          |
| MEADVILLE        | 4/23/2000  | 1.00 in.  | 0/0             | \$0              |
| MEADVILLE        | 3/26/2002  | 1.00 in.  | 0/0             | \$0              |
| MEADVILLE        | 3/31/2002  | 0.88 in.  | 0/0             | \$0              |
| MEADVILLE        | 7/13/2003  | 0.75 in.  | 0/0             | \$1,330          |
| MEADVILLE        | 4/6/2005   | 1.00 in.  | 0/0             | \$0              |
| MEADVILLE        | 4/6/2005   | 1.00 in.  | 0/0             | \$0              |
| MEADVILLE        | 5/14/2005  | 1.75 in.  | 0/0             | \$12,578         |
| MEADVILLE        | 2/13/2007  | 0.88 in.  | 0/0             | \$0              |
| MEADVILLE        | 6/11/2007  | 0.75 in.  | 0/0             | \$0              |
| MEADVILLE        | 2/3/2012   | 1.00 in.  | 0/0             | \$0              |
| <b>Roxie</b>     |            |           |                 |                  |
| ROXIE            | 3/10/2000  | 1.00 in.  | 0/0             | \$0              |
| ROXIE            | 7/7/2002   | 0.75 in.  | 0/0             | \$0              |
| ROXIE            | 12/4/2005  | 0.75 in.  | 0/0             | \$0              |

**ANNEX C: FRANKLIN COUNTY**

| Location                   | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-----------|-----------------|------------------|
| ROXIE                      | 5/3/2009   | 1.00 in.  | 0/0             | \$0              |
| ROXIE                      | 6/7/2011   | 1.75 in.  | 0/0             | \$21,666         |
| ROXIE                      | 7/4/2011   | 1.00 in.  | 0/0             | \$10,823         |
| ROXIE                      | 2/22/2013  | 1.00 in.  | 0/0             | \$0              |
| ROXIE                      | 3/18/2013  | 2.75 in.  | 0/0             | \$210,097        |
| <b>Unincorporated Area</b> |            |           |                 |                  |
| FRANKLIN CO.               | 1/23/1969  | 2.00 in.  | 0/0             | \$0              |
| FRANKLIN CO.               | 5/7/1975   | 0.75 in.  | 0/0             | \$0              |
| FRANKLIN CO.               | 2/24/1979  | 0.75 in.  | 0/0             | \$0              |
| FRANKLIN CO.               | 3/31/1981  | 1.75 in.  | 0/0             | \$0              |
| FRANKLIN CO.               | 3/12/1986  | 0.75 in.  | 0/0             | \$0              |
| FRANKLIN CO.               | 4/12/1986  | 1.75 in.  | 0/0             | \$0              |
| FRANKLIN CO.               | 11/26/1988 | 1.75 in.  | 0/0             | \$0              |
| FRANKLIN CO.               | 3/30/1992  | 0.80 in.  | 0/0             | \$0              |
| Knoxville                  | 3/25/1993  | 0.75 in.  | 0/0             | \$0              |
| LUCIEN                     | 2/19/1996  | 0.75 in.  | 0/0             | \$0              |
| WHITE APPLE                | 2/19/1996  | 0.75 in.  | 0/0             | \$0              |
| LUCIEN                     | 10/11/2001 | 1.75 in.  | 0/0             | \$6,880          |
| MC CALL CREEK              | 5/17/2003  | 0.75 in.  | 0/0             | \$1,333          |
| HAMBURG                    | 2/22/2005  | 1.00 in.  | 0/0             | \$0              |
| MC CALL CREEK              | 2/24/2007  | 0.75 in.  | 0/0             | \$0              |
| QUENTIN                    | 2/21/2008  | 0.75 in.  | 0/0             | \$0              |
| HAMBURG                    | 4/11/2008  | 2.75 in.  | 0/0             | \$227,652        |
| EDDICETON                  | 6/24/2008  | 0.75 in.  | 0/0             | \$0              |
| QUENTIN                    | 6/25/2008  | 1.00 in.  | 0/0             | \$0              |
| WHITE APPLE                | 5/6/2009   | 0.75 in.  | 0/0             | \$0              |
| QUENTIN                    | 5/12/2009  | 0.75 in.  | 0/0             | \$0              |
| MC CALL CREEK              | 12/31/2010 | 1.00 in.  | 0/0             | \$0              |
| LITTLE SPGS                | 4/3/2012   | 1.00 in.  | 0/0             | \$0              |
| OLDENBURG                  | 3/18/2013  | 1.75 in.  | 0/0             | \$21,010         |
| OLDENBURG                  | 3/27/2014  | 0.88 in.  | 0/0             | \$0              |
| LITTLE SPGS                | 3/17/2016  | 2.75 in.  | 0/0             | \$10,268         |
| QUENTIN                    | 3/17/2016  | 1.00 in.  | 0/0             | \$0              |
| KIRBY                      | 3/30/2016  | 1.00 in.  | 0/0             | \$0              |
| KIRBY                      | 4/1/2016   | 0.88 in.  | 0/0             | \$0              |
| GARDEN CITY                | 1/21/2017  | 1.75 in.  | 0/0             | \$10,069         |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

**PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that the probability of future hail occurrences is highly likely (100 percent annual probability). Since hail is an atmospheric hazard, it is assumed that Franklin County has equal exposure to this hazard. It can be expected that future hail events will continue to cause minor damage to property and vehicles throughout the county.

## C.2.10 Hurricane and Tropical Storm

### ***LOCATION AND SPATIAL EXTENT***

Hurricanes and tropical storms threaten the entire Atlantic and Gulf seaboard of the United States. While coastal areas are most directly exposed to the brunt of landfalling storms, their impact is often felt hundreds of miles inland and they can affect Franklin County. All areas in Franklin County are equally susceptible to hurricane and tropical storms.

### ***HISTORICAL OCCURRENCES***

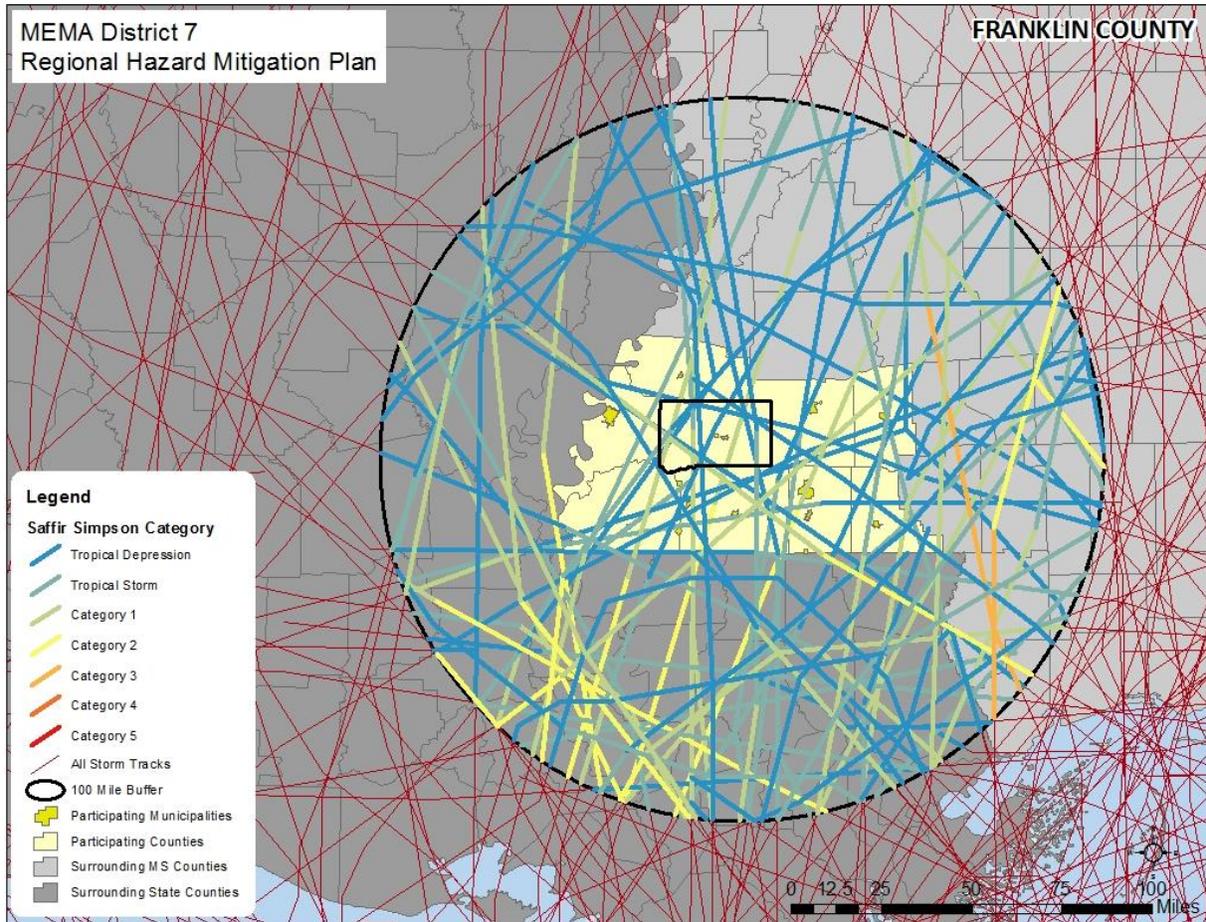
According to the National Hurricane Center's historical storm track records, 86 hurricane or tropical storm/depression tracks have passed within 100 miles of the MEMA District 7 Region since 1854.<sup>12</sup> This includes: 35 hurricanes, 21 tropical storms, and 30 tropical depressions.

A total of 61 tracks passed directly through the region as shown in **Figure C.10**. **Table C.19** provides the date of occurrence, name (if applicable), maximum wind speed (as recorded within 100 miles of the MEMA District 7 Region) and category of the storm based on the Saffir-Simpson Scale for each event.

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<sup>12</sup> These storm track statistics include tropical depressions, tropical storms, and hurricanes. Lesser events may still cause significant local impact in terms of rainfall and high winds.

**FIGURE C.10: HISTORICAL HURRICANE STORM TRACKS WITHIN 100 MILES OF THE MEMA DISTRICT 7 REGION**



Source: National Oceanic and Atmospheric Administration; National Hurricane Center

**TABLE C.19: HISTORICAL STORM TRACKS WITHIN 100 MILES OF THE MEMA 7 DISTRICT REGION (1850–2016)**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/21/1854          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/5/1855           | NOT NAMED  | Not Available              | Tropical Depression |
| 8/11/1856          | UNNAMED    | 85.03                      | Category 2          |
| 10/2/1860          | UNNAMED    | 89.03                      | Category 2          |
| 8/18/1861          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/16/1862          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/30/1863          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/5/1869           | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/12/1872          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/18/1875          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/1/1879           | UNNAMED    | 89.03                      | Category 2          |
| 10/7/1879          | UNNAMED    | 58.6                       | Tropical Storm      |

**ANNEX C: FRANKLIN COUNTY**

| <b>Date of Occurrence</b> | <b>Storm Name</b> | <b>Maximum Wind Speed (knots)</b> | <b>Storm Category</b> |
|---------------------------|-------------------|-----------------------------------|-----------------------|
| 10/7/1879                 | NOT NAMED         | Not Available                     | Tropical Depression   |
| 8/3/1881                  | NOT NAMED         | Not Available                     | Tropical Depression   |
| 6/15/1886                 | UNNAMED           | 69.67                             | Category 1            |
| 8/20/1888                 | UNNAMED           | 81.90                             | Category 1            |
| 8/27/1890                 | UNNAMED           | 42.69                             | Tropical Storm        |
| 9/7/1893                  | UNNAMED           | 78.78                             | Category 1            |
| 8/8/1894                  | UNNAMED           | 17.56                             | Tropical Depression   |
| 9/20/1898                 | UNNAMED           | 42.69                             | Tropical Storm        |
| 9/29/1905                 | UNNAMED           | 42.69                             | Tropical Storm        |
| 10/9/1905                 | UNNAMED           | 42.69                             | Tropical Storm        |
| 8/2/1908                  | UNNAMED           | 17.56                             | Tropical Depression   |
| 9/21/1909                 | UNNAMED           | 92.89                             | Category 2            |
| 8/12/1911                 | UNNAMED           | 50.35                             | Tropical Storm        |
| 6/13/1912                 | UNNAMED           | 64.34                             | Category 1            |
| 7/17/1912                 | UNNAMED           | 0.87                              | Tropical Depression   |
| 9/18/1914                 | UNNAMED           | 32.60                             | Tropical Depression   |
| 9/29/1915                 | UNNAMED           | 95.53                             | Category 2            |
| 7/6/1916                  | UNNAMED           | 85.03                             | Category 2            |
| 9/22/1920                 | UNNAMED           | 87.29                             | Category 2            |
| 10/16/1923                | UNNAMED           | 78.78                             | Category 1            |
| 8/26/1926                 | UNNAMED           | 78.78                             | Category 1            |
| 9/21/1926                 | UNNAMED           | 58.60                             | Tropical Storm        |
| 7/15/1931                 | UNNAMED           | 50.35                             | Tropical Storm        |
| 9/19/1932                 | UNNAMED           | 64.34                             | Category 1            |
| 10/16/1932                | UNNAMED           | 58.6                              | Tropical Storm        |
| 7/26/1933                 | UNNAMED           | 17.56                             | Tropical Depression   |
| 6/16/1934                 | UNNAMED           | 87.29                             | Category 2            |
| 7/27/1936                 | UNNAMED           | 42.69                             | Tropical Storm        |
| 8/23/1936                 | UNNAMED           | 4.99                              | Tropical Depression   |
| 10/3/1937                 | UNNAMED           | 32.6                              | Tropical Depression   |
| 9/24/1940                 | UNNAMED           | 32.6                              | Tropical Depression   |
| 9/6/1945                  | UNNAMED           | 17.56                             | Tropical Depression   |
| 9/8/1947                  | UNNAMED           | 32.6                              | Tropical Depression   |
| 9/19/1947                 | UNNAMED           | 91.63                             | Category 2            |
| 9/4/1948                  | UNNAMED           | 69.67                             | Category 1            |
| 9/4/1949                  | UNNAMED           | 58.6                              | Tropical Storm        |
| 8/1/1955                  | BRENDA            | 64.34                             | Category 1            |
| 8/27/1955                 | UNNAMED           | 50.35                             | Tropical Storm        |
| 6/13/1956                 | UNNAMED           | 58.60                             | Tropical Storm        |
| 9/18/1957                 | ESTHER            | 64.34                             | Category 1            |
| 5/31/1959                 | ARLENE            | 64.34                             | Category 1            |
| 10/4/1964                 | HILDA             | 91.63                             | Category 2            |
| 9/10/1965                 | BETSY             | 89.03                             | Category 2            |
| 8/18/1969                 | CAMILLE           | 99.88                             | Category 3            |
| 8/9/1971                  | UNNAMED           | 4.99                              | Tropical Depression   |
| 9/1/1971                  | UNNAMED           | 4.99                              | Tropical Depression   |

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/5/1971           | FERN       | 4.99                       | Tropical Depression |
| 9/16/1971          | EDITH      | 87.29                      | Category 2          |
| 7/29/1975          | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1977           | BABE       | 58.60                      | Tropical Storm      |
| 7/11/1979          | BOB        | 73.83                      | Category 1          |
| 7/20/1980          | UNNAMED    | 0.87                       | Tropical Depression |
| 8/15/1985          | DANNY      | 78.78                      | Category 1          |
| 9/2/1985           | ELENA      | 92.89                      | Category 2          |
| 10/29/1985         | JUAN       | 73.83                      | Category 1          |
| 8/11/1987          | UNNAMED    | 4.99                       | Tropical Depression |
| 8/9/1988           | BERYL      | 50.35                      | Tropical Storm      |
| 9/10/1988          | FLORENCE   | 69.67                      | Category 1          |
| 8/26/1992          | ANDREW     | 85.03                      | Category 2          |
| 9/20/1998          | HERMINE    | 32.60                      | Tropical Depression |
| 6/11/2001          | ALLISON    | 42.69                      | Tropical Storm      |
| 8/5/2002           | BERTHA     | 32.60                      | Tropical Depression |
| 9/26/2002          | ISIDORE    | 64.34                      | Category 1          |
| 10/3/2002          | LILI       | 69.67                      | Category 1          |
| 6/30/2003          | BILL       | 58.60                      | Tropical Storm      |
| 10/10/2004         | MATTHEW    | 17.56                      | Tropical Depression |
| 8/29/2005          | KATRINA    | 94.63                      | Category 3          |
| 9/13/2007          | HUMBERTO   | 32.60                      | Tropical Depression |
| 8/24/2008          | FAY        | 17.56                      | Tropical Depression |
| 9/1/2008           | GUSTAV     | 87.29                      | Category 2          |
| 7/25/2010          | BONNIE     | 0.87                       | Tropical Depression |
| 8/17/2010          | FIVE       | 4.99                       | Tropical Depression |
| 9/4/2011           | LEE        | 32.60                      | Tropical Depression |
| 8/29/2012          | ISAAC      | 69.67                      | Category 1          |

Source: National Hurricane Center

Federal records indicate that five disaster declarations were made in 1965 (Hurricane Betsy), 2004 (Hurricane Ivan), 2005 (Hurricane Katrina), 2008 (Hurricane Gustav), and 2012 (Hurricane Isaac) in Franklin County.<sup>13</sup> Hurricane and tropical storm events can cause substantial damage in the area due to high winds and flooding.

The National Climatic Data Center also reported five hurricane or tropical storm events in Franklin County since 2002.<sup>14</sup> These storms are listed in **Table C.20** and are generally representative of storms with the greatest impact on the county over that time period.

<sup>13</sup> A complete listing of historical disaster declarations can be found in Section 4: Hazard Identification.

<sup>14</sup> These hurricane events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported.

**TABLE C.20: HISTORICAL HURRICANE/TROPICAL STORM OCCURRENCES IN FRANKLIN COUNTY**

| Date of Occurrence | Storm Name             | Deaths/Injuries | Property Damage (2017) <sup>15</sup> |
|--------------------|------------------------|-----------------|--------------------------------------|
| 9/26/2002          | Tropical Storm Isidore | 0/0             | \$0                                  |
| 8/29/2005          | Hurricane Katrina      | 0/0             | \$622,515                            |
| 9/24/2005          | Hurricane Rita         | 0/0             | \$49,200                             |
| 9/1/2008           | Hurricane Gustav       | 0/0             | \$670,593                            |
| 8/28/2012          | Hurricane Isaac        | 0/0             | \$318,420                            |

Source: National Climatic Data Center

Flooding and high winds from hurricanes and tropical storms can cause damage throughout the county. Anecdotes are available from NCDC for the major storms that have impacted the county as found below:

#### **Hurricane Katrina – August 29, 2005**

The damage from Hurricane Katrina was devastating and widespread. Damage occurred across all of the Jackson forecast area which includes 9 parishes in Northeast Louisiana, 2 counties in Southeast Arkansas and about 2/3 of Central and Southern Mississippi. As widespread as the damage was, the more concentrated and most significant damage occurred across Southeast and East-Central Mississippi. For other areas, especially those west of Natchez to Yazoo City to Grenada line, damage to trees and power lines was significant and scattered across the landscape. As you move toward Central Mississippi and along Interstate 55 the damage and impacts increase. This portion of the state sustained widespread damage to trees and power lines.

#### **Hurricane Gustav – September 1, 2008**

As the center of Gustav crossed much of southern Louisiana, tropical storm force winds extended into southern Mississippi and portions of east central Louisiana. Sustained winds were between 35 and 45 mph with higher gusts between 70 and 100 mph occurred. Tree and power line damage was extensive across these areas which resulted in widespread power outages, some of which lasted for 3 to 5 days. As Gustav slowed across central Louisiana, the outer rainbands continued to rotate across much of southern and central Mississippi. This kept those portions of Mississippi in the region which was favorable for tornadoes. Over 3 days, 26 tornadoes were confirmed, all of which were in the EF0 to EF1 range.

#### **Hurricane Isaac – August 29, 2012**

Isaac moved very slowly to the north and northwest over the course of August 29th, which made for prolonged impacts. Forward motion of about 5 mph lead to tremendous flooding issues for both Louisiana and portions of Mississippi south of I-20. Around noon on August 29th, Isaac was downgraded to a Tropical Storm, but this was not much relief to the many residents who were being inundated with rain and wind. The worst of the wind was felt generally along and south of an axis from Marion County to Adams County. Numerous trees were down in Adams County, leaving many without power for several days. Eighty percent of the roads were blocked in Franklin County due to downed trees.

<sup>15</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

### **PROBABILITY OF FUTURE OCCURRENCES**

Given the inland location of the county, Franklin County will not be susceptible to many of the sub-hazards that are often associated with hurricanes and tropical storms such as storm surge. Although the probability of experiencing major impacts is somewhat less than coastal areas because of this, hurricanes and tropical storms remain a real threat to Franklin County due to induced events like flooding and high wind. Based on historical evidence, the probability level of future occurrence is likely (between 10 and 100 percent annual probability). Given the regional nature of the hazard, all areas in the county are equally exposed to this hazard. However, when the county is impacted, the damage could be significant, threatening lives and property throughout the planning area.

### **HURRICANE EVACUATIONS**

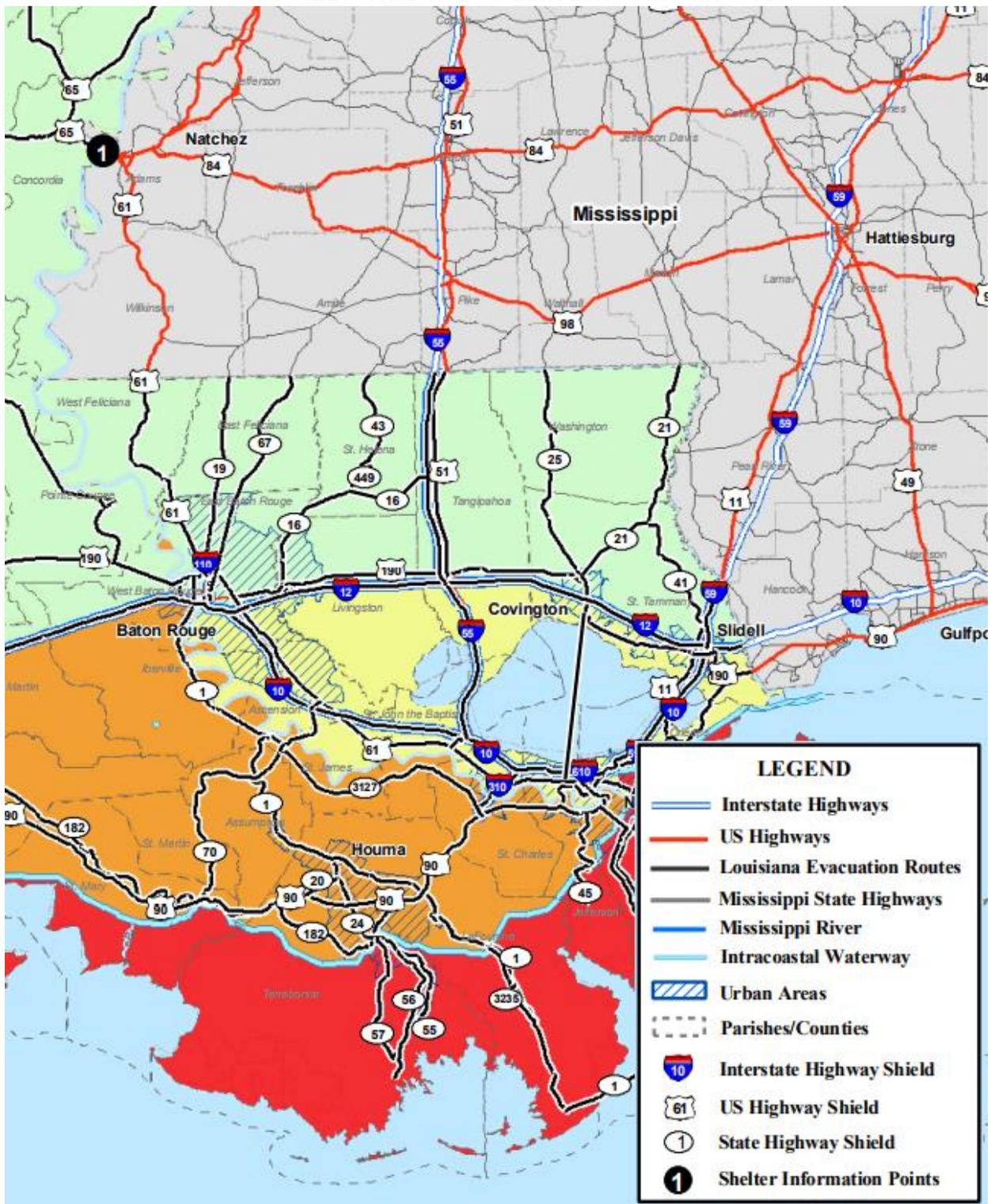
As discussed above, the MEMA District 7 Region has been directly impacted by a number of hurricane and tropical storm events historically. However, it should be noted that the region is also susceptible to indirect effects from hurricanes and tropical storms, particularly in the form of evacuations from coastal counties. The counties within MEMA District 7 are located far enough inland that they are often the primary recipients of evacuees from counties that will be (or have been) impacted by major storm events.

For example, during Hurricane Katrina in 2005, thousands of evacuees made their way to counties in southwest Mississippi to take temporary refuge from the storm. Due to the severe and devastating effects of the storm, temporary sheltering within these counties was extended much longer than originally anticipated and in some cases, the evacuees ended up staying for weeks or months. This additional population caused a major strain on resources within these relatively rural counties, as local communities with limited resources had an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people.

Caring for all of these evacuees was especially challenging for counties in the MEMA District 7 Region because most had been impacted themselves by the storm and were attempting to help their own citizens recover from the storm. Undoubtedly, recovering from a major disaster while simultaneously attempting to help evacuees from surrounding counties poses a number of difficulties for emergency management personnel and other local officials.

Based on Hurricane Katrina and other major hurricane events that have impacted the Gulf Coast in the past, it is likely that many of the MEMA District 7 counties will be receiver counties when it comes to evacuees. Many of these evacuees will likely come from locations in Louisiana, including New Orleans. Indeed, the State of Louisiana evacuation plan indicates that one of the primary evacuation routes from the City of New Orleans will direct evacuees north along Interstate 55, sending people through Pike County and Lincoln County (**Figure C.11**). Depending on the severity of the event, officials in Louisiana may even change Interstate 55 over to a contraflow traffic pattern to enable quicker evacuations.

FIGURE C.11: STATE OF LOUISIANA EVACUATION ROUTES



Source: State of Louisiana Evacuation Plan

As a result of the influx of evacuees during storm events, it is critical for local officials in MEMA District 7 to prepare for evacuations during hurricanes and other tropical storms, even if the counties themselves

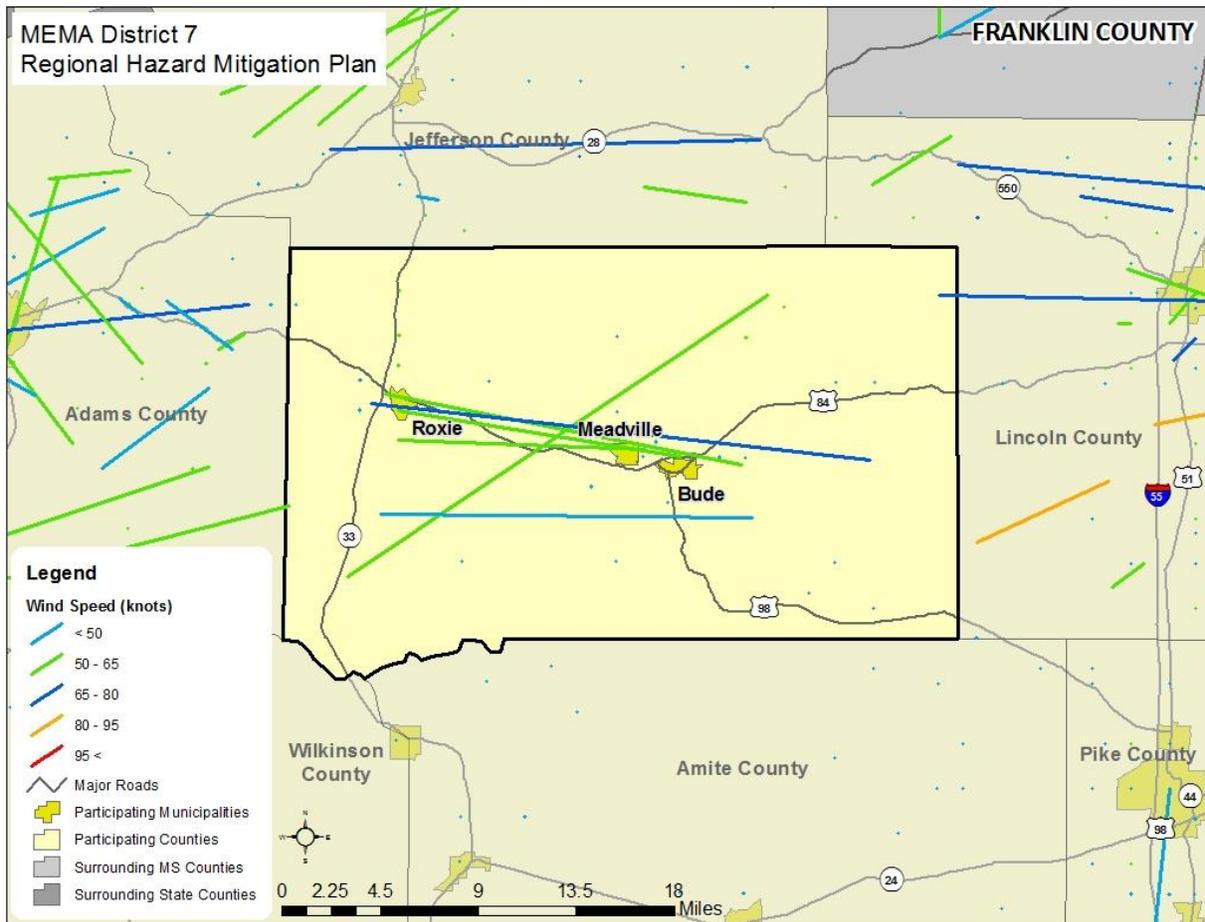
may not be directly impacted by the storm. As in past storms, it is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future storm events.

### C.2.11 Severe Thunderstorm/High Wind

#### LOCATION AND SPATIAL EXTENT

A thunderstorm event is an atmospheric hazard, and thus has no geographic boundaries. It is typically a widespread event that can occur in all regions of the United States. However, thunderstorms are most common in the central and southern states because atmospheric conditions in those regions are favorable for generating these powerful storms. It is assumed that Franklin County has uniform exposure to an event and the spatial extent of an impact could be large. With that in mind, **Figure C.12** shows the location of wind events that have impacted the county between 1955 and 2015.

**FIGURE C.12: SEVERE THUNDERSTORM TRACKS IN FRANKLIN COUNTY**



Source: National Weather Service Storm Prediction Center

**HISTORICAL OCCURRENCES**

Severe storms were at least partially responsible for three disaster declarations in Franklin County in 1983, 2001, and 2003.<sup>16</sup> According to NCDC, there have been 106 reported thunderstorm and high wind events since 1970 in Franklin County.<sup>17</sup> These events caused over \$2.5 million (2017 dollars) in damages.<sup>18</sup> **Table C.21** summarizes this information. **Table C.22** presents detailed thunderstorm and high wind event reports including date, magnitude, and associated damages for each event.

**TABLE C.21: SUMMARY OF THUNDERSTORM/HIGH WIND OCCURRENCES IN FRANKLIN COUNTY**

| Location                     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Bude                         | 12                    | 0/0             | \$104,115              | \$5,784                    |
| Meadville                    | 24                    | 0/0             | \$206,139              | \$8,963                    |
| Roxie                        | 19                    | 0/0             | \$1,494,301            | \$67,923                   |
| Unincorporated Area          | 51                    | 0/0             | \$697,028              | \$14,830                   |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>106</b>            | <b>0/0</b>      | <b>\$2,501,583</b>     | <b>\$97,500</b>            |

Source: National Climatic Data Center

**TABLE C.22: HISTORICAL THUNDERSTORM/HIGH WIND OCCURRENCES IN FRANKLIN COUNTY**

| Location         | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|------------------|------------|-------------------|------------|-----------------|------------------|
| <b>Bude</b>      |            |                   |            |                 |                  |
| BUDE             | 1/2/1999   | Thunderstorm Wind | --         | 0/0             | \$11,906         |
| BUDE             | 1/3/2000   | Thunderstorm Wind | --         | 0/0             | \$57,944         |
| BUDE             | 5/21/2001  | Thunderstorm Wind | --         | 0/0             | \$16,513         |
| BUDE             | 6/21/2004  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,289          |
| BUDE             | 10/16/2006 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| BUDE             | 6/19/2007  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| BUDE             | 2/21/2008  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| BUDE             | 3/19/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| BUDE             | 4/12/2009  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$0              |
| BUDE             | 4/26/2011  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| BUDE             | 2/1/2012   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,074          |
| BUDE             | 6/13/2014  | Thunderstorm Wind | 54 kts. EG | 0/0             | \$15,389         |
| <b>Meadville</b> |            |                   |            |                 |                  |
| Meadville        | 6/9/1994   | Thunderstorm Wind | 0 kts.     | 0/0             | \$826            |
| Meadville        | 4/22/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$4,829          |

<sup>16</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>17</sup> These thunderstorm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017 and these high wind events are only inclusive of those reported by NCDC from 1996 through February 2017. It is likely that additional thunderstorm and high wind events have occurred in Franklin County. As additional local data becomes available, this hazard profile will be amended.

<sup>18</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**ANNEX C: FRANKLIN COUNTY**

| Location                   | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-------------------|------------|-----------------|------------------|
| MEADVILLE                  | 2/21/1997  | Thunderstorm Wind | 61 kts.    | 0/0             | \$0              |
| MEADVILLE                  | 2/27/1999  | Thunderstorm Wind | --         | 0/0             | \$7,432          |
| MEADVILLE                  | 3/10/2000  | Thunderstorm Wind | --         | 0/0             | \$2,857          |
| MEADVILLE                  | 7/7/2002   | Thunderstorm Wind | 52 kts. ES | 0/0             | \$1,358          |
| MEADVILLE                  | 2/5/2004   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,313          |
| MEADVILLE                  | 6/27/2004  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$1,289          |
| MEADVILLE                  | 3/22/2005  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$0              |
| MEADVILLE                  | 9/24/2005  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| MEADVILLE                  | 3/9/2006   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| MEADVILLE                  | 10/19/2006 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| MEADVILLE                  | 10/19/2006 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| MEADVILLE                  | 2/12/2008  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$0              |
| MEADVILLE                  | 4/12/2009  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$0              |
| MEADVILLE                  | 6/8/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$21,666         |
| MEADVILLE                  | 2/15/2012  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,370          |
| MEADVILLE                  | 12/10/2012 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$26,625         |
| MEADVILLE                  | 12/20/2012 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$9,585          |
| MEADVILLE                  | 3/28/2014  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$5,174          |
| MEADVILLE                  | 1/21/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,161          |
| MEADVILLE                  | 3/17/2016  | Thunderstorm Wind | 56 kts. EG | 0/0             | \$97,550         |
| MEADVILLE                  | 1/2/2017   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$7,049          |
| MEADVILLE                  | 1/19/2017  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$8,056          |
| <b>Roxie</b>               |            |                   |            |                 |                  |
| Roxie                      | 11/11/1995 | Thunderstorm Wind | 0 kts.     | 0/0             | \$1,592          |
| ROXIE                      | 2/27/1999  | Thunderstorm Wind | --         | 0/0             | \$2,973          |
| ROXIE                      | 6/4/2000   | Thunderstorm Wind | --         | 0/0             | \$1,418          |
| ROXIE                      | 7/17/2000  | Thunderstorm Wind | --         | 0/0             | \$2,830          |
| ROXIE                      | 11/28/2001 | Thunderstorm Wind | --         | 0/0             | \$1,378          |
| ROXIE                      | 7/7/2002   | Thunderstorm Wind | 52 kts. ES | 0/0             | \$33,943         |
| ROXIE                      | 9/24/2005  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$30,750         |
| ROXIE                      | 11/15/2005 | Thunderstorm Wind | 55 kts. EG | 0/0             | \$37,124         |
| ROXIE                      | 7/19/2006  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$0              |
| ROXIE                      | 11/21/2007 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| ROXIE                      | 12/20/2007 | Thunderstorm Wind | 55 kts. EG | 0/0             | \$11,642         |
| ROXIE                      | 5/3/2008   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$16,931         |
| ROXIE                      | 3/25/2009  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$5,748          |
| ROXIE                      | 5/3/2009   | Thunderstorm Wind | 78 kts. EG | 0/0             | \$1,143,405      |
| ROXIE                      | 10/20/2010 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$27,951         |
| ROXIE                      | 4/4/2011   | Thunderstorm Wind | 60 kts. EG | 0/0             | \$163,084        |
| ROXIE                      | 12/25/2012 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,130          |
| ROXIE                      | 2/21/2013  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,053          |
| ROXIE                      | 3/28/2014  | Thunderstorm Wind | 54 kts. EG | 0/0             | \$10,348         |
| <b>Unincorporated Area</b> |            |                   |            |                 |                  |
| FRANKLIN CO.               | 7/31/1970  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| FRANKLIN CO.               | 7/27/1972  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| FRANKLIN CO.               | 7/23/1974  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |

**ANNEX C: FRANKLIN COUNTY**

| Location        | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|-----------------|------------|-------------------|------------|-----------------|------------------|
| FRANKLIN CO.    | 5/7/1975   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| FRANKLIN CO.    | 5/7/1975   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| FRANKLIN CO.    | 2/18/1976  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| FRANKLIN CO.    | 8/23/1979  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| FRANKLIN CO.    | 7/26/1987  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| FRANKLIN CO.    | 11/16/1987 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| FRANKLIN CO.    | 6/10/1989  | Thunderstorm Wind | 56 kts.    | 0/0             | \$0              |
| FRANKLIN CO.    | 5/2/1991   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| FRANKLIN CO.    | 6/6/1991   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| FRANKLIN CO.    | 8/10/1991  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| FRANKLIN CO.    | 3/5/1992   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| FRANKLIN CO.    | 3/9/1992   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| FRANKLIN CO.    | 5/26/1992  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| McCall Creek    | 7/1/1994   | Thunderstorm Wind | 0 kts.     | 0/0             | \$824            |
| Union           | 6/7/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$802            |
| FRANKLIN (ZONE) | 4/13/1996  | High Wind         | 45 kts.    | 0/0             | \$0              |
| LITTLE SPGS     | 2/26/1998  | Thunderstorm Wind | --         | 0/0             | \$75,517         |
| MC CALL CREEK   | 6/5/1998   | Thunderstorm Wind | --         | 0/0             | \$3,000          |
| COUNTYWIDE      | 3/2/1999   | Thunderstorm Wind | --         | 0/0             | \$74,098         |
| COUNTYWIDE      | 7/21/2000  | Thunderstorm Wind | --         | 0/0             | \$7,075          |
| COUNTYWIDE      | 12/24/2002 | Thunderstorm Wind | 60 kts. EG | 0/0             | \$9,462          |
| COUNTYWIDE      | 2/21/2003  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,342          |
| MC CALL CREEK   | 2/5/2004   | Thunderstorm Wind | 52 kts. EG | 0/0             | \$1,313          |
| HAMBURG         | 12/7/2004  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$2,570          |
| COUNTYWIDE      | 3/20/2006  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$0              |
| EDDICETON       | 7/19/2006  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$30,040         |
| HAMBURG         | 10/16/2006 | Thunderstorm Wind | 53 kts. EG | 0/0             | \$8,482          |
| LITTLE SPGS     | 2/24/2007  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$360            |
| OLDENBURG       | 4/11/2008  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$5,691          |
| OLDENBURG       | 6/27/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$7,822          |
| QUENTIN         | 8/2/2008   | Thunderstorm Wind | 60 kts. EG | 0/0             | \$223,222        |
| WHITE APPLE     | 3/27/2009  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| FRANKLIN (ZONE) | 12/24/2009 | Strong Wind       | 46 kts. EG | 0/0             | \$1,132          |
| MC CALL CREEK   | 3/8/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| OLDENBURG       | 6/7/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$10,833         |
| HAMBURG         | 2/15/2012  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,370          |
| OLDENBURG       | 2/15/2012  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,370          |
| WHITE APPLE     | 3/21/2012  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$53,298         |
| FRANKLIN        | 4/3/2012   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$15,941         |
| OLDENBURG       | 8/10/2012  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,061          |
| MC CALL CREEK   | 10/18/2012 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,285          |
| MC CALL CREEK   | 10/18/2012 | Thunderstorm Wind | 40 kts. EG | 0/0             | \$3,171          |
| BUDE DIXIE FLD  | 6/28/2013  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,142          |
| QUENTIN         | 3/28/2014  | Thunderstorm Wind | 54 kts. EG | 0/0             | \$10,348         |
| HAMBURG         | 2/15/2016  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$108,283        |
| FRANKLIN (ZONE) | 4/30/2016  | Strong Wind       | 44 kts. EG | 0/0             | \$3,066          |

| Location | Date      | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------|-----------|-------------------|------------|-----------------|------------------|
| QUENTIN  | 1/2/2017  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$10,069         |
| QUENTIN  | 1/19/2017 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,035          |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

†E = estimated; EG = estimated gust; ES = estimated sustained; M = measured; MG = measured gust; MS = measured sustained

Source: National Climatic Data Center

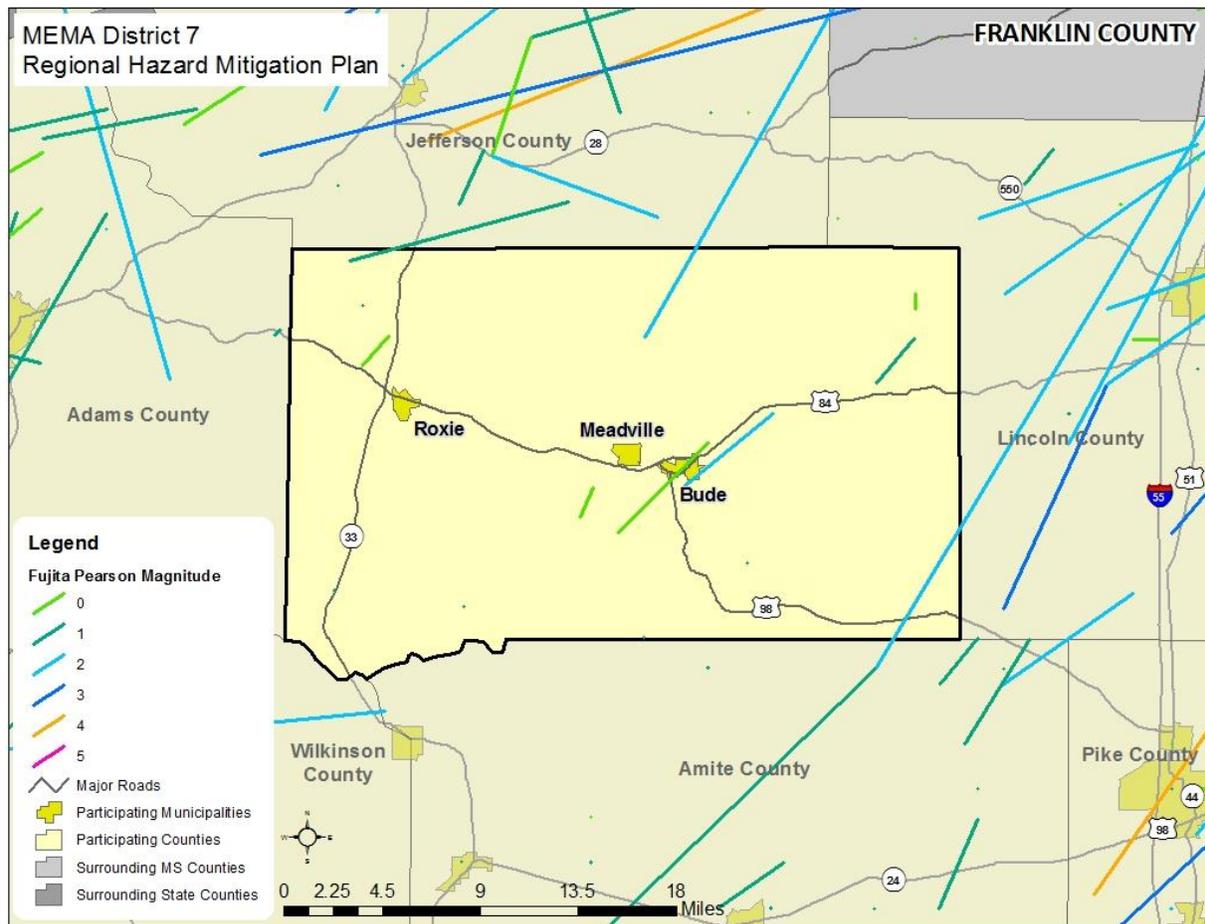
**PROBABILITY OF FUTURE OCCURRENCES**

Given the high number of previous events, it is certain that thunderstorm events, including straight-line wind events, will occur in the future. This results in a probability level of highly likely (100 percent annual probability) for the entire county.

**C.2.12 Tornado**

**LOCATION AND SPATIAL EXTENT**

Tornadoes occur throughout the state of Mississippi, and thus in Franklin County. Tornadoes typically impact a relatively small area, but damage may be extensive. Event locations are completely random and it is not possible to predict specific areas that are more susceptible to tornado strikes over time. Therefore, it is assumed that Franklin County is uniformly exposed to this hazard. With that in mind, **Figure C.13** shows tornado track data for many of the major tornado events that have impacted the county between 1950 and 2015. While no definitive pattern emerges from this data, some areas that have been impacted in the past may be potentially more susceptible in the future.

**FIGURE C.13: HISTORICAL TORNADO TRACKS IN FRANKLIN COUNTY**

Source: National Weather Service Storm Prediction Center

### **HISTORICAL OCCURRENCES**

Tornadoes were at least partially responsible for four disaster declarations in Franklin County in 1973, 1983, 2001, and 2003.<sup>19</sup> According to the National Climatic Data Center, there have been a total of 12 recorded tornado events in Franklin County since 1972 (**Table C.23**), resulting in over \$8.5 million (2017 dollars) in property damages.<sup>20</sup> <sup>21</sup> In addition, seven injuries were reported. The magnitude of these tornadoes ranges from F0 to F2, although an F5 event is possible. Detailed information on historic tornado events can be found in **Table C.24**.

<sup>19</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>20</sup> These tornado events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1950 through February 2017. It is likely that additional tornadoes have occurred in Franklin County. As additional local data becomes available, this hazard profile will be amended.

<sup>21</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE C.23: SUMMARY OF TORNADO OCCURRENCES IN FRANKLIN COUNTY**

| Location                     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Bude                         | 0                     | 0/0             | \$0                    | \$0                        |
| Meadville                    | 2                     | 0/0             | \$111,766              | \$9,314                    |
| Roxie                        | 1                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area          | 9                     | 0/7             | \$8,388,391            | \$186,409                  |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>12</b>             | <b>0/7</b>      | <b>\$8,500,157</b>     | <b>\$195,723</b>           |

Source: National Climatic Data Center

**TABLE C.24: HISTORICAL TORNADO IMPACTS IN FRANKLIN COUNTY**

| Location                   | Date       | Magnitude | Deaths/Injuries | Property Damage* | Details  |
|----------------------------|------------|-----------|-----------------|------------------|--|
| <b>Bude</b>                |            |           |                 |                  |  |
| None reported              | --         | --        | --              | --               | --   |
| <b>Meadville</b>           |            |           |                 |                  |  |
| MEADVILLE                  | 9/24/2005  | F0        | 0/0             |                  | This tornado briefly touched down southwest of Meadville and uprooted a few trees and twisted limbs off several more.  |
| MEADVILLE                  | 9/3/2008   | EFO       | 0/0             | \$111,766        | This weak tornado touched down about 3 miles south of Meadville and tracked north northeast for a little over 5 miles where it crossed Barlow Road. Several trees were blown down along with many limbs snapped along the path. A few power lines were down due to limbs on the line. The front porch of a restaurant was blown off as the tornado crossed near the intersection of Highway 98 and Old Highway 84. Max winds were around 85 mph. |
| <b>Roxie</b>               |            |           |                 |                  |  |
| ROXIE                      | 6/7/2001   | F0        | 0/0             | \$0              | A spotter reported seeing a small tornado about 3.5 miles northwest of Roxie. The tornado was on the ground for less than half of a mile in open country and caused no damage.   |
| <b>Unincorporated Area</b> |            |           |                 |                  |  |
| FRANKLIN CO.               | 1/4/1972   | F2        | 0/0             | \$148,737        | --   |
| FRANKLIN CO.               | 4/5/1983   | F2        | 0/4             | \$6,199,899      | --   |
| FRANKLIN CO.               | 10/14/1984 | F1        | 0/3             | \$580,541        | --   |
| FRANKLIN CO.               | 10/14/1984 | F1        | 0/0             | \$580,541        | --   |
| FRANKLIN CO.               | 11/16/1987 | F1        | 0/0             | \$0              | --   |

**ANNEX C: FRANKLIN COUNTY**

| Location         | Date       | Magnitude    | Deaths/<br>Injuries | Property<br>Damage* | Details  |
|------------------|------------|--------------|---------------------|---------------------|--|
| FRANKLIN<br>CO.  | 11/16/1987 | F1           | 0/0                 | \$529,731           | --   |
| MC CALL<br>CREEK | 9/24/2005  | F0           | 0/0                 | \$0                 | This weak tornado briefly touched down around Dummy Line Road and tore off numerous limbs and downed a few trees.  |
| HAMBURG          | 12/9/2008  | EF1          | 0/0                 | \$348,941           | The tornado started out in a forested area west of Hamburg. The timber damage in this area became quite intense, with swaths of pine trees snapped and leveled. As the tornado crossed Highway 33, it moved through a small community of homes, causing roof damage to a frame home and several mobile homes. Additionally, several outbuildings were destroyed, and windows were blown out of vehicles. The rest of the tornado's path was across rural forested areas of southern Jefferson County, and damage was mainly limited to tree damage. However, one home did suffer some minor roof damage and some farm outbuildings sustained some roof damage. Maximum winds were around 105 mph. Total path length across northwest Franklin and southern Jefferson Counties was 11 miles.  |
| MC CALL<br>CREEK | 11/29/2010 | Funnel Cloud | 0/0                 | \$0                 | During the evening hours of November 29th and the overnight/early morning period of the 30th, the region was impacted by an outbreak of tornadoes. This outbreak brought 13 tornadoes to the forecast area. This occurred as potent storm system moved out of the Rockies and developed a strong area of low pressure across the Central Plains. This surface low caused a warm front to take shape and quickly lift northward across the forecast during the afternoon of the 29th. Warm and humid conditions pushed north, which led to unstable conditions over the region just ahead of the advancing strong cold front. The wind energy through the atmosphere was strong. The resulting wind shear (change in wind speed or direction with height) was strong and very favorable for rotating storms and supporting tornadoes. As the clash of systems occurred, a mix of supercell thunderstorms developed, along with a broken line of thunderstorms. A handful of these storms utilized the strong wind shear present and produced tornadoes. Overall, 13 tornadoes occurred with 5 being of the strong variety (EF2-EF3). The strongest tornado occurred over northwest Leake and southern Attala Counties. Here, an EF3 moved along a 10 mile path and destroyed numerous mobile homes, 6 people were injured. Four other strong tornadoes occurred and were all rated EF2. |

| Location | Date | Magnitude | Deaths/<br>Injuries | Property<br>Damage* | Details   |
|----------|------|-----------|---------------------|---------------------|---|
|          |      |           |                     |                     | Two of these occurred in Yazoo County, one just southwest of Yazoo City and the other in Downtown Yazoo City. Numerous buildings were damaged along with many trees and power lines down. Another EF2 occurred in Starkville where it destroyed multiple mobile homes in town. Fifteen injuries occurred in this area. The final EF2 occurred in Smith County. This tornado had an 11 mile path which started just SW of Raleigh to 6 miles NE of Raleigh. One brick home sustained significant damage along with numerous other buildings and sheds damaged. This outbreak broke a streak of 3 years when no tornadoes occurred during the month of November across Mississippi. Additionally, the last Fall outbreak of tornadoes occurred on November 24, 2004. Historically, November marks the peak of our 2nd severe weather season and ranks 3rd as the most active month for tornadoes in Mississippi, just a few behind March. |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

**PROBABILITY OF FUTURE OCCURRENCES**

According to historical information, tornado events pose a significant threat to Franklin County. The probability of future tornado occurrences affecting Franklin County is likely (between 10 and 100 percent annual probability).

**C.2.13 Winter Storm and Freeze**

**LOCATION AND SPATIAL EXTENT**

Nearly the entire continental United States is susceptible to winter storm and freeze events. Some ice and winter storms may be large enough to affect several states, while others might affect limited, localized areas. The degree of exposure typically depends on the normal expected severity of local winter weather. Franklin County is not accustomed to severe winter weather conditions and seldom receives severe winter weather, even during the winter months. Events tend to be mild in nature; however, this creates a situation where even relatively small accumulations of snow, ice, or other wintry precipitation can lead to losses and damage due to the fact that these events are not commonplace. Given the atmospheric nature of the hazard, the entire county has uniform exposure to a winter storm.

**HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, there have been a total of eight recorded winter storm events in Franklin County since 1996 (**Table C.25**).<sup>22</sup> These events resulted in almost \$941,000 (2017 dollars) in damages.<sup>23</sup> Detailed information on the recorded winter storm events can be found in **Table C.26**.

**TABLE C.25: SUMMARY OF WINTER STORM EVENTS IN FRANKLIN COUNTY**

| Location        | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-----------------|-----------------------|-----------------|------------------------|----------------------------|
| Franklin County | 8                     | 0/0             | \$940,603              | \$44,791                   |

Source: National Climatic Data Center

**TABLE C.26: HISTORICAL WINTER STORM IMPACTS IN FRANKLIN COUNTY**

| Location                   | Date       | Type           | Deaths/Injuries | Property Damage* |
|----------------------------|------------|----------------|-----------------|------------------|
| <b>Bude</b>                |            |                |                 |                  |
| None reported              | --         | --             | --              | --               |
| <b>Meadville</b>           |            |                |                 |                  |
| None reported              | --         | --             | --              | --               |
| <b>Roxie</b>               |            |                |                 |                  |
| None reported              | --         | --             | --              | --               |
| <b>Unincorporated Area</b> |            |                |                 |                  |
| FRANKLIN (ZONE)            | 2/1/1996   | Ice Storm      | 0/0             | \$157,859        |
| FRANKLIN (ZONE)            | 1/19/2008  | Heavy Snow     | 0/0             | \$0              |
| FRANKLIN (ZONE)            | 12/11/2008 | Heavy Snow     | 0/0             | \$0              |
| FRANKLIN (ZONE)            | 12/4/2009  | Heavy Snow     | 0/0             | \$0              |
| FRANKLIN (ZONE)            | 2/11/2010  | Heavy Snow     | 0/0             | \$451,274        |
| FRANKLIN (ZONE)            | 2/3/2011   | Ice Storm      | 0/0             | \$331,470        |
| FRANKLIN (ZONE)            | 1/28/2014  | Heavy Snow     | 0/0             | \$0              |
| FRANKLIN (ZONE)            | 1/6/2017   | Winter Weather | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

There have been several severe winter weather events in Franklin County. The text below describes two of the major events and associated impacts on the county. Similar impacts can be expected with severe winter weather.

**February 2010**

Heavy snow affected a large portion of the region, especially locations across central and southern Mississippi, on Thursday night and Friday, February 11th and 12th. The heavy snow was a result of a low

<sup>22</sup> These ice and winter storm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional winter storm conditions have affected Franklin County.

<sup>23</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

pressure system that tracked eastward across the northern Gulf of Mexico, and a vigorous upper level disturbance that moved across the region while a cold air mass was in place. Light precipitation overspread the region late Thursday afternoon into the evening before becoming heavy Thursday night into early Friday morning. The snow tapered off from west to east during the midday hours Friday.

### **February 2011**

An ice storm developed across the area on February 3rd into the early morning hours of the 4th. While this icing event was not devastating, the impact to travel was a major issue across the region. Thousands of accidents occurred from slick roads. As a result of the accidents, three fatalities occurred along with a handful of injuries. Overall, most areas received 0.25 to 0.5 inches of ice accumulation from freezing rain. Additionally, some areas had a mix of precipitation with sleet accumulating. Some snow did occur, but those were just across select areas and the accumulation was mainly one inch or less.

Winter storms throughout the planning area have several negative externalities including hypothermia, cost of snow and debris cleanup, business and government service interruption, traffic accidents, and power outages. Furthermore, citizens may resort to using inappropriate heating devices that could to fire or an accumulation of toxic fumes.

### ***PROBABILITY OF FUTURE OCCURRENCES***

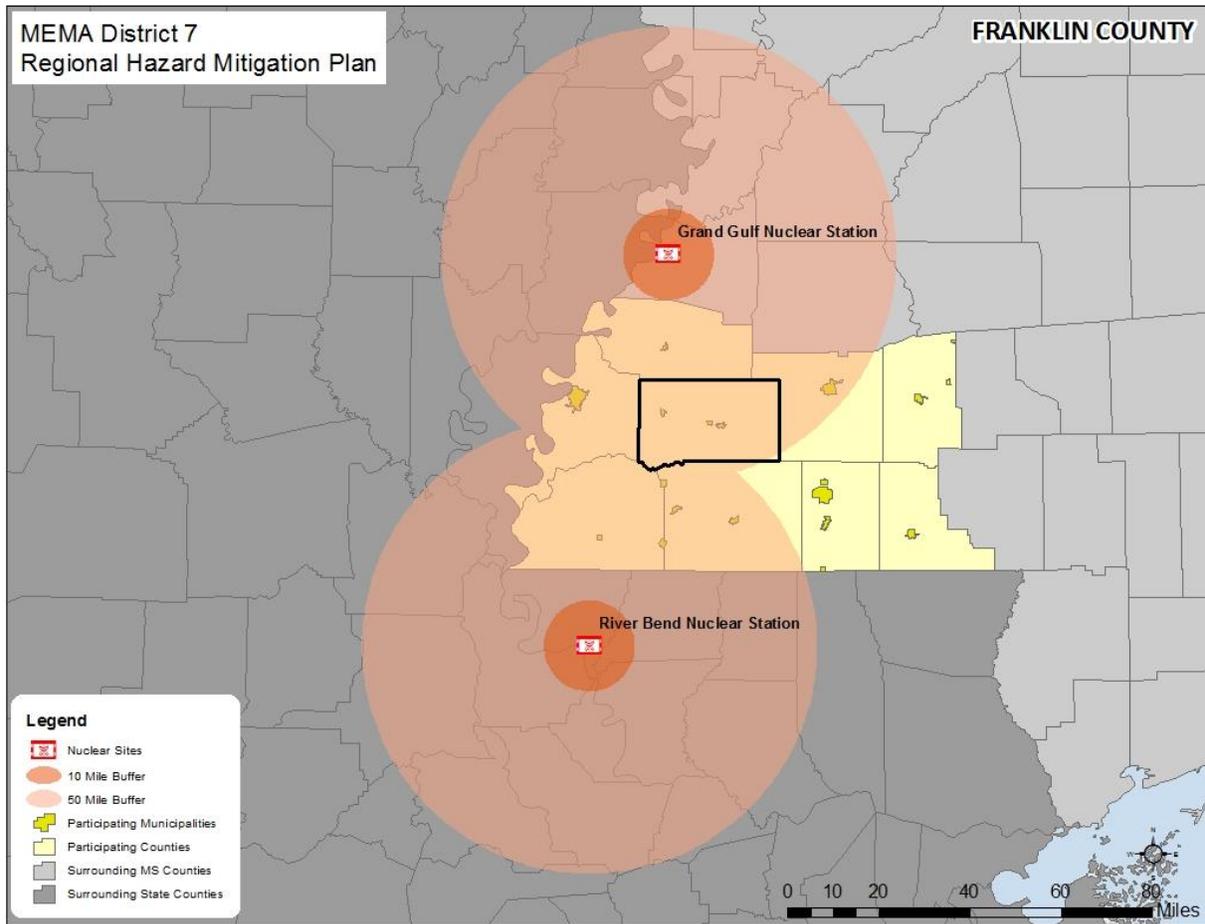
Winter storm events will continue to occur in Franklin County. Based on historical information, the probability is likely (between 10 and 100 percent annual probability).

## ***HUMAN-CAUSED HAZARDS***

### **C.2.14 Radiological Event**

#### ***LOCATION AND SPATIAL EXTENT***

The Grand Gulf Nuclear Station and River Bend Nuclear Station are both located within a 50-mile radius of the MEMA District 7 Region. The Nuclear Regulatory Commission defines two emergency planning zones around nuclear plants. Areas located within 10 miles of the station are considered to be within the zone of highest risk to a nuclear incident and this radius is the designated evacuation radius recommended by the Nuclear Regulatory Commission. Within the 10-mile zone, the primary concern is exposure to and inhalation of radioactive contamination. No part of Franklin County is located in the 10-mile radius of a nuclear station. The most concerning effects in the secondary 50-mile zone are related to ingestion of food and liquids that may have been contaminated. Nearly all of Franklin County is located within this 50-mile radius. The 50-mile zone is still considered to be at risk from a nuclear incident, though the impacts may be less severe than in the 10-mile zone (**Figure C.14**).

**FIGURE C.14: NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN FRANKLIN COUNTY**

Source: International Atomic Energy Agency

### **HISTORICAL OCCURRENCES**

Although there have been no major nuclear events at either the Grand Gulf or River Bend Nuclear Stations, there is some possibility that one could occur as there have been incidents in the past in the United States at other facilities and at facilities around the world. Additionally, a list of minor events/notifications was acquired from reports collected by the Nuclear Regulatory Commission (NRC). The NRC classifies events using the scale found in **Table C.27**. A list of events at Grand Gulf Nuclear Station can be found in **Table C.28** and a list of events at River Bend Nuclear Station can be found in **Table C.29**. It is noteworthy that all of the events were minor in magnitude and many were insignificant enough that they did not register on the classification scale.

**TABLE C.27: NUCLEAR REGULATORY COMMISSION EMERGENCY CLASSIFICATION SCALE FOR EVENTS OCCURRING AT NUCLEAR POWER PLANTS**

| Classification                       | Description   |
|--------------------------------------|---|
| Notification of Unusual Event (NOUE) | Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. [Note: This term is sometimes shortened to Unusual Event (UE). The terms Notification of Unusual Event, NOUE and Unusual Event are used interchangeably.]  |
| Alert                                | Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) protective action guides (PAGs)  |
| Site Area Emergency                  | Site Area Emergency (SAE) – Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile action that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary. |
| General Emergency                    | Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile action that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.  |

Source: Nuclear Regulatory Commission

**TABLE C.28: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT GRAND GULF NUCLEAR STATION**

| Date      | Retrieved From*                  | Classification | Plant             | Description  |
|-----------|----------------------------------|----------------|-------------------|--|
| 8/29/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST         |
| 10/1/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF NUCLEAR STATION SECURITY OFFICER LOCKOUT                  |
| 9/29/2016 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF EXTENDED PLANT SHUTDOWN TO ADDRESS OPERATIONS PERFORMANCE |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lersearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

**TABLE C.29: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT  
RIVER BEND NUCLEAR STATION**

| Date       | Retrieved From*                  | Classification                               | Plant             | Description   |
|------------|----------------------------------|--|-------------------|---|
| 11/26/1985 | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | ECCS Initiation: Improper restoration of a level transmitter causes HPSC injection    |
| 11/27/1985 | Licensee Event Report            | Alert  | River Bend Unit 1 | Failure to Perform Surveillance Tests   |
| 3/5/1992   | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | REACTOR SCRAM CAUSED BY A GENERATOR TRIP DUE TO HIGH WINDS CAUSING TRANSFORMER DAMAGE |
| 9/15/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE IVAN  |
| 10/4/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | Shutdown Greater than 72 Hours  |
| 9/23/2005  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | NRC ENTERS MONITORING MODE DUE TO HURRICANE RITA                                      |
| 5/23/2007  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REACTOR SHUTDOWN DUE TO UNEXPECTED CHANGE IN RECIRCULATION FLOW                       |
| 9/2/2008   | Preliminary Notification Reports | Notification of Unusual Event/Not Applicable | River Bend Unit 1 | NRC RESPONSE TO HURRICANE GUSTAV  |
| 5/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | AUGMENTED INSPECTION TEAM ONSITE AT RIVER BEND STATION                                |
| 8/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST                          |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lersearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

### **PROBABILITY OF FUTURE OCCURRENCES**

A nuclear event is a very rare occurrence in the United States due to the intense regulation of the industry. There have been minor incidents in the past, but it is considered unlikely (less than 1 percent annual probability).

### **RADIOLOGICAL EVACUATIONS**

Similar to the hurricane evacuations discussed above, in many ways the MEMA District 7 Region would potentially be impacted to a greater degree by evacuations caused by a radiological event than by the event itself. Since the region is not directly located within the 10-mile evacuation area but neighboring counties are located within this zone, it is highly likely that populations from those neighboring counties will be evacuated to the counties within the MEMA District 7 Region.

Due to the severe and long-term effects of a major radiological event, temporary sheltering will be an initial concern, but the greater challenge may be in the long-term. As has happened with historical radiological accidents in other locations, the danger in the impacted area will likely extend for a very long period after the event and evacuees may be unable to return to their homes for months or years. This additional influx of population will cause a major strain on resources within these relatively rural counties in the short-term, as local communities with limited resources will have an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people. In the long-term, there may be challenges for local officials as existing infrastructure will likely be inadequate to handle larger populations.

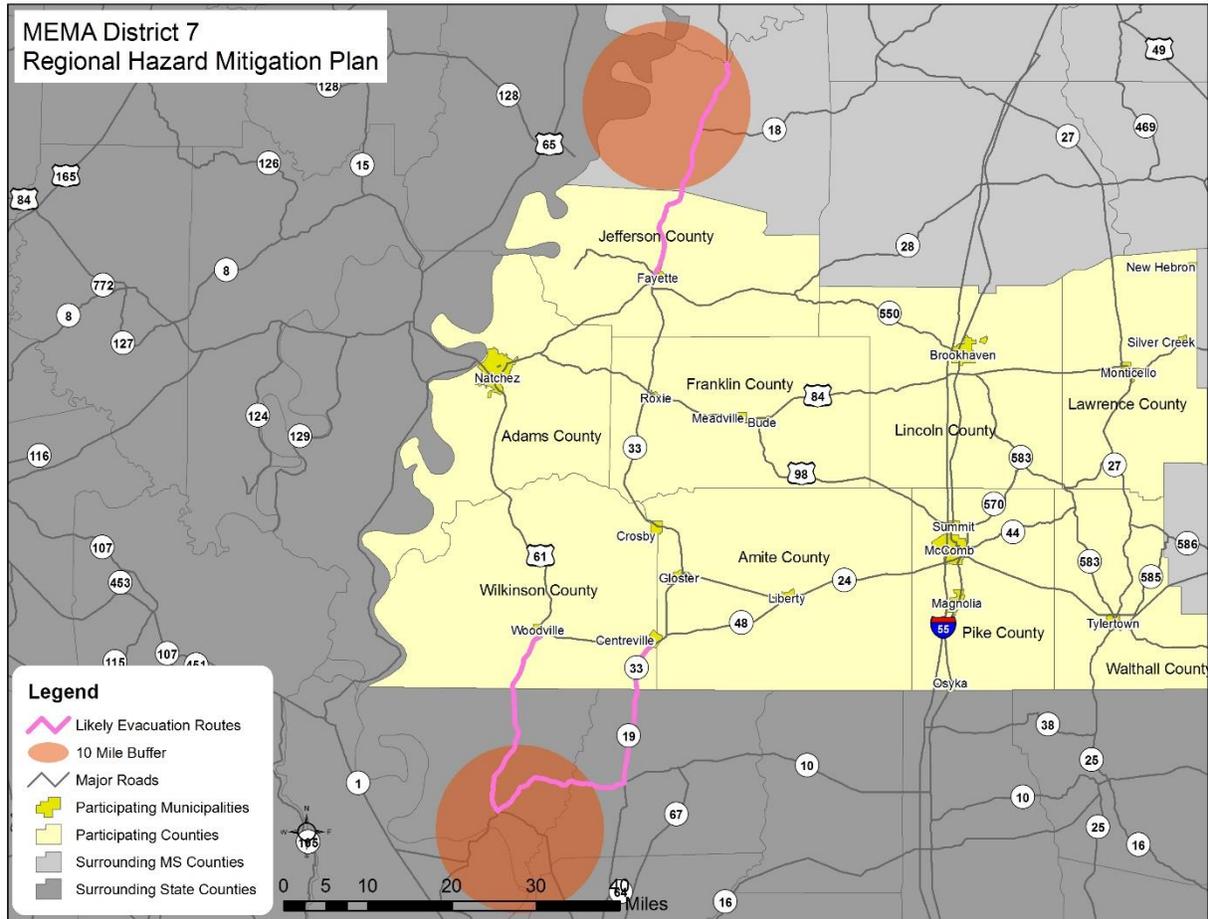
Although there have not been any major radiological events in the region historically, hurricane evacuations (discussed above) provide a similar scenario in terms of what the region might expect. However, one additional concern that officials will need to consider in a radiological event is that evacuees may be contaminated by radioactivity. According to the Centers for Disease Control, radioactive contamination can occur when radioactive materials are released into the environment and become deposited into the air, water, surfaces, soil, plants, buildings, people or animals. This contamination can then be spread when people touch other people, surfaces, or objects. Therefore, when people evacuate a contaminated zone, they pose a potential risk of spreading the contamination to others if they are not properly treated. Local officials in MEMA District 7 may need to be prepared to set up decontamination centers along major evacuation routes to ensure that the contamination is not spread. It is also important for citizens to understand the steps they can take to reduce the risk of spreading contamination such as evacuating quickly after an event and following decontamination instructions as directed by local officials.<sup>24</sup>

Based on the locations of the 10-mile evacuation areas near the region, many of these evacuees will likely come from Claiborne County to the north and West Feliciana and East Feliciana Parishes to the south. The main roads for these evacuees will probably be U.S. Highway 61 and Mississippi State Highway 33 since these are the primary and most direct roads into and out of the aforementioned evacuation counties and into MEMA District 7 (**Figure C.15**). Depending on the severity of the event, officials may even change these roads over to a contraflow traffic pattern to enable quicker evacuations.

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<sup>24</sup> Centers for Disease Control and Prevention. *Emergency Preparedness and Response: Contamination vs. Exposure*. Retrieved on September 1, 2017 from <https://emergency.cdc.gov/radiation/contamination.asp>

**FIGURE C.15: LIKELY EVACUATION ROUTES FOR A RADIOLOGICAL EVENT IN THE MEMA DISTRICT 7 REGION**



Source: International Atomic Energy Agency

As a result of the potential for an influx of evacuees during a radiological event, it is critical for local officials in MEMA District 7 to prepare for evacuations. It is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future events.

### C.2.15 Conclusions on Hazard Risk

The hazard profiles presented in this subsection were developed using best available data and result in what may be considered principally a qualitative assessment as recommended by FEMA in its “How-to” guidance document titled *Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA Publication 386-2). It relies heavily on historical and anecdotal data, stakeholder input, and professional and experienced judgment regarding observed and/or anticipated hazard impacts. It also carefully considers the findings in other relevant plans, studies, and technical reports.

**HAZARD EXTENT**

**Table C.30** describes the extent of each natural hazard identified for Franklin County. The extent of a hazard is defined as its severity or magnitude, as it relates to the planning area.

**TABLE C.30: EXTENT OF FRANKLIN COUNTY HAZARDS**

| Flood-related Hazards |   |             |  |                                     |                                 |  |   |    |
|-----------------------|---|-------------|--|-------------------------------------|---------------------------------|--|---|----|
| Dam and Levee Failure | Dam Failure extent is defined using the Mississippi Department of Environmental Quality classifications which include Low, Significant, and High. One dam is classified as high-hazard in Franklin County.  |             |  |                                     |                                 |  |   |    |
| Erosion               | The extent of erosion can be defined by the measurable rate of erosion that occurs. There are no official erosion rate records in Franklin County but local estimates are around 0.25 to 0.50 feet per year. Some areas of erosion have been identified by local coordinators.  |             |  |                                     |                                 |  |   |    |
| Flood                 | Flood extent can be measured by the amount of land and property in the floodplain as well as flood height and velocity. The amount of land in the floodplain accounts for 12.5 percent of the total land area in Franklin County.   |             |  |                                     |                                 |  |   |    |
|                       | Flood depth and velocity are recorded via United States Geological Survey stream gages throughout the region. While a gage does not exist for each participating jurisdiction, there is one at or near many areas. The greatest peak discharge recorded for the county was on the Homochitto River at Rosetta. Water reached a discharge of 150,000 cubic feet per second (recorded on April 13, 1974). The highest stream gage height was on McCall Creek near Lucien with a height that was recorded at 92.70 feet (recorded on April 13, 1974). Additional peak discharge readings, historic crest heights, and the corresponding flood categories (where available) are in the table below. |             |  |                                     |                                 |  |   |    |
|                       | <b>Location/<br/>Jurisdiction</b>   | <b>Date</b> | <b>Maximum<br/>Historic<br/>Crest (ft)</b> | <b>Peak<br/>Discharge<br/>(cfs)</b> | <b>Flood Categories</b>         |  |   |    |
|                       |   |             |  | <b>Action<br/>Stage<br/>(ft)</b>    | <b>Flood<br/>Stage<br/>(ft)</b> | <b>Moderate<br/>Flood<br/>Stage (ft)</b> | <b>Major<br/>Flood<br/>Stage<br/>(ft)</b> |    |
|                       | <b>Franklin County</b>  |             |  |                                     |                                 |  |   |    |
|                       | Homochitto River at Eddiceton   | 5/13/1990   | 21.06                                      | 55,400*                             | NA                              | NA                                       | NA  | NA |
|                       | McCall Creek near Lucien  | 4/13/1974   | 92.70                                      | 23,000                              | NA                              | NA                                       | NA  | NA |
|                       | Beaver Run near McCall Creek  | 4/13/1974   | 10.85                                      | 1,220                               | NA                              | NA                                       | NA  | NA |
|                       | Homochitto River near Bude  | 4/13/1974   | 22.00                                      | 95,000                              | NA                              | NA                                       | NA  | NA |
|                       | Homochitto River at Rosetta   | 3/31/1949   | 37.80                                      | 150,000*                            | 18                              | 19                                       | 30  | 37 |
|                       | NA= Data not available for this particular gage   |             |  |                                     |                                 |  |   |    |
|                       | *Occurred on a different date than Maximum Historic Crest   |             |  |                                     |                                 |  |   |    |

| <b>Fire-related Hazards</b>    |  |
|--------------------------------|--|
| Drought                        | Drought extent is defined by the U.S. Drought Monitor Classifications which include Abnormally Dry, Moderate Drought, Severe Drought, Extreme Drought, and Exceptional Drought. According to the U.S. Drought Monitor Classifications, the most severe drought condition is Exceptional. Franklin County has received this ranking once over the 17-year reporting period.   |
| Lightning                      | According to the Vaisala’s flash density map, Franklin County is located in an area that experiences 12 to 20 lightning flashes per square mile per year. It should be noted that future lightning occurrences may exceed these figures.   |
| Wildfire                       | Wildfire data was provided by the Mississippi Forestry Commission and is reported annually by county from 2007-2016. The greatest number of fires to occur in Franklin County in any year was 39 in 2011. The greatest number of acres to burn in the county in a single year occurred in 2008 when 248 acres were burned. Although this data lists the extent that has occurred, larger and more frequent wildfires are possible throughout the county.           |
| <b>Geologic Hazards</b>        |  |
| Earthquake                     | Earthquake extent can be measured by the Richter Scale or the Modified Mercalli Intensity (MMI) scale. According to data provided by the National Centers for Environmental Information, no earthquakes were reported in Franklin County.  |
| <b>Wind-related Hazards</b>    |  |
| Extreme Heat                   | The extent of extreme heat can be measured by the record high temperature recorded. Official long term temperature records are not kept for any areas in Franklin County. However, the highest recorded temperature in the region was 106°F in 2007 with heat index values recorded above 115°F.   |
| Hailstorm                      | Hail extent can be defined by the size of the hail stone. The largest hail stone reported in Franklin County was 2.75 inches (last reported on March 17, 2016). It should be noted that future events may exceed this.   |
| Hurricane and Tropical Storm   | Hurricane extent is defined by the Saffir-Simpson Scale which classifies hurricanes into Category 1 through Category 5. The greatest classification of hurricane to impact the MEMA District 7 Region was a Category 3 storm. This occurred in 1969 with Hurricane Camille and in 2005 with Hurricane Katrina. The storm track of both storms passed just to the east of the region, but due to the size of these storms, their impact was felt across the region. |
| Severe Thunderstorm/ High Wind | Thunderstorm extent is defined by the number of thunder events and wind speeds reported. According to a 67-year history from the National Climatic Data Center, the strongest recorded wind event in Franklin County was reported on May 3, 2009 at 78 knots (approximately 90 mph). It should be noted that future events may exceed these historical occurrences.  |
| Tornado                        | Tornado hazard extent is measured by tornado occurrences in the US provided by FEMA as well as the Fujita/Enhanced Fujita Scale. The greatest magnitude reported in Franklin County was an F2 (last reported on April 5, 1983).  |
| Winter Storm and Freeze        | The extent of winter storms can be measured by the amount of snowfall received (in inches). Official long term snow records are not kept for any areas in Franklin County. However, reports from NCDC of the greatest snowfall in the county has been 6.5 inches (reported on February 11, 2010).  |
| <b>Human-caused Hazards</b>    |  |
| Radiological Event             | Although there is no history of a nuclear accident at either the Grand Gulf Nuclear Station or River Bend Nuclear Station, other events across the globe and in the United States in particular indicate that an event is possible. Since several national and international events were Level 7 events on the INES, the potential for a Level 7 event at these stations is possible.  |

### PRIORITY RISK INDEX RESULTS

In order to draw some meaningful planning conclusions on hazard risk for Franklin County, the results of the hazard profiling process were used to generate countywide hazard classifications according to a “Priority Risk Index” (PRI). More information on the PRI and how it was calculated can be found in Section 5.17.2.

**Table C.31** summarizes the degree of risk assigned to each category for all initially identified hazards based on the application of the PRI. Assigned risk levels were based on the detailed hazard profiles developed for this subsection, as well as input from the Regional Hazard Mitigation Council. The results were then used in calculating PRI values and making final determinations for the risk assessment.

**TABLE C.31: SUMMARY OF PRI RESULTS FOR FRANKLIN COUNTY**

| Hazard                        | Category/Degree of Risk |              |                |                    |                    |            |
|-------------------------------|-------------------------|--------------|----------------|--------------------|--------------------|------------|
|                               | Probability             | Impact       | Spatial Extent | Warning Time       | Duration           | PRI Score  |
| <b>Flood-related Hazards</b>  |                         |              |                |                    |                    |            |
| Dam Failure and Levee Failure | Unlikely                | Critical     | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>2.3</b> |
| Erosion                       | Possible                | Minor        | Small          | More than 24 hours | More than 1 week   | <b>1.8</b> |
| Flood                         | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 24 hours | <b>3.2</b> |
| <b>Fire-related Hazards</b>   |                         |              |                |                    |                    |            |
| Drought                       | Possible                | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.5</b> |
| Lightning                     | Highly Likely           | Limited      | Small          | 6 to 12 hours      | Less than 6 hours  | <b>2.6</b> |
| Wildfire                      | Highly Likely           | Limited      | Small          | Less than 6 hours  | Less than 1 week   | <b>2.9</b> |
| <b>Geologic Hazards</b>       |                         |              |                |                    |                    |            |
| Earthquake                    | Unlikely                | Minor        | Small          | Less than 6 hours  | Less than 6 hours  | <b>1.5</b> |
| <b>Wind-related Hazards</b>   |                         |              |                |                    |                    |            |
| Extreme Heat                  | Likely                  | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.8</b> |
| Hailstorm                     | Highly Likely           | Limited      | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>2.8</b> |
| Hurricane and Tropical Storm  | Likely                  | Catastrophic | Large          | More than 24 hours | Less than 1 week   | <b>3.3</b> |
| Severe Thunderstorm/High Wind | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>3.1</b> |
| Tornado                       | Likely                  | Catastrophic | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>3.2</b> |
| Winter Storm and Freeze       | Likely                  | Minor        | Moderate       | More than 24 hours | Less than 1 week   | <b>2.2</b> |
| <b>Human-caused Hazards</b>   |                         |              |                |                    |                    |            |
| Radiological Event            | Unlikely                | Critical     | Moderate       | More than 24 hours | Less than 1 week   | <b>2.2</b> |

### C.2.16 Final Determinations on Hazard Risk

The conclusions drawn from the hazard profiling process for Franklin County, including the PRI results and input from the Regional Hazard Mitigation Council, resulted in the classification of risk for each identified hazard according to three categories: High Risk, Moderate Risk, and Low Risk (**Table C.32**). For purposes

of these classifications, risk is expressed in relative terms according to the estimated impact that a hazard will have on human life and property throughout all of Franklin County. A more quantitative analysis to estimate potential dollar losses for each hazard has been performed separately, and is described in Section 6: *Vulnerability Assessment* and below in Section C.3. It should be noted that although some hazards are classified below as posing low risk, their occurrence of varying or unprecedented magnitudes is still possible in some cases and their assigned classification will continue to be evaluated during future plan updates. In most cases, the hazards of greatest concern did not change much since the last plan update, indicating that the priorities remained relatively stable and there were few changes in priorities.

**TABLE C.32: CONCLUSIONS ON HAZARD RISK FOR FRANKLIN COUNTY**

|                      |   |
|----------------------|---|
| <b>HIGH RISK</b>     | Hurricane and Tropical Storm<br>Tornado<br>Flood<br>Severe Thunderstorm/High Wind<br>Wildfire |
| <b>MODERATE RISK</b> | Extreme Heat<br>Hailstorm<br>Lightning<br>Drought<br>Dam and Levee Failure                    |
| <b>LOW RISK</b>      | Winter Storm and Freeze<br>Radiological Event<br>Erosion<br>Earthquake                        |

### C.3 FRANKLIN COUNTY VULNERABILITY ASSESSMENT

This subsection identifies and quantifies the vulnerability of Franklin County to the significant hazards previously identified. This includes identifying and characterizing an inventory of assets in the county and assessing the potential impact and expected amount of damages caused to these assets by each identified hazard event. More information on the methodology and data sources used to conduct this assessment can be found in Section 6: *Vulnerability Assessment*.

#### C.3.1 Asset Inventory

**Table C.33** lists the estimated number of improved properties and the total value of improvements for Franklin County and its participating jurisdictions (study area of vulnerability assessment). Because digital parcel data was not available for most communities, data obtained from Hazus-MH 4.0 inventory was utilized to complete the analysis.

**TABLE C.33: IMPROVED PROPERTY IN FRANKLIN COUNTY**

| Location                     | Counts of Improved Property | Total Value of Improvements |
|------------------------------|-----------------------------|-----------------------------|
| Bude                         | 560                         | \$94,838                    |
| Meadville                    | 314                         | \$82,402                    |
| Roxie                        | 275                         | \$36,555                    |
| Unincorporated Area          | 3,088                       | \$650,390,205               |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>4,237</b>                | <b>\$650,604,000</b>        |

Source: Hazus-MH 4.0

**Table C.34** lists the fire stations, police stations, medical care facilities, emergency operation centers, schools, government/public buildings, transportation infrastructure, and private facilities located in Franklin County according to previous plan data and Hazus-MH 4.0 data that was reviewed and updated by local officials.

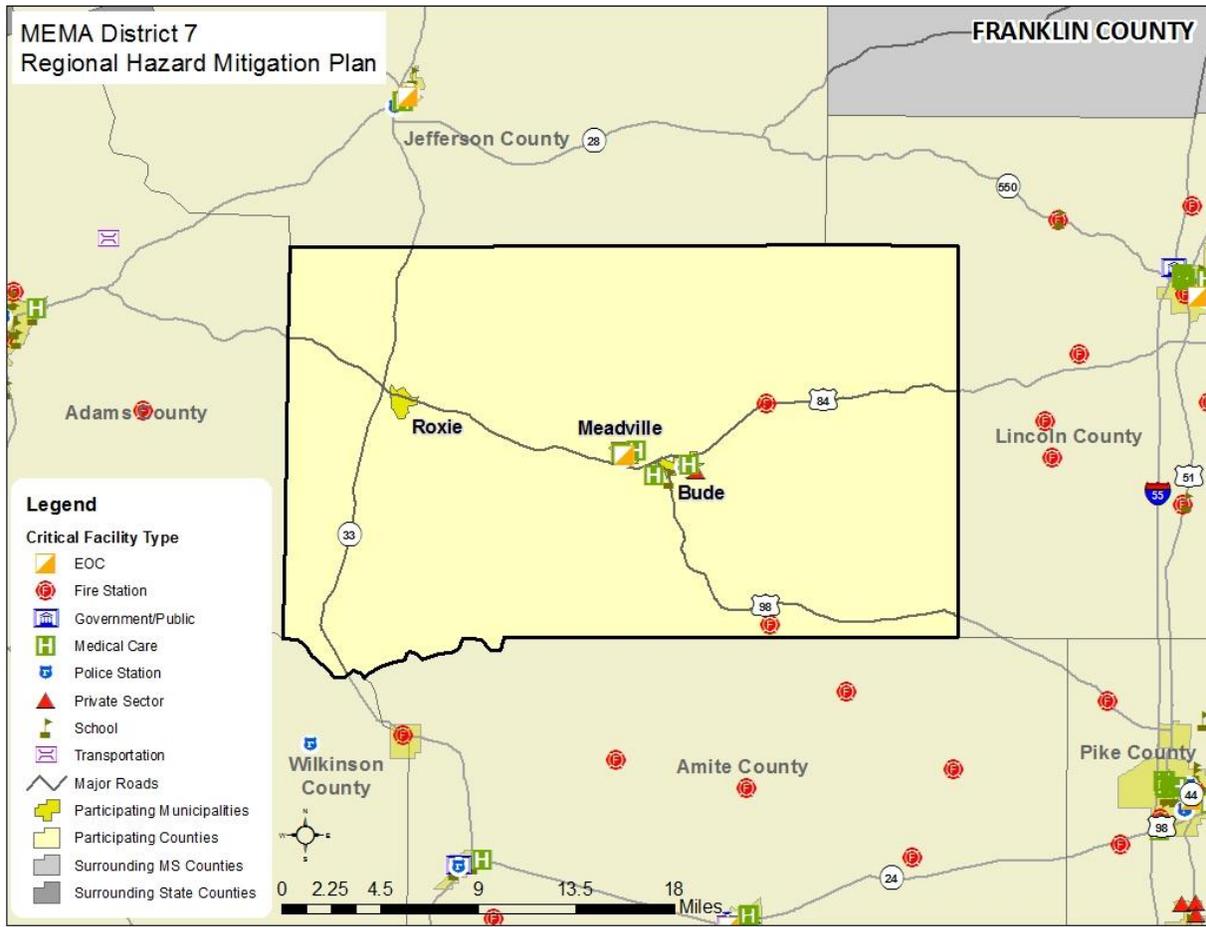
In addition, **Figure C.16** shows the locations of critical facilities in Franklin County. **Table C.45**, at the end of this subsection, shows a complete list of the critical facilities by name, as well as the hazards that affect each facility. As noted previously, this list is not all-inclusive and only includes information provided through Hazus which was updated, as best as possible, with local knowledge.

**TABLE C.34: CRITICAL FACILITY INVENTORY IN FRANKLIN COUNTY**

| Location                     | Fire Stations | Police Stations | Medical Care | EOC      | Schools  | Gov't/<br>Public | Trans    | Private Sector |
|------------------------------|---------------|-----------------|--------------|----------|----------|------------------|----------|----------------|
| Bude                         | 0             | 1               | 1            | 0        | 1        | 0                | 0        | 1              |
| Meadville                    | 1             | 2               | 3            | 1        | 2        | 0                | 0        | 0              |
| Roxie                        | 0             | 0               | 0            | 0        | 0        | 0                | 0        | 0              |
| Unincorporated Area          | 1             | 0               | 0            | 0        | 0        | 0                | 0        | 0              |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>2</b>      | <b>3</b>        | <b>4</b>     | <b>1</b> | <b>3</b> | <b>0</b>         | <b>0</b> | <b>1</b>       |

Source: Hazus-MH 4.0; Local Officials

**FIGURE C.16: CRITICAL FACILITY LOCATIONS IN FRANKLIN COUNTY**



Source: Hazus-MH 4.0; Local Officials

### C.3.2 Social Vulnerability

In addition to identifying those assets potentially at risk to identified hazards, it is important to identify and assess those particular segments of the resident population in Franklin County that are potentially at risk to these hazards.

**Table C.35** lists the population by jurisdiction according to U.S. Census, American Community Survey 2015 population estimates. The total population in Franklin County according to Census data was 7,857 persons. Additional population estimates are presented above in Section C.1.

**TABLE C.35: TOTAL POPULATION IN FRANKLIN COUNTY**

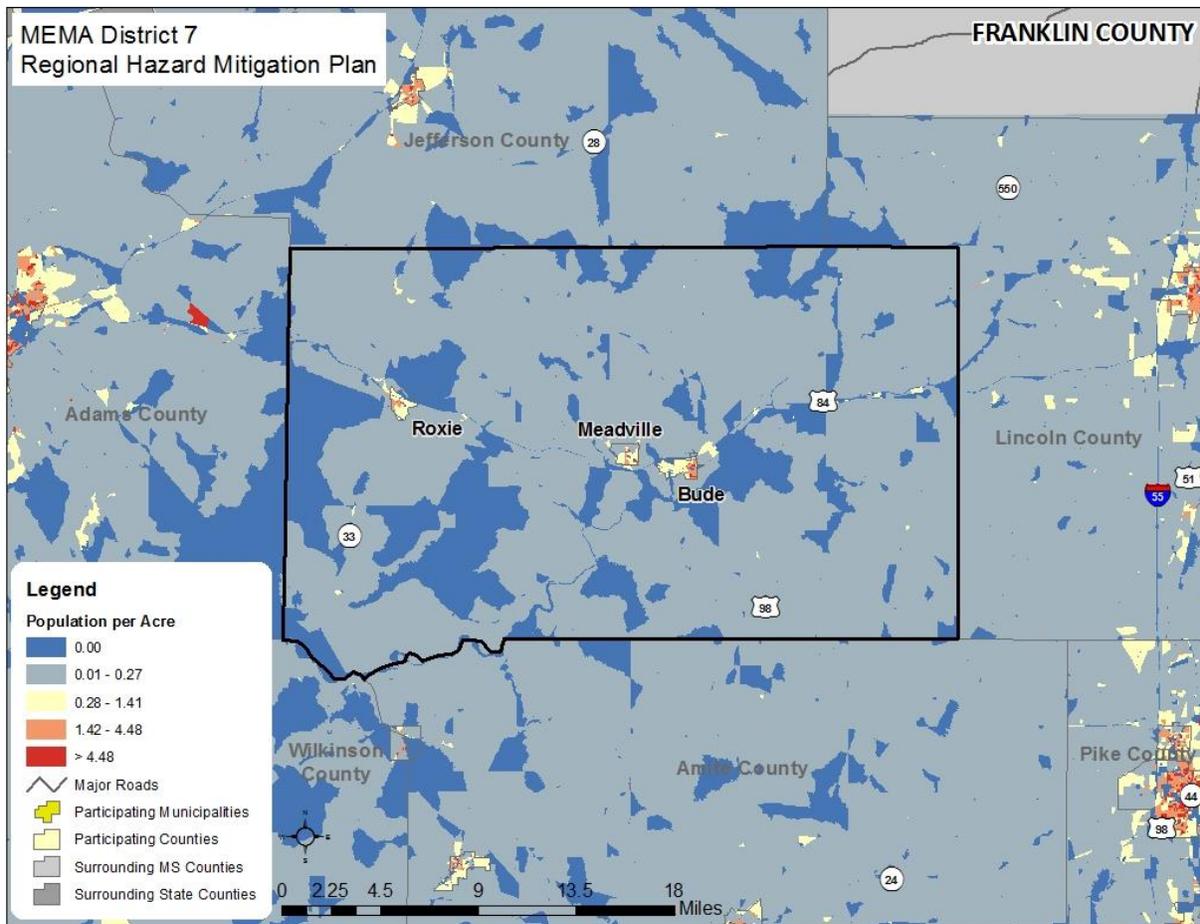
| Location                     | Total 2015 Population |
|------------------------------|-----------------------|
| Bude                         | 905                   |
| Meadville                    | 454                   |
| Roxie                        | 551                   |
| Unincorporated Area          | 5,947                 |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>7,857</b>          |

| Location | Total 2015 Population |
|----------|-----------------------|
|----------|-----------------------|

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

In addition, **Figure C.17** illustrates the population density per acre by census block as it was reported by the U.S. Census Bureau in 2010. As can be seen in the figure, the population is spread out with concentrations in municipal areas such as Bude, Meadville, and Roxie.

**FIGURE C.17: POPULATION DENSITY IN FRANKLIN COUNTY**



Source: United States Census Bureau, 2010 Census

### C.3.3 Development Trends and Changes in Vulnerability

Since the previous hazard mitigation plan was approved, Franklin County has experienced limited growth and development. **Table C.36** shows the number of building units constructed since 2010 according to the U.S. Census American Community Survey.

**TABLE C.36: BUILDING COUNTS FOR FRANKLIN COUNTY**

| Location | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|----------|----------------------------|---------------------------|----------------------------------|
| Bude     | 495                        | 0                         | 0.00%                            |

| Location                     | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|------------------------------|----------------------------|---------------------------|----------------------------------|
| Meadville                    | 222                        | 0                         | 0.00%                            |
| Roxie                        | 248                        | 7                         | 2.82%                            |
| Unincorporated Area          | 3,192                      | 59                        | 1.85%                            |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>4,157</b>               | <b>66</b>                 | <b>1.59%</b>                     |

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

Table C.37 shows population growth estimates for the county from 2010 to 2015 based on the U.S. Census American Community Survey.

**TABLE C.37: POPULATION GROWTH FOR FRANKLIN COUNTY**

| Location                     | Population Estimates |              |              |              |              |              | % Change 2010-2015 |
|------------------------------|----------------------|--------------|--------------|--------------|--------------|--------------|--------------------|
|                              | 2010                 | 2011         | 2012         | 2013         | 2014         | 2015         |                    |
| Bude                         | 1,023                | 1,263        | 1,229        | 1,295        | 990          | 905          | -11.53%            |
| Meadville                    | 492                  | 596          | 610          | 549          | 440          | 454          | -7.72%             |
| Roxie                        | 520                  | 492          | 544          | 573          | 568          | 551          | 5.96%              |
| Unincorporated Area          | 6,095                | 5,761        | 5,672        | 5,596        | 5,946        | 5,947        | -2.43%             |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>8,130</b>         | <b>8,112</b> | <b>8,055</b> | <b>8,013</b> | <b>7,944</b> | <b>7,857</b> | <b>-3.36%</b>      |

Source: United States Census Bureau, 2006-2010, 2007-2011, 2008-2012, 2009-2013, and 2010-2014, and 2011-2015 American Community Survey 5-Year Estimates

Based on the data above, there has been a low rate of residential development and population growth in the county since 2010, and the county has actually experienced a population decline. However, it is notable that Roxie has experienced a higher rate of growth and development compared to the rest of the county, resulting in an increased number of people and structures that are vulnerable to the potential impacts of the identified hazards. Therefore, development and population growth have impacted the county’s vulnerability since the previous local hazard mitigation plan was approved and there has been a slight increase in the overall vulnerability as well as a larger increase in certain areas and communities.

It is also important to note that as development increases in the future, greater populations and more structures and infrastructure will be exposed to potential hazards if development occurs in the floodplains or other high risk areas.

### C.3.4 Vulnerability Assessment Results

As noted in Section 6: *Vulnerability Assessment*, only hazards with a specific geographic boundary, available modeling tool, or sufficient historical data allow for further analysis. Those results, specific to Franklin County, are presented here. All other hazards are assumed to impact the entire planning region (drought, extreme heat, hailstorm, lightning, severe thunderstorm/high wind, tornado, and winter storm) or, due to lack of data, analysis would not lead to credible results (erosion). The total county exposure, and thus risk to these hazards, was presented in **Table C.33**.

The hazards to be further analyzed in this subsection include: dam/levee failure, flood, wildfire, earthquake, hurricane and tropical storm winds, and radiological event.

The annualized loss estimate for all hazards is presented near the end of this subsection in **Table C.44**.

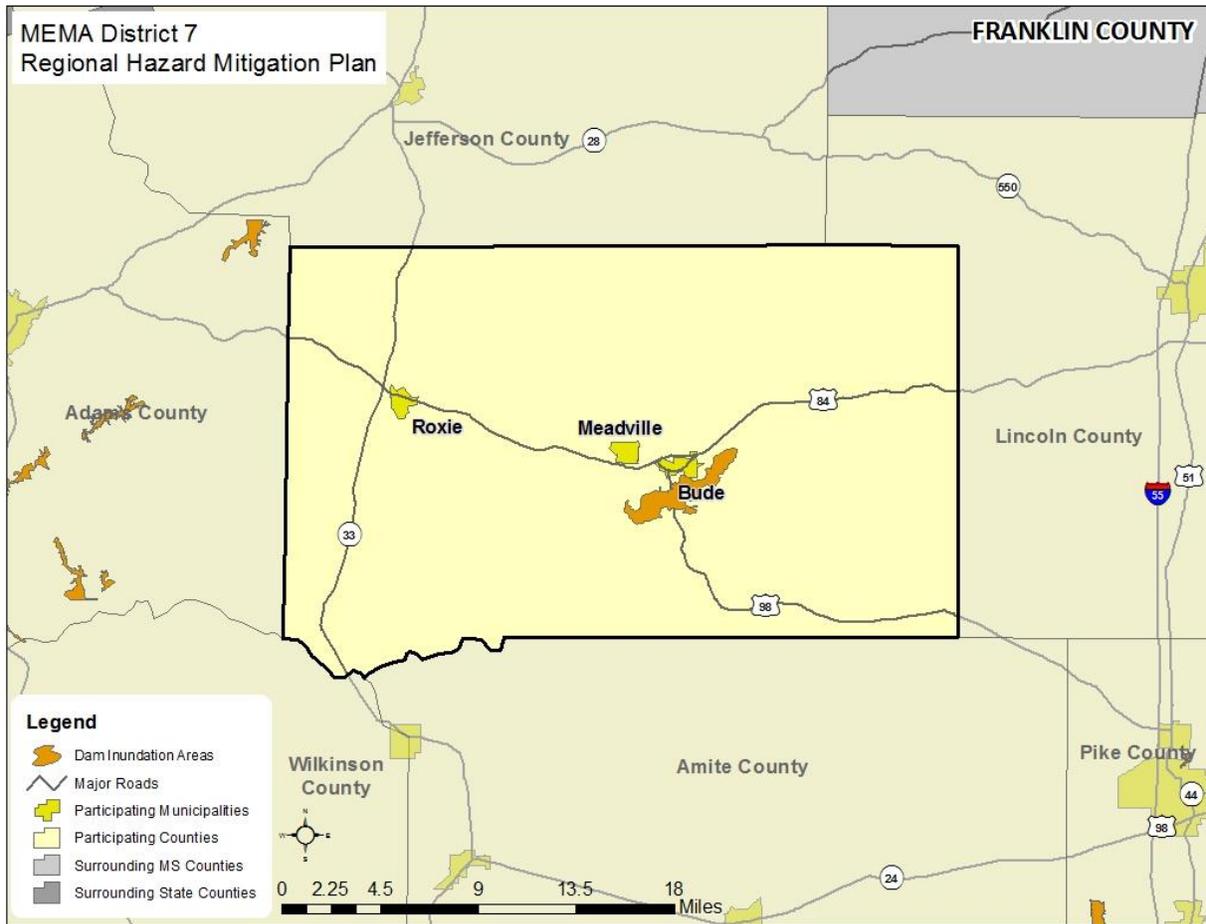
### ***DAM/LEVEE FAILURE***

In order to assess risk to a dam or levee failure, a GIS-based analysis was used to estimate exposure to one of the areas delineated by the Mississippi Department of Environmental Quality as a potential inundation area in the event of a failure. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified inundation area. As mentioned previously, this type of inundation mapping has not been completed for every dam/levee in the region, so the results of this analysis likely underestimate the overall vulnerability to a dam or levee failure. However, the analysis is still useful as a sort of baseline minimum of property that is potentially at-risk. The identified inundation areas can be found in **Figure C.18**.

In general, building footprint and parcel data were used in this analysis. However, in some communities, due to a lack of digital parcel data, it was determined that analysis using the inventory from Hazus-MH 4.0 would be used to supplement the building/parcel data. It should be noted that this data will merely be an estimation and may not reflect actual counts or values located in dam inundation areas. Indeed, in almost all cases, this data likely overestimates the amount of property in the identified risk zones.

**Table C.38** presents the potential at-risk property. Both the number of buildings and the approximate improved value are presented.

**FIGURE C.18: DAM INUNDATION AREAS IN FRANKLIN COUNTY**



Source: Mississippi Department of Environmental Quality

**TABLE C.38: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE DAM/LEEVE FAILURE HAZARD**

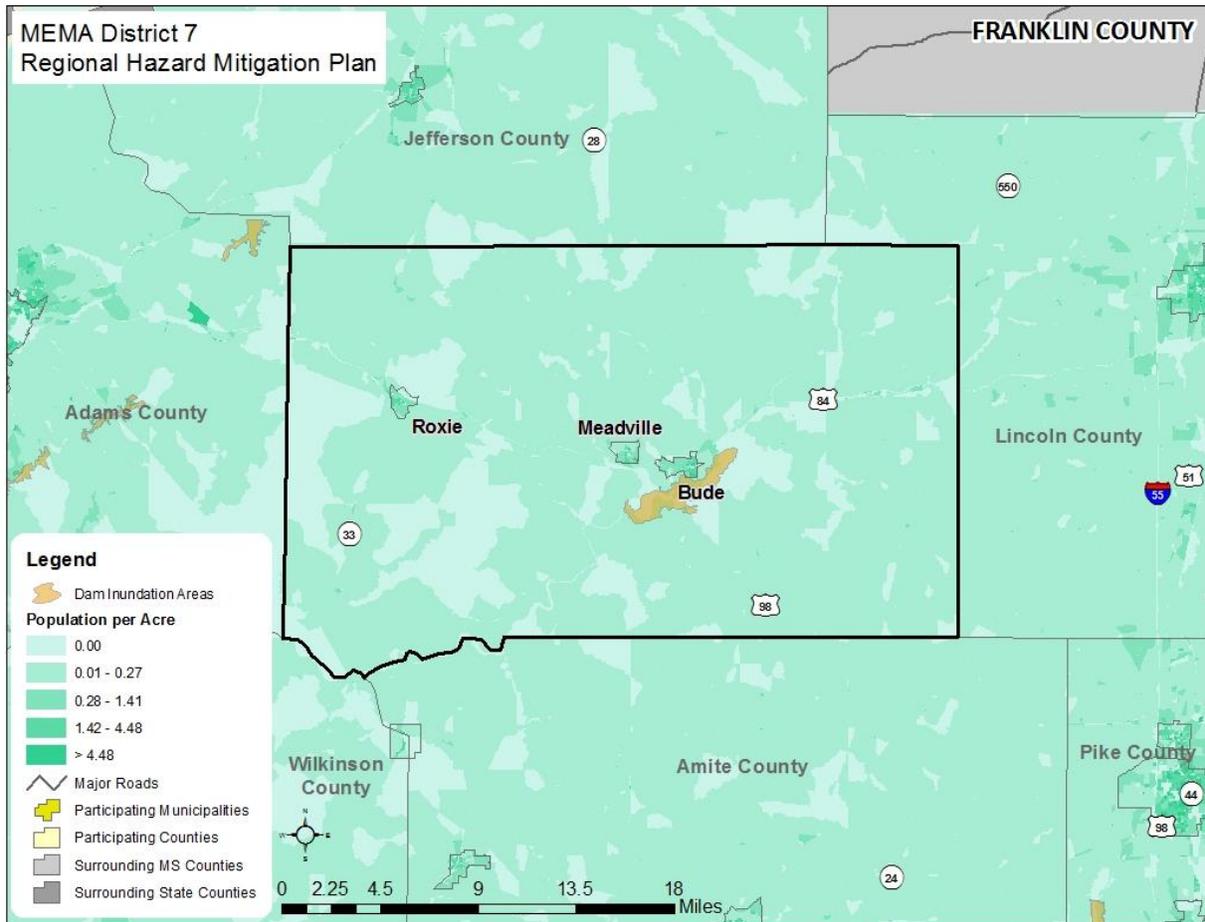
| Location                     | Dam Inundation Area            |                        |
|------------------------------|--------------------------------|------------------------|
|                              | Approx. Number of Improvements | Approx. Improved Value |
| Bude                         | 45                             | \$5,836,000            |
| Meadville                    | 0                              | \$0                    |
| Roxie                        | 0                              | \$0                    |
| Unincorporated Area          | 124                            | \$18,572,000           |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>169</b>                     | <b>\$24,408,000</b>    |

Source: Mississippi Department of Environmental Quality; Hazus 4.0

**Social Vulnerability**

Figure C.19 is presented to gain a better understanding of at-risk population by evaluating census block level population data against dam inundation areas. There are several areas of concern in the county, although it should be noted that most of the population of the county is not at risk to a dam/levee failure.

**FIGURE C.19: POPULATION DENSITY NEAR DAM INUNDATION AREAS IN FRANKLIN COUNTY**



Source: Mississippi Department of Environmental Quality; United States Census Bureau, 2010 Census

### Critical Facilities

There are no critical facilities located within the identified dam inundation areas. Although there are no facilities located in the identified areas, this does not indicate that there is no risk to a dam/levee failure, especially considering not all dams have delineated inundation areas. A list of specific critical facilities and their associated risk can be found in **Table C.45** at the end of this section.

In conclusion, a dam/levee failure has the potential to impact many existing and future buildings, facilities, and populations in Franklin County, though structures located near or in the dam inundation areas are at highest risk. Specific vulnerabilities for Franklin County assets will be greatly dependent on their individual design and the mitigation measures in place where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates if data becomes available.

**FLOOD**

Historical evidence indicates that Franklin County is susceptible to flood events. A total of 22 flood events have been reported by the National Climatic Data Center resulting in \$3.1 million (2017 dollars) in property damage. On an annualized level, these damages amounted to \$247,438 for Franklin County.

In order to assess flood risk, a GIS-based analysis was used to estimate exposure to flood events using Digital Flood Insurance Rate Map (DFIRM) data in combination with improved property records for the county. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified floodplain. Due to a lack of digital parcel data in most counties, it was determined that an analysis using the inventory from Hazus-MH 4.0 would be used, though it should be noted that the data will merely be an estimation and may not reflect actual counts or values located in the floodplain. Indeed, in almost all cases, this analysis likely overestimates the amount of property at risk. **Table C.39** presents the potential at-risk property. Both the number of parcels and the approximate value are presented.

**TABLE C.39: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE FLOOD HAZARD<sup>25</sup>**

| Location                     | 1.0-percent ACF                |                                | 0.2-percent ACF                |                                |
|------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|                              | Approx. Number of Improvements |
| Bude                         | 162                            | \$25,687,000                   | 0                              | \$0                            |
| Meadville                    | 70                             | \$9,484,000                    | 0                              | \$0                            |
| Roxie                        | 93                             | \$11,484,000                   | 0                              | \$0                            |
| Unincorporated Area          | 1,978                          | \$281,190,000                  | 0                              | \$0                            |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>2,303</b>                   | <b>\$327,845,000</b>           | <b>0</b>                       | <b>\$0</b>                     |

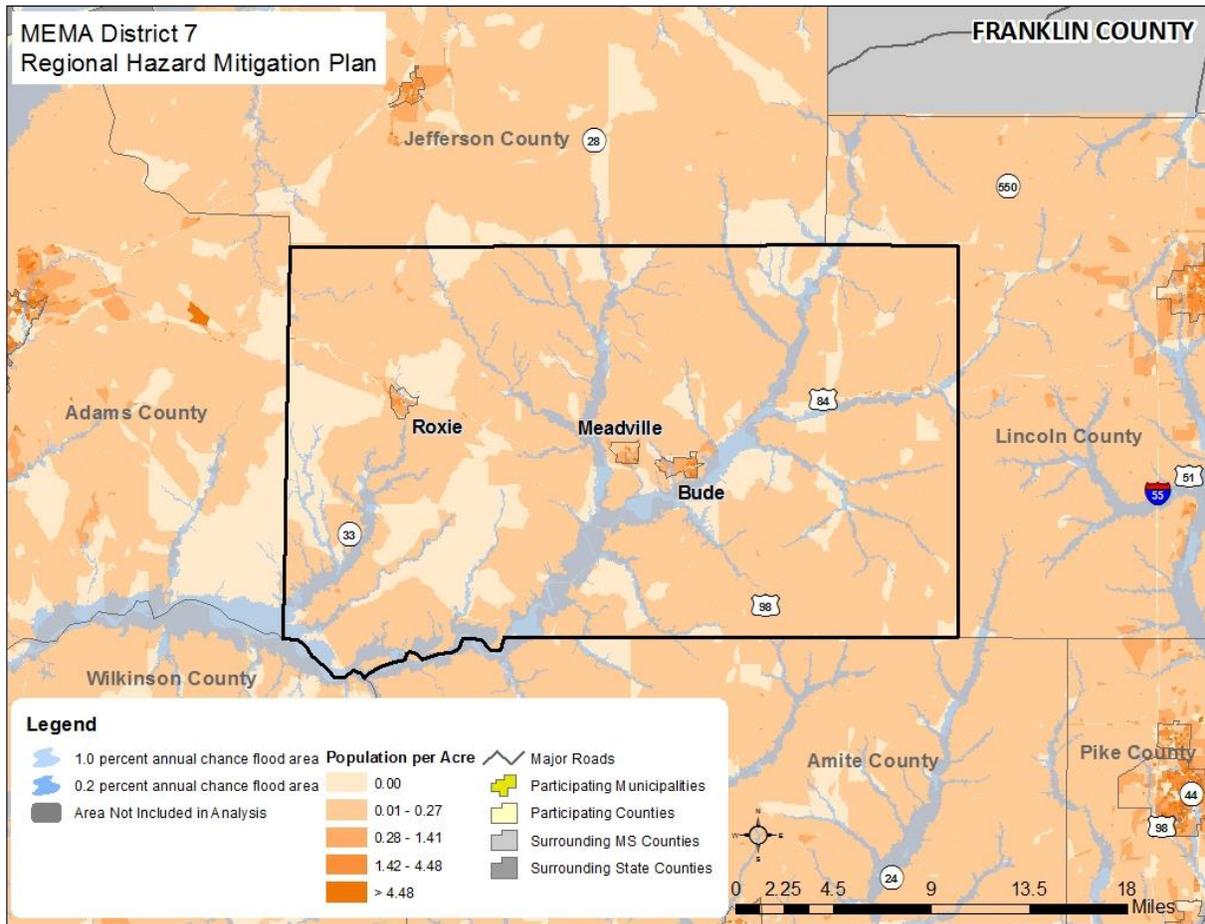
Source: Federal Emergency Management Agency DFIRM; Hazus MH 4.0

**Social Vulnerability**

**Figure C.20** is presented to gain a better understanding of at-risk population by evaluating census block level population data against mapped floodplains. There are areas of concern in several of the population centers. Therefore, further investigation in these areas may be warranted.

<sup>25</sup> As noted in Section 6.4, no building-specific data, such as building footprints, was available to determine buildings at risk. As a result of this data limitation, at-risk census block building counts and values of the structures were used.

**FIGURE C.20 : POPULATION DENSITY NEAR FLOODPLAINS IN FRANKLIN COUNTY**



Source: Federal Emergency Management Agency DFIRM; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there is one critical facility located in the floodplain. (Please note, as previously indicated, this analysis does not consider building elevation, which may negate risk.) This facility is a fire station located in the 1.0 percent annual chance flood zone. A list of specific critical facilities and their associated risk can be found in **Table C.45** at the end of this subsection.

In conclusion, a flood has the potential to impact many existing and future buildings, facilities, and populations in Franklin County, though some areas are at a higher risk than others. All types of structures in a floodplain are at-risk, though elevated structures will have a reduced risk. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. Furthermore, areas subject to repetitive flooding should be analyzed for potential mitigation actions.

**WILDFIRE**

Although historical evidence indicates that Franklin County is susceptible to wildfire events, there are few reports which include information on historic dollar losses. Therefore, it is difficult to calculate a reliable

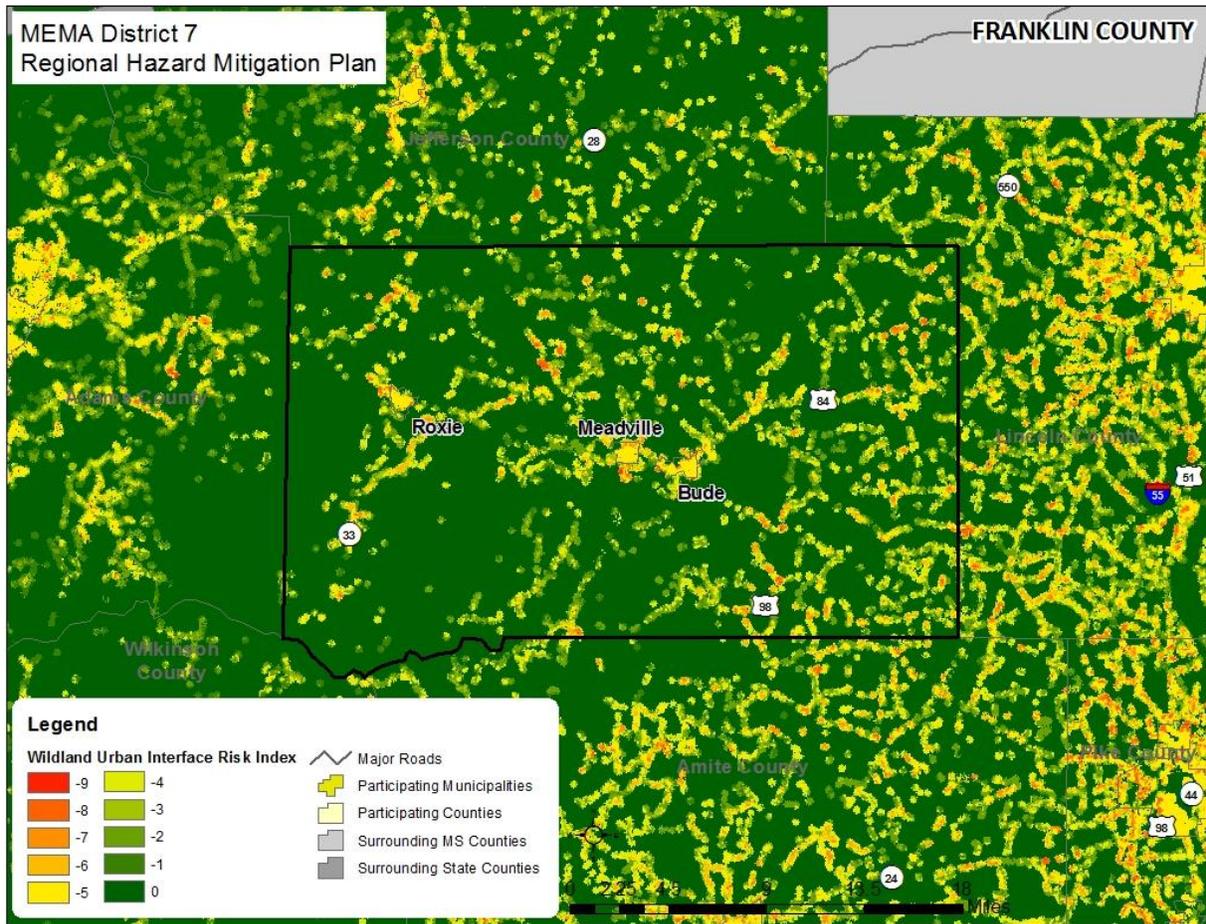
annualized loss figure. Annualized loss is considered negligible though it should be noted that a single event could result in significant damages throughout the county.

To estimate exposure to wildfire, building data was obtained from Hazus-MH 4.0 which includes information that has been aggregated at the census block level and which has been deemed useful for analyzing wildfire vulnerability. However, it should be noted that the accuracy of Hazus data is somewhat lower than that of parcel data. For the critical facility analysis, areas of concern were intersected with critical facility locations.

**Figure C.21** shows the Wildland Urban Interface Risk Index (WUIRI) data, which is a data layer that shows a rating of the potential impact of a wildfire on people and their homes. The key input, Wildland Urban Interface (WUI), reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the WUI and rural areas is key information for defining potential wildfire impacts to people and homes. Initially provided as raster data, it was converted to a polygon to allow for analysis. The Wildland Urban Interface Risk Index data ranges from 0 to -9 with lower values being most severe (as noted previously, this is only a measure of relative risk). **Figure C.22** shows the areas of analysis where any grid cell is less than -4. Areas with a value below -4 were chosen to be displayed as areas of risk because this showed the upper echelon of the scale and the areas at highest risk.

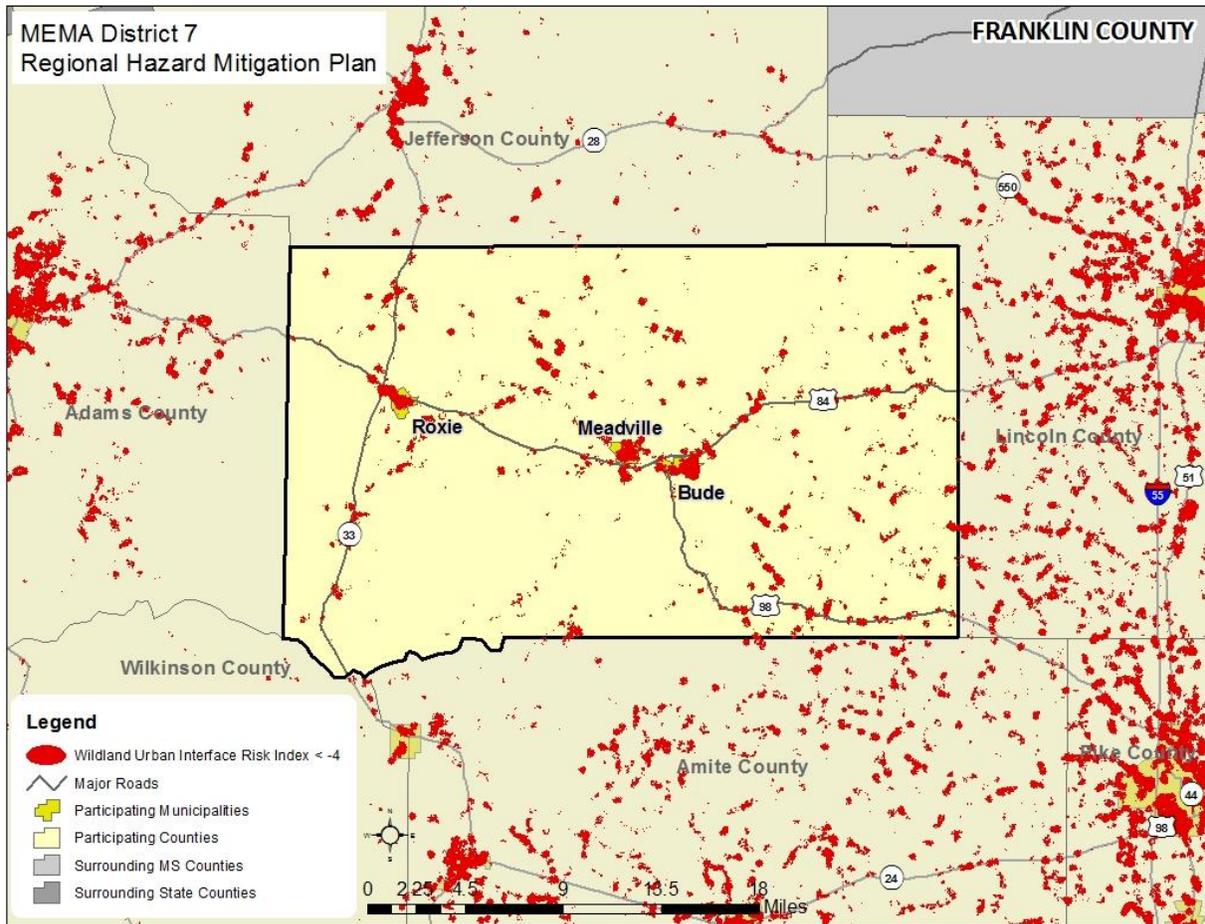
**Table C.40** shows the results of the analysis.

FIGURE C.21: WUI RISK INDEX AREAS IN FRANKLIN COUNTY



Source: Southern Wildfire Risk Assessment Data

**FIGURE C.22: WILDFIRE RISK AREAS IN FRANKLIN COUNTY**



Source: Southern Wildfire Risk Assessment Data

**TABLE C.40: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO WILDFIRE RISK AREAS<sup>26</sup>**

| Location                     | Wildfire Risk Area             |                        |
|------------------------------|--------------------------------|------------------------|
|                              | Approx. Number of Improvements | Approx. Improved Value |
| Bude                         | 560                            | \$94,838,000           |
| Meadville                    | 313                            | \$82,258,000           |
| Roxie                        | 275                            | \$36,555,000           |
| Unincorporated Area          | 2,971                          | \$411,425,000          |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>4,119</b>                   | <b>\$625,076,000</b>   |

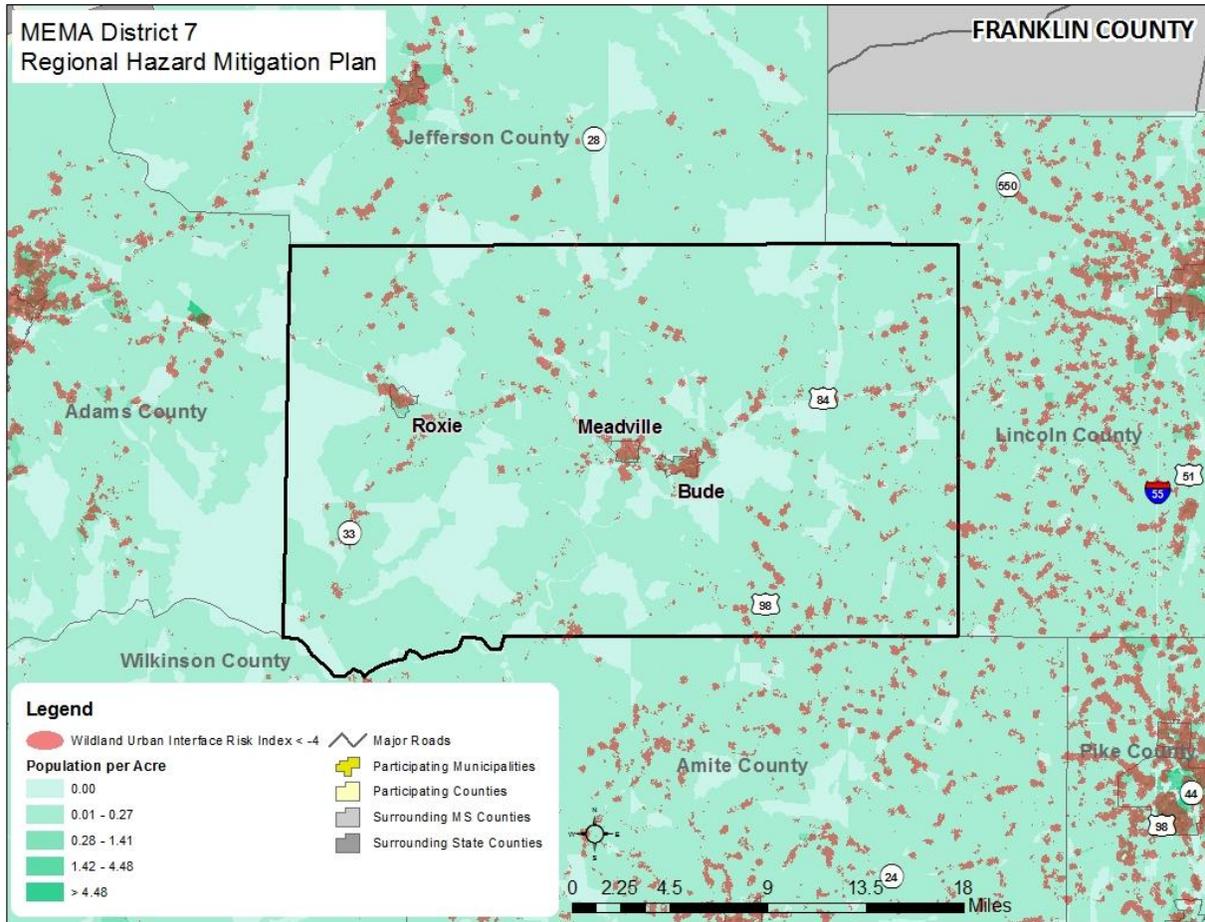
Source: Southern Wildfire Risk Assessment; Hazus-MH 4.0

<sup>26</sup> Parcel/Building Footprint data was not available for Franklin County. Therefore, building counts and values were pulled from Hazus-MH at the census block level and approximate improved value was calculated.

**Social Vulnerability**

Given some level of susceptibility across the entire county, it is assumed that the total population is at risk to the wildfire hazard. **Figure C.23** shows an overlay of the wildfire risk areas identified above with the population density by census block. This shows that many of the areas of higher population concentration are susceptible to wildfire because of their proximity to the wildland urban interface.

**FIGURE C.23: WILDFIRE RISK AREAS IN FRANKLIN COUNTY**



Source: Southern Wildfire Risk Assessment Data; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are 11 critical facilities located in wildfire areas of concern, including 1 EOC, 1 fire station, 3 medical care facilities, 3 police stations, 1 private sector building, and 2 schools. It should be noted, that several factors could impact the spread of a wildfire putting all facilities at risk. A list of specific critical facilities and their associated risk can be found in **Table C.45** at the end of this subsection.

In conclusion, a wildfire event has the potential to impact many existing and future buildings, critical facilities, and populations in Franklin County.

**EARTHQUAKE**

As the Hazus-MH model suggests below, and historical occurrences confirm, any significant earthquake activity in the area is likely to inflict minor damage to the county. Hazus-MH 4.0 estimates a total annualized loss of \$4,000 which includes structural and non-structural damage to buildings, contents, and inventory throughout the county.

For the earthquake hazard vulnerability assessment, a probabilistic scenario was created to estimate the average annualized loss<sup>27</sup> for the county. The results of the analysis are generated at the census tract level within Hazus-MH and then aggregated to the county level. Since the scenario is annualized, no building counts are provided. Losses reported included losses due to structure failure, building loss, contents damage, and inventory loss. They do not include losses to business interruption, lost income, or relocation. **Table C.41** summarizes the findings with results rounded to the nearest thousand.

**TABLE C.41: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR EARTHQUAKE HAZARD**

| Location        | Structural Damage | Non-Structural Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|-----------------|-------------------|-----------------------|-----------------|----------------|-----------------------|
| Franklin County | \$1,000           | \$2,000               | \$1,000         | \$0            | \$4,000               |

Source: Hazus-MH 4.0

**Social Vulnerability**

It can be assumed that all existing and future populations are at risk to the earthquake hazard.

**Critical Facilities**

The Hazus-MH probabilistic analysis did not indicate that any critical facilities would sustain measurable damage in an earthquake event. However, all critical facilities should be considered at-risk to minor to moderate damage should an event occur. A list of specific critical facilities and their associated risk can be found in **Table C.45** at the end of this subsection.

In conclusion, an earthquake has the potential to impact all existing and future buildings, facilities, and populations in Franklin County. Specific vulnerabilities for these assets will be greatly dependent on their individual design and the mitigation measures in place. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. The Hazus-MH scenario indicates that minimal to moderate damage is expected from an earthquake occurrence. While Franklin County may not experience a catastrophic earthquake, localized damage is possible with a moderate to larger scale occurrence.

**HURRICANE AND TROPICAL STORM**

Historical evidence indicates that Franklin County has significant risk to the hurricane and tropical storm hazard. There have been five disaster declarations due to hurricanes as noted in pervious sections. Several tracks have come near or traversed through the county, as shown and discussed in Section C.2.10. Hazus-MH 4.0 estimates a total annualized loss of \$172,000 which includes buildings, contents, and inventory throughout the county.

<sup>27</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

Hurricanes and tropical storms can cause damage through numerous additional hazards such as flooding, erosion, tornadoes, and high winds, thus it is difficult to estimate total potential losses from these cumulative effects. The current Hazus-MH hurricane model only analyzes hurricane winds and is not capable of modeling and estimating cumulative losses from all hazards associated with hurricanes; therefore, only hurricane winds are analyzed in this section. It can be assumed that all existing and future buildings and populations are at risk to the hurricane and tropical storm hazard. Hazus-MH 4.0 was used to determine average annualized losses<sup>28</sup> for the county as shown below in **Table C.42**. Only losses to buildings, inventory, and contents are included in the results.

**TABLE C.42: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR HURRICANE WIND HAZARD**

| Location        | Building Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|-----------------|-----------------|-----------------|----------------|-----------------------|
| Franklin County | \$110,000       | \$62,000        | \$0            | \$172,000             |

Source: Hazus-MH 4.0

**Social Vulnerability**

Given some equal susceptibility across the entire county, it is assumed that the total population, both current and future, is at risk to the hurricane and tropical storm hazard.

**Critical Facilities**

Given equal vulnerability across Franklin County, all critical facilities are considered to be at risk. Some buildings may perform better than others in the face of such an event due to construction and age, among other factors. Determining individual building response is beyond the scope of this plan. However, this plan will consider mitigation action for especially vulnerable structures and/or critical facilities to mitigate against the effects of the hurricane hazard. A list of specific critical facilities can be found in **Table C.45** at the end of this subsection.

In conclusion, a hurricane event has the potential to impact many existing and future buildings, critical facilities, and populations in Franklin County.

**RADIOLOGICAL EVENT**

The location of Grand Gulf and River Bend Nuclear Stations north and south of the region, respectively, demonstrate that the county is at some risk to the effects of a nuclear accident. Although there have not been any major events at these plants in the past, there have been major events at other nuclear stations around the country. Additionally, smaller scale incidents at both these nuclear stations have occurred.

In order to assess nuclear risk, a GIS-based analysis was used to estimate exposure during a nuclear event within each of the risk zones described in Section C.2.14. The determination of assessed value at-risk (exposure) was calculated using GIS analysis by summing the total values for those properties that were confirmed to be located within one of the risk zones. **Table C.43** presents potential at-risk properties in the 50-mile buffer zone (no property was located in the 10-mile buffer zone). The number of buildings, parcels, and the approximate value are presented.

<sup>28</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

**TABLE C.43: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO A NUCLEAR ACCIDENT**

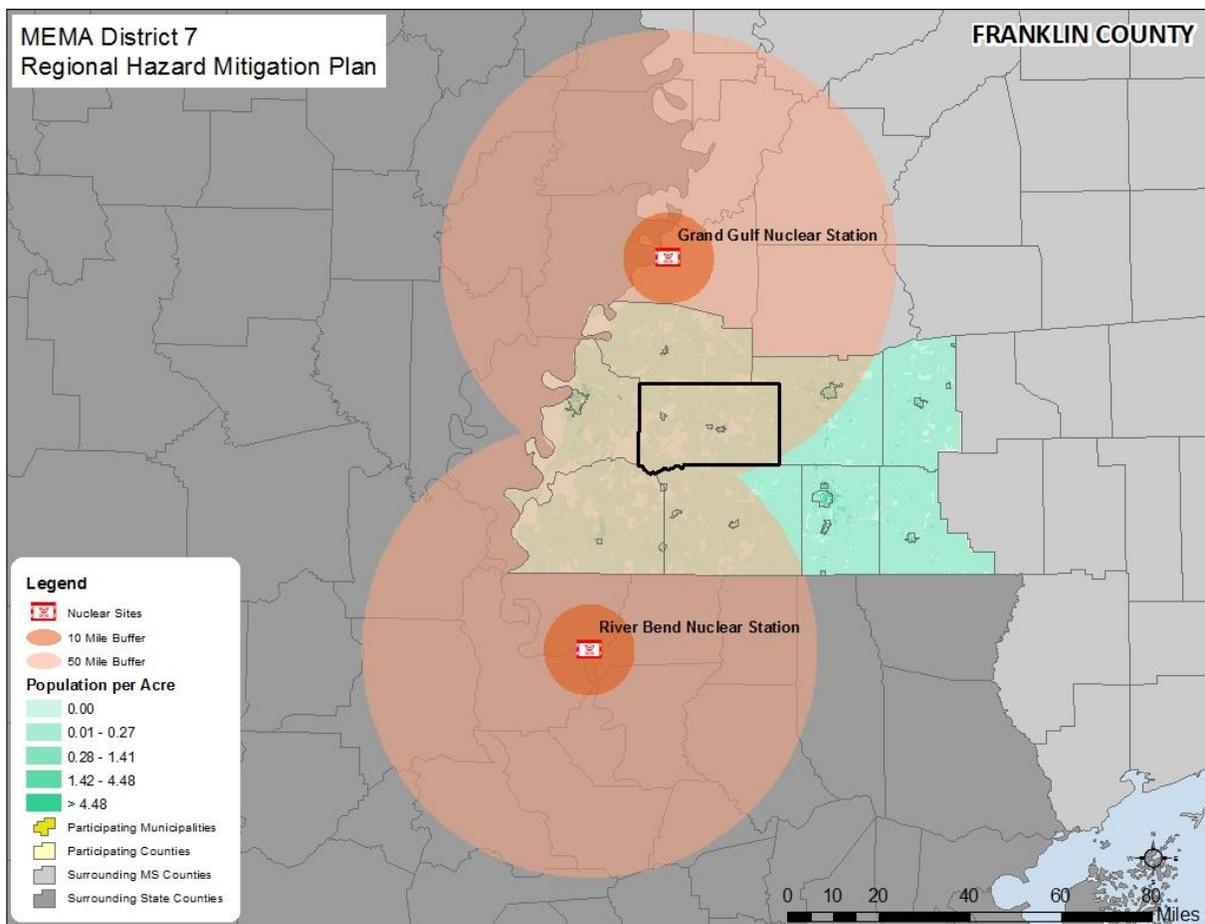
| Location                     | 50-mile Nuclear Buffer Area    |                        |
|------------------------------|--------------------------------|------------------------|
|                              | Approx. Number of Improvements | Approx. Improved Value |
| Bude                         | 560                            | \$94,838,000           |
| Meadville                    | 314                            | \$82,402,000           |
| Roxie                        | 275                            | \$36,555,000           |
| Unincorporated Area          | 3,088                          | \$436,809,000          |
| <b>FRANKLIN COUNTY TOTAL</b> | <b>4,237</b>                   | <b>\$650,604,000</b>   |

Source: International Atomic Energy Agency; Hazus-MH 4.0

**Social Vulnerability**

Since virtually the entire county is within the 50-mile buffer area, the entire population is considered to be at high risk to a radiological event. This risk can be seen in **Figure C.24**.

**FIGURE C.24: POPULATION DENSITY NEAR NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN FRANKLIN COUNTY**



Source: International Atomic Energy Agency; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that all 14 critical facilities in the county are located in the 50-mile nuclear buffer area, including 1 EOC, 2 fire stations, 4 medical care facilities, 3 police stations, 1 private sector building, and 3 schools. No critical facilities are located in the 10-mile buffer area. A list of specific critical facilities and their associated risk can be found in **Table C.45** at the end of this section.

In conclusion, a nuclear accident has the potential to impact many existing and future buildings, facilities, and populations in Franklin County.

**CONCLUSIONS ON HAZARD VULNERABILITY**

**Table C.44** presents a summary of annualized loss for each hazard in Franklin County. Due to the reporting of hazard damages primarily at the county level, it was difficult to determine an accurate annualized loss estimate for each municipality. Therefore, an annualized loss was determined through the damage reported through historical occurrences at the county level. These values should be used as an additional planning tool or measure risk for determining hazard mitigation strategies throughout the county.

**TABLE C.44: ANNUALIZED LOSS FOR FRANKLIN COUNTY**

| Event                         | Franklin County |
|-------------------------------|-----------------|
| <b>Flood-related Hazards</b>  |                 |
| Dam and Levee Failure         | Negligible      |
| Erosion                       | Negligible      |
| Flood                         | \$247,438       |
| <b>Fire-related Hazards</b>   |                 |
| Drought                       | \$4,269         |
| Lightning                     | \$16,186        |
| Wildfire                      | Negligible      |
| <b>Geologic Hazards</b>       |                 |
| Earthquake*                   | \$1,000         |
| <b>Wind-related Hazards</b>   |                 |
| Extreme Heat                  | Negligible      |
| Hailstorm                     | \$23,521        |
| Hurricane & Tropical Storm    | \$110,715       |
| Severe Thunderstorm/High Wind | \$97,500        |
| Tornado                       | \$195,723       |
| Winter Storm & Freeze         | \$44,791        |
| <b>Human-caused Hazards</b>   |                 |
| Radiological Event            | Negligible      |

\*No historic losses for earthquake were recorded, so Hazus estimates for annualized loss were used.

| Event | Franklin County |
|-------|-----------------|
|-------|-----------------|

Note: In this table, the term “Negligible” is used to indicate that no records of dollar losses for the particular hazard were recorded. This could be the case either because there were no events that caused dollar damage or because documentation of that particular type of event is not well kept.

As noted previously, all existing and future buildings and populations (including critical facilities) are vulnerable to atmospheric hazards including drought, lightning, extreme heat, hailstorm, hurricane and tropical storm, severe thunderstorm/high wind, tornado, and winter storm and freeze. Some buildings may be more vulnerable to these hazards based on other factors such as construction and building type. **Table C.45** shows the critical facilities vulnerable to the hazards analyzed in this section. The table lists those assets that are determined to be exposed to each of the identified hazards (marked with an “X”).

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**TABLE C.45: AT-RISK CRITICAL FACILITIES IN FRANKLIN COUNTY**

| FACILITY NAME                                 | FACILITY TYPE  | FLOOD-RELATED         |         |                | FIRE-RELATED   |         |           | GEO      | WIND-RELATED |              |           |                              |                                    |         | HUM                     |                                 |
|---|----------------|-----------------------|---------|----------------|----------------|---------|-----------|----------|--------------|--------------|-----------|------------------------------|------------------------------------|---------|-------------------------|---------------------------------|
|   |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought | Lightning | Wildfire | Earthquake   | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Light Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area |
| <b>Franklin County</b>                        |                |                       |         |                |                |         |           |          |              |              |           |                              |                                    |         |                         |                                 |
| Franklin County EOC                           | EOC            |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| East Franklin Rural Volunteer Fire Department | Fire Station   |                       | X       | X              |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Meadville Volunteer Fire Department District  | Fire Station   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Bude Rural Health Clinic                      | Medical Care   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Family Medical Group of Meadville             | Medical Care   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Franklin County Hospital                      | Medical Care   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Meadville Convalescent Nursing Home           | Medical Care   |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Bude Police Dept                              | Police Station |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Franklin County Sheriff                       | Police Station |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Meadville Police Dept                         | Police Station |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| American Railcar                              | Private Sector |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Franklin County Elementary School             | School         |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Franklin County High School                   | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Franklin County Jr High School                | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |

## C.4 FRANKLIN COUNTY CAPABILITY ASSESSMENT

This subsection discusses the capability of Franklin County to implement hazard mitigation activities. More information on the purpose and methodology used to conduct the assessment can be found in Section 7: *Capability Assessment*.

### C.4.1 Planning and Regulatory Capability

**Table C.46** provides a summary of the relevant local plans, ordinances, and programs already in place or under development for Franklin County. A checkmark (✓) indicates that the given item is currently in place and being implemented. An asterisk (\*) indicates that the given item is currently being developed for future implementation. A dagger (†) indicates that the given item is administered for that municipality by the county. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the MEMA District 7 Regional Hazard Mitigation Plan.

**TABLE C.46: RELEVANT PLANS, ORDINANCES, AND PROGRAMS**

| Planning Tool/Regulatory Tool | Hazard Mitigation Plan | Threat and Hazard Identification and Risk Assessment (THIRA) | Comprehensive Land Use Plan | Floodplain Management Plan/Flood Mitigation Plan | Open Space Management Plan (Parks & Rec/Greenway Plan) | Stormwater Management Plan/Ordinance | Natural Resource Protection Plan | Flood Response Plan | Emergency Operations Plan | Emergency Management Accreditation Program (EMAP Accreditation) | Continuity of Operations Plan | Evacuation Plan | Disaster Recovery Plan | Capital Improvements Plan | Economic Development Plan | Historic Preservation Plan | Flood Damage Prevention Ordinance | Zoning Ordinance | Subdivision Ordinance | Unified Development Ordinance | Post-Disaster Redevelopment/ Reconstruction Plan/ Ordinance | Building Code | Fire Code | National Flood Insurance Program (NFIP) | NFIP Community Rating System (CRS Program) |
|-------------------------------|------------------------|--|-----------------------------|--|--|--------------------------------------|----------------------------------|---------------------|---------------------------|---|-------------------------------|-----------------|------------------------|---------------------------|---------------------------|----------------------------|-----------------------------------|------------------|-----------------------|-------------------------------|---|---------------|-----------|---|--|
|                               | FRANKLIN COUNTY        | ✓  |                             |  |  |                                      |                                  |                     |                           | ✓   |                               |                 |                        |                           |                           | ✓                          |                                   | ✓                |                       |                               |   |               |           |   | ✓  |
| Bude                          | †                      |  |                             |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            |                                   |                  |                       |                               |   |               |           |   |  |
| Meadville                     | †                      |  |                             |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            |                                   |                  |                       |                               |   |               |           |   |  |
| Roxie                         | †                      |  |                             |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            | ✓                                 |                  |                       |                               |   |               |           | ✓                                       |  |

A more detailed discussion on the county’s planning and regulatory capabilities follows.

### EMERGENCY MANAGEMENT

#### Hazard Mitigation Plan

Franklin County has previously adopted a hazard mitigation plan. The Town of Bude, Town of Meadville, and Town of Roxie were also included in this plan.

### Emergency Operations Plan

Franklin County maintains an emergency operations plan through its Emergency Management Agency. The Town of Bude, Town of Meadville, and Town of Roxie are also covered by this plan.

### FLOODPLAIN MANAGEMENT

**Table C.47** provides NFIP policy and claim information for each participating jurisdiction in Franklin County.

**TABLE C.47: NFIP POLICY AND CLAIM INFORMATION**

| Jurisdiction     | Date Joined NFIP | Current Effective Map Date | NFIP Policies in Force | Insurance in Force | Closed Claims | Total Payments to Date |
|------------------|------------------|----------------------------|------------------------|--------------------|---------------|------------------------|
| FRANKLIN COUNTY† | 12/13/12         | 01/06/10(M)                | 10                     | \$849,400          | 1             | \$6,854                |
| Bude*            | --               | --                         | --                     | --                 | --            | --                     |
| Meadville*       | --               | --                         | --                     | --                 | --            | --                     |
| Roxie            | 06/17/86         | 01/06/10(M)                | 1                      | \$175,000          | 0             | \$0                    |

†Includes unincorporated areas of county only

\*Community does not participate in the NFIP

(M) – No Elevation Determined, All Zone A, C and X

Source: NFIP Community Status information as of 8/17/2017; NFIP claims and policy information as of 4/30/2017

All jurisdictions listed above that are participants in the NFIP will continue to comply with all required provisions of the program and will work to adequately comply in the future utilizing a number of strategies. For example, the jurisdictions will coordinate with MEMA and FEMA to develop maps and regulations related to special flood hazard areas within their jurisdictional boundaries and, through a consistent monitoring process, will design and improve their floodplain management program in a way that reduces the risk of flooding to people and property.

As noted above, several jurisdictions are not participants in the NFIP. The Town of Bude and Town of Meadville do not participate in the NFIP due to a lack of capacity or resources to properly administer and maintain the program.

### Flood Damage Prevention Ordinance

All communities participating in the NFIP are required to adopt a local flood damage prevention ordinance. Franklin County and the Town of Roxie both participate in the NFIP and have adopted flood damage prevention regulations.

## C.4.2 Administrative and Technical Capability

**Table C.48** provides a summary of the capability assessment results for Franklin County with regard to relevant staff and personnel resources. A checkmark (✓) indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill. A dagger (†) indicates a county-level staff member(s) provides the specified knowledge or skill to that municipality.

**TABLE C.48: RELEVANT STAFF/PERSONNEL RESOURCES**

| Staff/Personnel Resource | Planners with knowledge of land development/land management practices | Engineers or professionals trained in construction practices related to buildings and/or infrastructure | Planners or engineers with an understanding of natural and/or human-caused hazards | Emergency Manager | Floodplain Manager | Land Surveyors | Scientists familiar with the hazards of the community | Staff with education or expertise to assess the community's vulnerability to hazards | Personnel skilled in GIS and/or Hazus | Resource development staff or grant writers |
|--------------------------|---|---|--|-------------------|--------------------|----------------|---|--|---------------------------------------|---|
| FRANKLIN COUNTY          |   |   |  | ✓                 | ✓                  |                | ✓   | ✓  |                                       |   |
| Bude                     |   |   |  | †                 |                    |                | †   | †  |                                       |   |
| Meadville                |   |   |  | †                 |                    |                | †   | †  |                                       |   |
| Roxie                    |   |   |  | †                 | ✓                  |                | †   | †  |                                       |   |

Credit for having a floodplain manager was given to those jurisdictions that have a flood damage prevention ordinance, and therefore an appointed floodplain administrator, regardless of whether the appointee was dedicated solely to floodplain management. Credit was given for having a scientist familiar with the hazards of the community if a jurisdiction has a Cooperative Extension Service or Soil and Water Conservation Department. Credit was also given for having staff with education or expertise to assess the community's vulnerability to hazards if a staff member from the jurisdiction was a participant on the existing hazard mitigation plan's planning committee.

### C.4.3 Fiscal Capability

**Table C.49** provides a summary of the results for Franklin County with regard to relevant fiscal resources. A checkmark (✓) indicates that the given fiscal resource has previously been used to implement hazard mitigation actions. A dagger (†) indicates that the given fiscal resource is locally available for hazard mitigation purposes (including match funds for state and federal mitigation grant funds).

**TABLE C.49: RELEVANT FISCAL RESOURCES**

| Fiscal Tool/Resource | Capital Improvement Programming | Community Development Block Grants (CDBG) | Special Purpose Taxes (or taxing districts) | Gas/Electric Utility Fees | Water/Sewer Fees | Stormwater Utility Fees | Development Impact Fees | General Obligation, Revenue, and/or Special Tax Bonds | Partnering Arrangements or Intergovernmental Agreements | Other: FEMA Hazard Mitigation Grants, Homeland Security Grants, USDA Rural Development Agency Grants, and US Economic Development Administration Grants |
|----------------------|---------------------------------|---|---|---------------------------|------------------|-------------------------|-------------------------|---|---|---|
| FRANKLIN COUNTY      |                                 | †   |   |                           |                  |                         |                         |   | ✓   | †   |
| Bude                 |                                 | †   |   |                           |                  |                         |                         |   |   | †   |
| Meadville            |                                 | †   |   |                           |                  |                         |                         |   |   | †   |
| Roxie                |                                 | †   |   |                           |                  |                         |                         |   |   | †   |

### C.4.4 Political Capability

During the months immediately following a disaster, local public opinion in Franklin County is more likely to shift in support of hazard mitigation efforts.

**Table C.50** provides a summary of the results for Franklin County with regard to political capability. A checkmark (✓) indicates the expected degree of political support by local elected officials in terms of adopting/funding information.

**TABLE C.50: LOCAL POLITICAL SUPPORT**

| Political Support | Limited | Moderate | High |
|-------------------|---------|----------|------|
| FRANKLIN COUNTY   |         | ✓        |      |
| Bude              | ✓       |          |      |
| Meadville         | ✓       |          |      |
| Roxie             |         | ✓        |      |

### C.4.5 Conclusions on Local Capability

**Table C.51** shows the results of the capability assessment using the designed scoring methodology described in Section 7: *Capability Assessment*. The capability score is based solely on the information found in existing hazard mitigation plans and readily available on the jurisdictions' government websites. This information was reviewed by all jurisdictions and each jurisdiction provided feedback on the information included in the capability assessment. Local government input was vital to identifying capabilities. According to the assessment, the average local capability score for the county and its jurisdictions is 14.5, which falls into the limited capability ranking.

**TABLE C.51: CAPABILITY ASSESSMENT RESULTS**

| Jurisdiction    | Overall Capability Score | Overall Capability Rating |
|-----------------|--------------------------|---------------------------|
| FRANKLIN COUNTY | 23                       | Limited                   |
| Bude            | 9                        | Limited                   |
| Meadville       | 9                        | Limited                   |
| Roxie           | 17                       | Limited                   |

## C.5 FRANKLIN COUNTY MITIGATION STRATEGY

This subsection provides the blueprint for Franklin County to follow in order to become less vulnerable to its identified hazards. It is based on general consensus of the Regional Hazard Mitigation Council and the findings and conclusions of the capability assessment and risk assessment. Additional Information can be found in Section 8: *Mitigation Strategy* and Section 9: *Mitigation Action Plan*.

### C.5.1 Mitigation Goals

Franklin County developed six mitigation goals in coordination with the other participating MEMA District 7 Region jurisdictions. The regional mitigation goals are presented in **Table C.52**.

**TABLE C.52: MEMA DISTRICT 7 REGIONAL MITIGATION GOALS**

|         | Goal   |
|---------|--|
| Goal #1 | Increase the overall public awareness of natural hazards that face the region.   |
| Goal #2 | Retrofit of critical facilities and/or critical infrastructure to lower the risk of damage from natural hazards.   |
| Goal #3 | General improvement of regional or local mitigation planning and capability.   |
| Goal #4 | Support State Identified Mitigation Initiatives such as saferooms and storm shelters, severe weather warning systems for universities and colleges, and severe weather notification systems for local communities. |

|         | Goal  |
|---------|---|
| Goal #5 | Reduce loss of life, damage and loss of property and infrastructure, economic costs, including response, recovery and disruption of economic activity.      |
| Goal #6 | Foster cooperation among all levels of governments and the private sector with respect to improving, updating, and implementing the hazard mitigation plan. |

### C.5.2 Mitigation Action Plan

The mitigation actions proposed by Franklin County, Town of Bude, Town of Meadville, and Town of Roxie are listed in the following individual Mitigation Action Plans.

## Franklin County Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------------|-------------------|---|---|-------------------------|---|
| <b>Prevention</b> |  |                           |                   |   |   |                         |   |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning</b> – The Franklin County Board of Supervisors/Towns of Meadville, Bude, and Roxie should have a Comprehensive Plan developed to guide long term recovery and development.                                 | Hurricane or other hazard | High              | Franklin County Board of Supervisors/ Towns of Meadville, Bude, and Roxie | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Franklin County Board of Supervisors/Towns of Meadville, Bude, and Roxie recognize that comprehensive land use planning yields many benefits for both the county and towns. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. The county and towns have not developed a Comprehensive Plan. Therefore, this action will remain in the plan. |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction. | Flood                     | Moderate          | Southwest Mississippi Planning and Development District, Inc.             | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|--|-------------------------|---|
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds      | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

| Action #                           | Description   | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|---|---|-------------------|---|---|-------------------------|--|
| <b>Property Protection</b>         |   |   |                   |   |   |                         |  |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Franklin County Board of Supervisors/ Towns of Meadville, Bude, and Roxie should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Franklin County Board of Supervisors/ Towns of Meadville, Bude, and Roxie | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Franklin County Board of Supervisors/Towns of Meadville, Bude, and Roxie recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/town government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |
| <b>Natural Resource Protection</b> |   |   |                   |   |   |                         |  |
| NRP-1                              |   |   |                   |   |   |                         |  |
| <b>Structural Projects</b>         |   |   |                   |   |   |                         |  |
| SP-1                               |   |   |                   |   |   |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-7 since they were duplicate actions.</p> |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Franklin County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Franklin County will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|--------------------------------------|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Franklin County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Franklin County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

**ANNEX C: FRANKLIN COUNTY**

| Action # | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|--|-------------------|--------------------------------------|---|-------------------------|---|
| ES-4     | <b>Construct New Emergency Shelter</b> – The county should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions. | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Franklin County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Franklin County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. Since a new emergency shelter has not been constructed in Franklin County, this action will remain in the plan. |
| ES-5     | <b>Renovate Emergency Operations Center</b> – The EOC should secure and renovate another building or construct a new one of sufficient size to house all EOC staff and equipment.  | Hurricane or other hazard requiring action from the EOC                    | High              | Franklin County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Franklin County Emergency Operations Center (EOC) is currently housed in inadequate space requiring staff and equipment to be quartered at several locations in the county. This severely hampers the EOC’s ability to perform its functions during times of emergency. Staff and equipment should be housed at one location to maximize efficiency and minimize response time. This action will remain in the plan to improve the EOC’s functions.   |

**ANNEX C: FRANKLIN COUNTY**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|---|--|-------------------------|--|
| ES-6     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system.   | Tornado             | High              | Franklin County Board of Supervisors    | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County General Fund | 2022                    | Many citizens in Franklin County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. A warning system needs to be installed in Franklin County, so this action will remain in the plan. |
| ES-7     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA   | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department              | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|--------------------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                                      |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Franklin County Board of Supervisors | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau               | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division            | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Franklin County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Bude Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                             | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|---|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of Bude<br/>Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Bude will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                            | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|--|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Bude Board of Aldermen and Mayor           | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Bude continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Bude/ Franklin County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | 2022                    | In the event of inclement weather, it is essential that residents of the Town of Bude receive timely warnings. A warning system needs to be installed in the Town of Bude, so this action will remain in the plan.  |

**ANNEX C: FRANKLIN COUNTY**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency  | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Bude Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Bude              | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Bude will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

### Town of Meadville Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**ANNEX C: FRANKLIN COUNTY**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan.   |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               | <b>Drainage Improvements</b> – The Town of Meadville intends to implement flood control measures in this area to protect current property and encourage future growth.   | Flood               | High              | Town of Meadville, Franklin County                            | FEMA Hazard Mitigation Grant, Town of Meadville General Fund   | 2022                    | Flash flooding within the Town of Meadville in the Williams Street area has caused flooding of roadways and property. This flooding causes damage to the roadways and can prevent access to emergency vehicles during times of distress, so this action will remain in the plan. |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions.</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---|---|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | Town of Meadville Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Meadville will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                 | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---|-------------------|---|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Meadville Board of Aldermen and Mayor           | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Meadville continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Meadville/ Franklin County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | 2022                    | In the event of inclement weather, it is essential that residents of the Town of Meadville receive timely warnings. A warning system needs to be installed in the Town of Meadville, so this action will remain in the plan.   |

**ANNEX C: FRANKLIN COUNTY**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency       | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Meadville Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Meadville         | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Meadville will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

### Town of Roxie Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**ANNEX C: FRANKLIN COUNTY**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan.   |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               | <b>Drainage Improvements</b> – The Town of Roxie is currently completing a drainage project and intends to continue implementing flood control measures.   | Flood               | High              | Town of Roxie, Franklin County                                | FEMA Hazard Mitigation Grant, Community Development Block Grant, Town of Roxie General Fund  | 2022                    | Flash flooding within the Town of Roxie has caused flooding of roadways and property. This flooding causes damage to the roadways and can prevent access to emergency vehicles during times of distress, so this action will remain in the plan. |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions.</p> |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                          | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of Roxie Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Roxie will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|---|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Roxie Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Roxie continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                             | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|--|-------------------|---|---|-------------------------|--|
| ES-4     | <b>Construct Volunteer Fire Department/Emergency Evacuation Center</b> – The town should construct a 50 person evacuation shelter. The Volunteer Fire Department could be housed in the same facility.   | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Roxie Board of Aldermen and Mayor           | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2022                    | The Town of Roxie Board of Aldermen and Mayor recognize the need to have modern, safe emergency shelters for county/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. Also, the current facilities for the Volunteer Fire Department are inadequate. More space is needed to store equipment. Since a new emergency shelter has not been constructed in the Town of Roxie, this action will remain in the plan. |
| ES-5     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado  | High              | Town of Roxie/ Franklin County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | 2022                    | In the event of inclement weather, it is essential that residents of the Town of Roxie receive timely warnings. A warning system needs to be installed in the Town of Roxie, so this action will remain in the plan.   |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---|---------------------------|-------------------------|--|
| ES-6                                  | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA                | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |
| <b>Public Education and Awareness</b> |   |                     |                   |   |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Roxie                           | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| PEA-2    | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.    |
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                              |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.  | Dam Failure         | Moderate          | MDEQ, Dam Safety Division | N/A                       | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Roxie will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan. |

ANNEX C: FRANKLIN COUNTY

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others</b> – Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.                  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                      | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan.  |

**ANNEX C: FRANKLIN COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-7    | <p><b>Education: Public Outreach –</b><br/>                     Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan. |

# ANNEX D

## JEFFERSON COUNTY

This annex includes jurisdiction-specific information for Jefferson County and its participating municipalities. It consists of the following five subsections:

- D.1 Jefferson County Community Profile
  - D.2 Jefferson County Risk Assessment
  - D.3 Jefferson County Vulnerability Assessment
  - D.4 Jefferson County Capability Assessment
  - D.5 Jefferson County Mitigation Strategy
- 

### D.1 JEFFERSON COUNTY COMMUNITY PROFILE

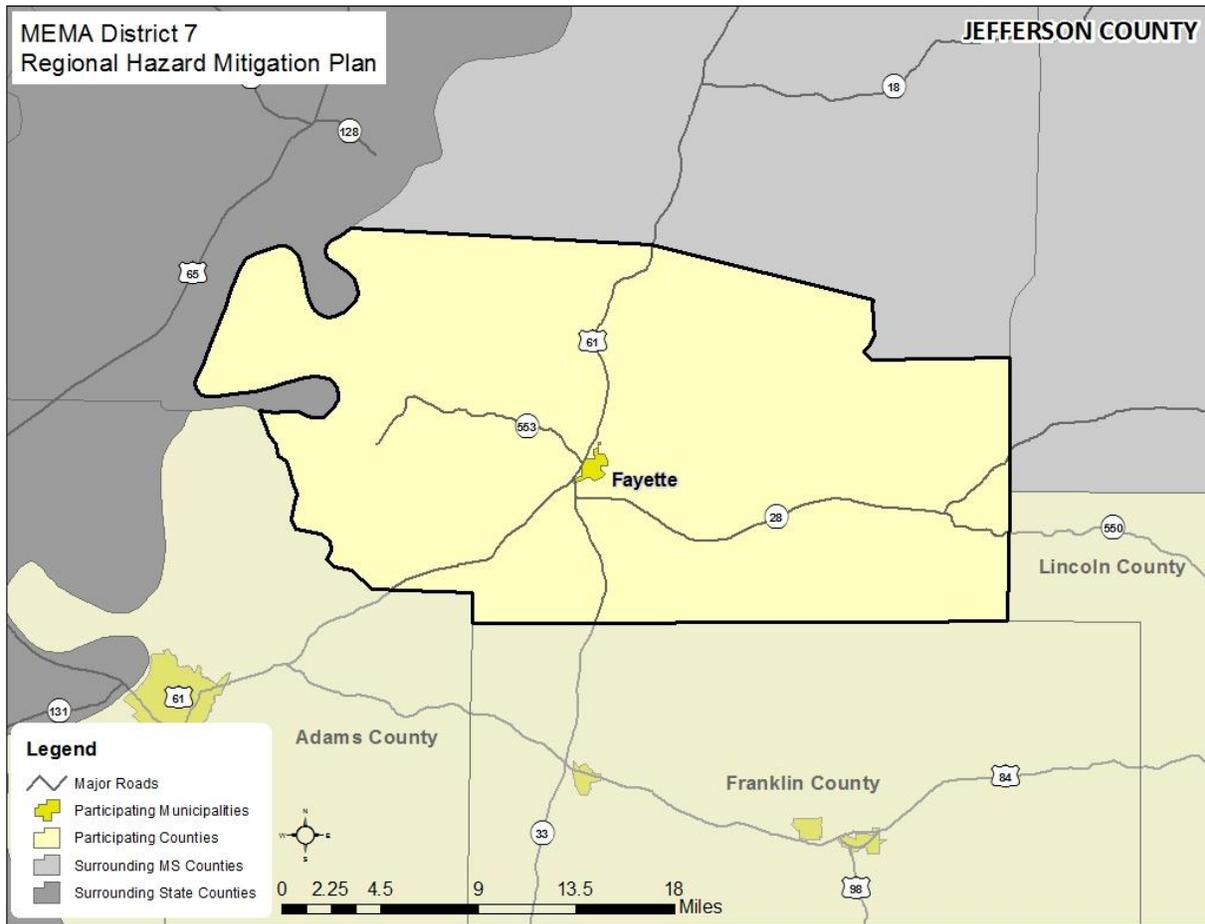
#### D.1.1 Geography and the Environment

Jefferson County is located in southwestern Mississippi. It comprises one city, City of Fayette, as well as many small unincorporated communities. An orientation map is provided as **Figure D.1**.

The county is located adjacent to the Mississippi River supplying diverse recreational activities. The total area of the county is 527 square miles, 7 square miles of which is water area.

Jefferson County enjoys four distinct seasons but the climate in the region is generally hot and humid compared to the rest of the United States given its latitude and relative proximity to the Gulf Coast. Precipitation is generally highest in winter months when the temperatures are moderately lower, but the likelihood of precipitation remains relatively constant throughout the year. Summers in the region can become fairly hot with average highs in the nineties and lows in the seventies. The region is also often susceptible to turbulent weather when warm, wet air from the Gulf of Mexico is pushed up into the region to mix with cooler air coming down from across the continent which can result in severe weather conditions. This is particularly true in the spring when seasons are changing and diverse weather patterns interact.

**FIGURE D.1: JEFFERSON COUNTY ORIENTATION MAP**



### D.1.2 Population and Demographics

According to the 2015 American Community Survey, Jefferson County has a population of 7,586 people. The county has seen a significant decrease in population between 2000 and 2015, and the population density is 15 people per square mile. Population counts from the U.S. Census Bureau for 2000 and 2010 and from the American Community Survey for 2015 for the county and participating jurisdictions are presented in **Table D.1**.

**TABLE D.1: POPULATION COUNTS FOR JEFFERSON COUNTY**

| Jurisdiction     | 2000 Census Population | 2010 Census Population | 2015 American Community Survey Estimate | % Change 2000-2015 |
|------------------|------------------------|------------------------|---|--------------------|
| Jefferson County | 9,740                  | 7,726                  | 7,586                                   | -22.1%             |
| Fayette          | 2,242                  | 1,614                  | 1,563                                   | -30.3%             |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

Based on the 2010 Census, the median age of residents of Jefferson County is 37.6 years. The racial characteristics of the county are presented in **Table D.2**. Blacks or African Americans make up the majority of the population in the county, accounting for over 85 percent of the population.

**TABLE D.2: DEMOGRAPHICS OF JEFFERSON COUNTY**

| Jurisdiction     | White, Percent | Black or African American, Percent | American Indian or Alaska Native, Percent | Asian, Percent | Native Hawaiian or Other Pacific Islander, Percent | Other Race, Percent | Two or More Races, percent | Persons of Hispanic Origin, Percent* |
|------------------|----------------|------------------------------------|---|----------------|--|---------------------|----------------------------|--------------------------------------|
| Jefferson County | 13.9%          | 85.9%                              | 0.0%                                      | 0.1%           | 0.0%   | 0.0%                | 0.0%                       | 0.1%                                 |
| Fayette          | 0.0%           | 99.4%                              | 0.0%                                      | 0.6%           | 0.0%   | 0.0%                | 0.0%                       | 0.0%                                 |

\*Hispanics may be of any race, so also are included in applicable race categories

Source: 2011-2015 American Community Survey 5-Year Estimates

### D.1.3 Housing

According to the 2010 U.S. Census, there are 3,673 housing units in Jefferson County, the majority of which are single family homes or mobile homes. Housing information for the county and municipality is presented in **Table D.3**. As shown in the table, the incorporated city has a lower percentage of seasonal housing units compared to the unincorporated county.

**TABLE D.3: HOUSING CHARACTERISTICS OF JEFFERSON COUNTY**

| Jurisdiction     | Housing Units (2000) | Housing Units (2010) | Seasonal Units, Percent (2010) | Median Home Value (2011-2015) |
|------------------|----------------------|----------------------|--------------------------------|-------------------------------|
| Jefferson County | 3,819                | 3,673                | 8.0%                           | \$60,500                      |
| Fayette          | 843                  | 750                  | 2.0%                           | \$55,100                      |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

### D.1.4 Infrastructure

#### TRANSPORTATION

In Jefferson County, U.S. Highway 61 and Mississippi Highway 33 provide access to the north and south. Mississippi Highway 28 provides access to the east and west.

There are no general aviation airports located in Jefferson County.

No railroads operate within Jefferson County.

#### UTILITIES

Electrical power in Jefferson County is provided by Entergy Mississippi Inc. and Southwest Mississippi Electric Power Association.

Water and sewer service is provided by participating jurisdictions and/or community based associations, but unincorporated areas often rely on septic systems and wells in Jefferson County.

### **COMMUNITY FACILITIES**

There are a number of buildings and community facilities located throughout Jefferson County. According to the data collected for the vulnerability assessment (Section 6.4.1), there are 1 fire station, 2 police stations, and 1 school located within the county.

There are also 2 hospitals and medical care facilities located in Jefferson County. This includes Jefferson County Hospital, a 30-bed short term acute facility located in Fayette.

Recreational opportunities exist throughout Jefferson County. The Homochitto National Forest comprises almost 200,000 acres of land and is partially located in Jefferson County. Visitors can camp, hike, hunt, and fish in the forest. Another prominent feature of the region is the Natchez Trace Parkway which begins in the City of Natchez and runs northeast through Jefferson County on to Nashville, Tennessee. This parkway commemorates the Old Natchez Trace which is an historic trail that was followed by Native Americans who were tracing bison along their migratory routes from the grazing pastures of central and western Mississippi to the salt licks of Tennessee.

The Mississippi River, which runs along the western border of the county, has played an integral part in the history of the county. The river acted as a major conduit for trade in the 19<sup>th</sup> century as plantations produced large quantities of cotton that could be easily shipped down to ports such as New Orleans. Today, the river is still an important part of the local economy as products are shipped worldwide out of the Natchez port. Apart from the Mississippi River there are multiple water based refuges, activities, and recreational features focused on local water bodies in the region. There are also numerous other small lakes, creeks, and other water bodies throughout the region that offer the outstanding outdoor recreational opportunities for which the region is known.

### **D.1.5 Land Use**

Jefferson County has a blend of old and new development that contributes to physical, cultural, and economic attributes throughout the region. There is one incorporated municipality located in the county. This area is where the county's population is generally concentrated. The incorporated area is also where many of the businesses, commercial uses, and institutional uses are located. Land uses in the balance of the county generally consist of rural residential development, agricultural uses, and recreational areas. There are multiple county- and regional-based agencies that serve to coordinate growth and promote economic development. Local land use and associated regulations are further discussed in *Section 7: Capability Assessment*.

### **D.1.6 Employment and Industry**

According to the U.S. Census Bureau's American Community Survey (ACS), in 2015, Jefferson County had an average annual employment of 6,013 workers and an average unemployment rate of 15.9 percent (compared to 10.3 percent for the state). In 2015, the Educational services, health care and social assistance industry employed 37.1 percent of the workforce. Manufacturing was the second largest industry, employing 13.6 percent of workers, and Transportation and warehousing followed behind

(12.1%). The average annual median household in 2015 for Jefferson County was \$20,743 compared to \$39,665 in the state of Mississippi.

## **D.2 JEFFERSON COUNTY RISK ASSESSMENT**

This subsection includes hazard profiles for each of the significant hazards identified in Section 4: *Hazard Identification* as they pertain to Jefferson County. Each hazard profile includes a description of the hazard's location and extent, notable historical occurrences, and the probability of future occurrences. Additional information can be found in Section 5: *Hazard Profiles*.

### ***FLOOD-RELATED HAZARDS***

#### **D.2.1 Dam and Levee Failure**

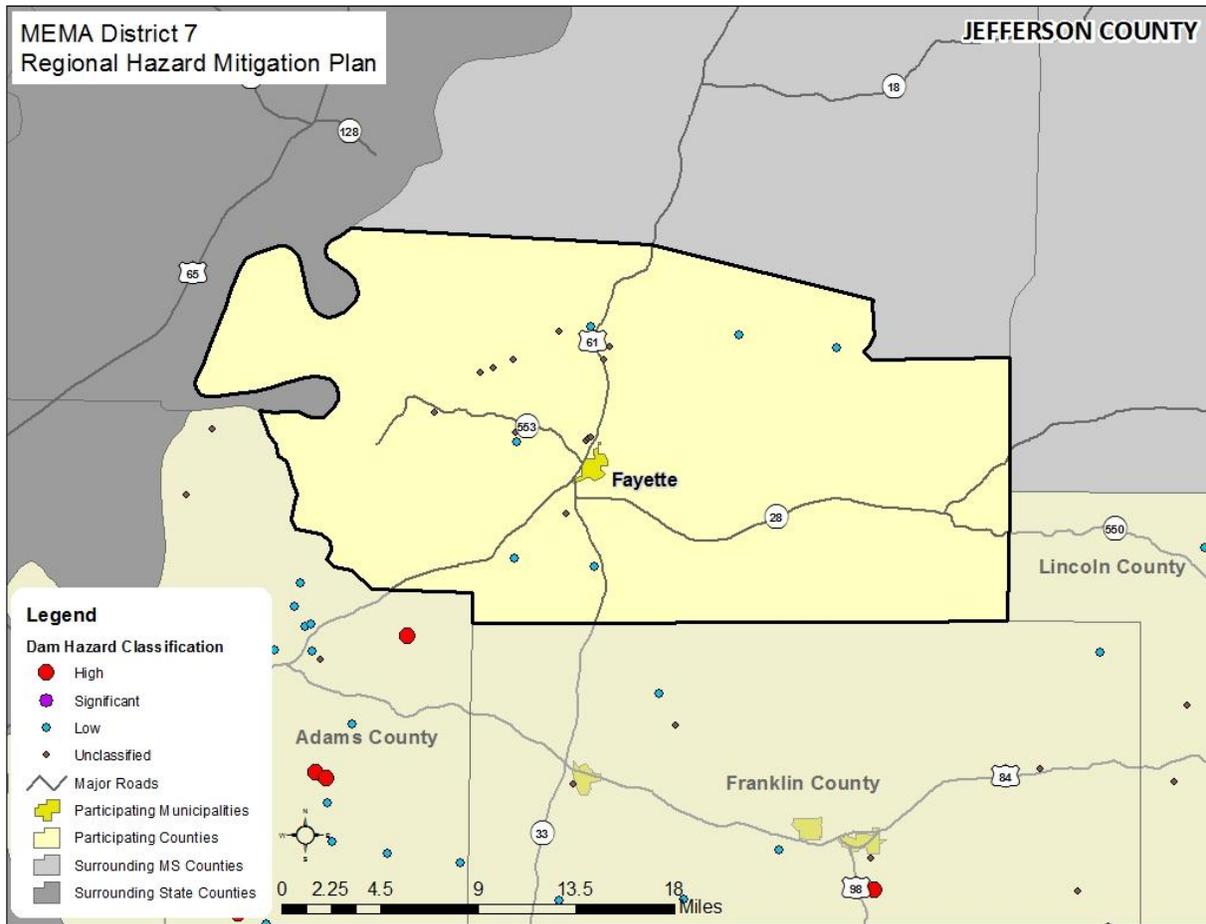
##### ***LOCATION AND SPATIAL EXTENT***

According to the Mississippi Department of Environmental Quality, there are no high hazard dams in Jefferson County (**Table D.4**).<sup>1</sup> **Figure D.2** and **Figure D.3** show the location of high hazard dams as well as mapped inundation areas located nearby.

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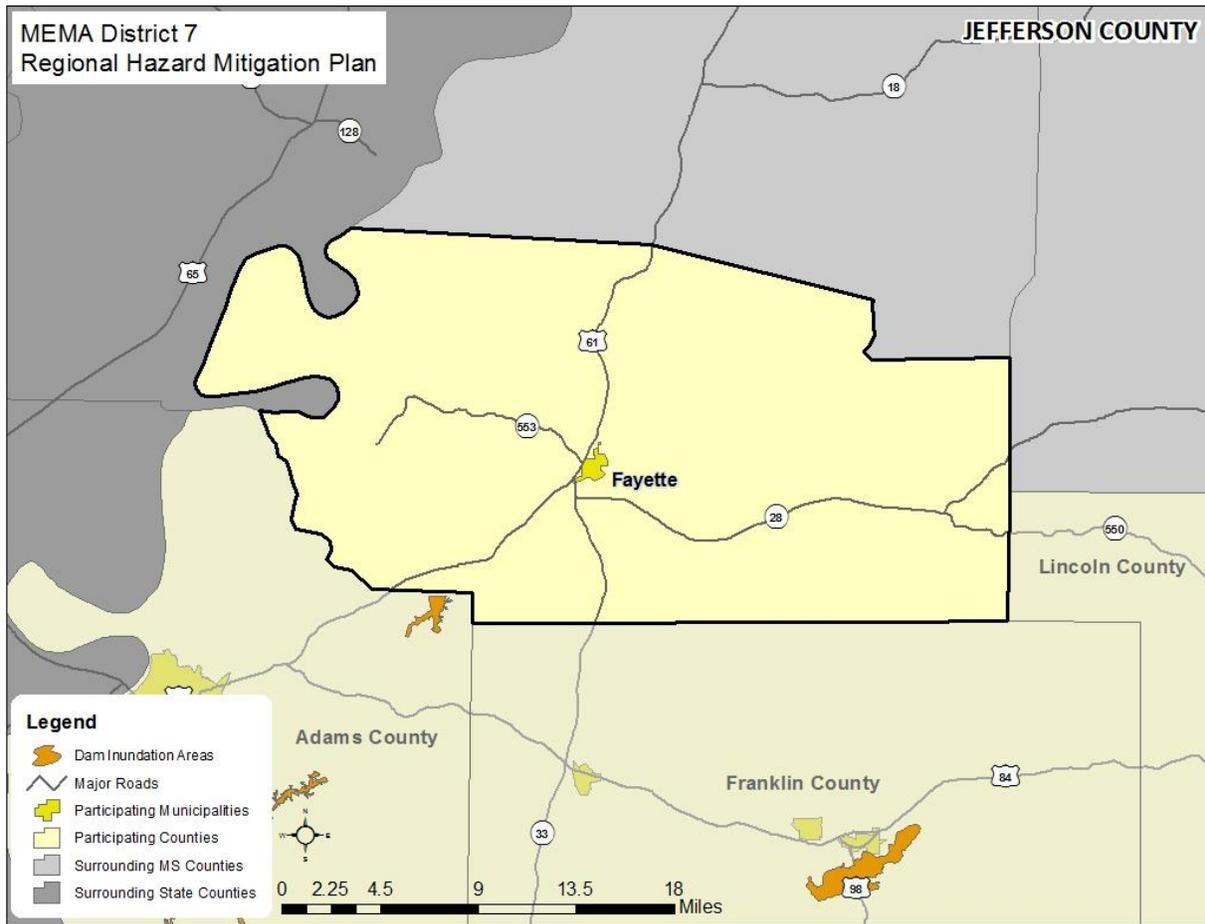
<sup>1</sup> The list of high hazard dams obtained from the Mississippi Department of Environmental Quality was reviewed and amended by local officials to the best of their knowledge.

FIGURE D.2: JEFFERSON COUNTY HIGH HAZARD DAM LOCATIONS



Source: Mississippi Department of Environmental Quality

**FIGURE D.3: JEFFERSON COUNTY DAM INUNDATION AREAS**



Source: Mississippi Department of Environmental Quality

**TABLE D.4: JEFFERSON COUNTY HIGH HAZARD DAMS**

| Dam Name                | Hazard Potential | Max Storage (ac/ft) | Dam Height (ft) |
|-------------------------|------------------|---------------------|-----------------|
| <b>Jefferson County</b> |                  |                     |                 |
| NONE                    | N/A              | N/A                 | N/A             |

Source: Mississippi Department of Environmental Quality

**HISTORICAL OCCURRENCES**

According to the Mississippi State Hazard Mitigation Plan, there have been no dam failures reported in Jefferson County (Table D.5). However, several breach scenarios in the region could be catastrophic.

**TABLE D.5: JEFFERSON COUNTY DAM FAILURES (1982-2012)**

| Date          | County    | Structure Name | Cause of Failure |
|---------------|-----------|----------------|------------------|
| None reported | Jefferson | --             | --               |

Source: Mississippi Department of Environmental Quality

## **PROBABILITY OF FUTURE OCCURRENCES**

Given the current dam inventory and historic data, a dam breach is unlikely (less than 1 percent annual probability) in the future. As has been demonstrated in the past, regular monitoring is necessary to prevent these events.

### **D.2.2 Erosion**

#### **LOCATION AND SPATIAL EXTENT**

Erosion in Jefferson County is typically caused by flash flooding events. Unlike coastal areas, areas of concern for erosion in Jefferson County are primarily rivers/streams and reservoirs. Generally, vegetation also helps to prevent erosion in the area, but in recent years, erosion has become a growing threat to many of the participating counties and jurisdictions.

At this time, there is no regional or state-level data available on localized areas of erosion so it is a challenge to identify particularly prone areas on a wider geographic scale. However, a few areas of concern were reported by members of the hazard mitigation council and other local sources. Locations along the Mississippi River in Jefferson County are known to be especially at-risk, but there are locations in many areas within the region where erosion is prominent.

#### **HISTORICAL OCCURRENCES**

Several sources were vetted to identify areas of erosion in Jefferson County. This includes searching local newspapers, interviewing local officials, and reviewing previous hazard mitigation plans. The locations identified above are representative of areas where erosion has taken place in the past.

These incidents have caused major problems as bridges have become damaged in many instances and made unsafe for emergency services vehicles to cross during and after storm events. This delays response times and critical life-safety support. In addition, the shutdown of roads has hurt local communities economically as trade and commerce are temporarily shut down as bridges are repaired. It has also caused disruption to daily activities for local school boards who must re-route buses around affected areas, causing additional fuel resources to be expended and increasing drive times for students.

#### **PROBABILITY OF FUTURE OCCURRENCES**

Erosion remains a natural, dynamic, and continuous process for Jefferson County, and it will continue to occur. The annual probability level assigned for erosion is likely (between 10 and 100 percent annually).

### **D.2.3 Flood**

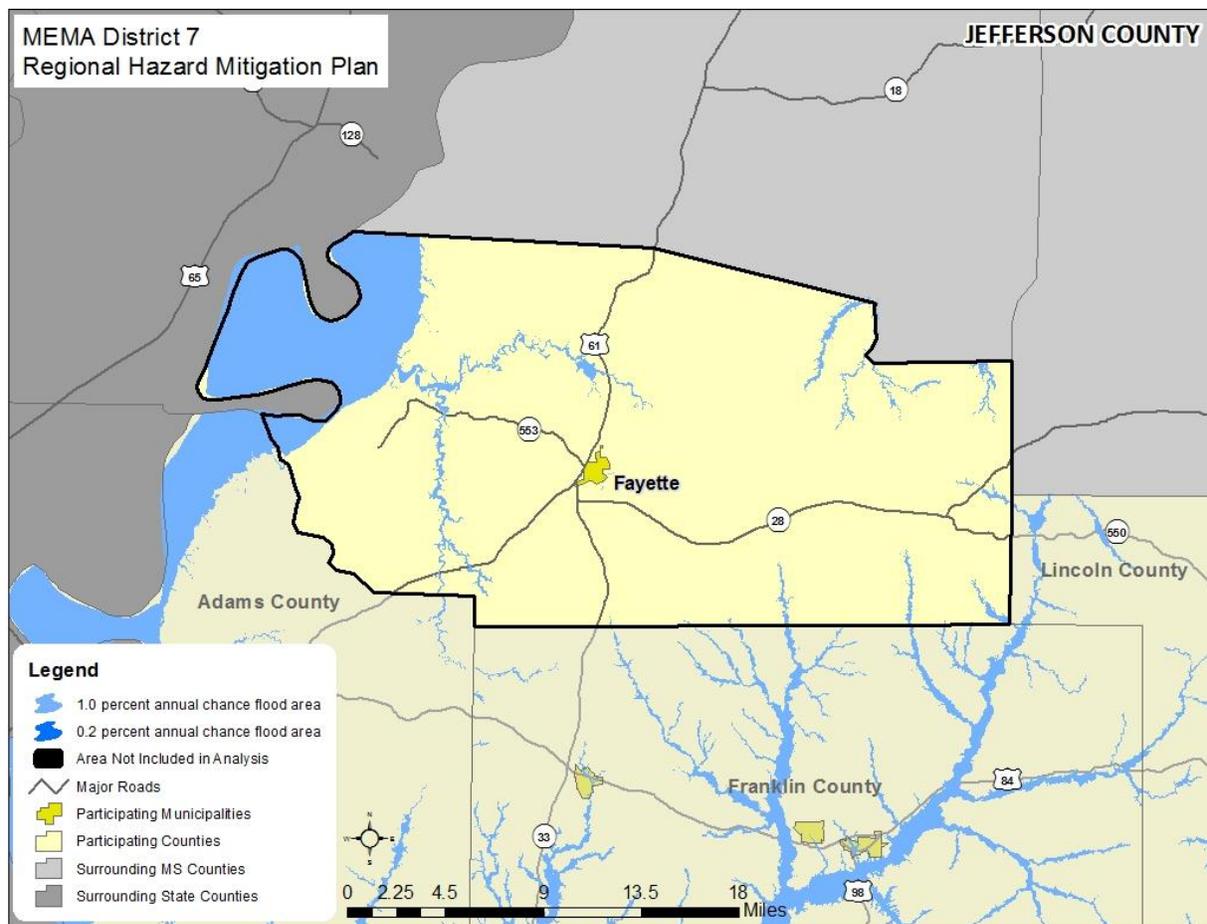
#### **LOCATION AND SPATIAL EXTENT**

There are areas in Jefferson County that are susceptible to flood events. Special flood hazard areas in the county were mapped using Geographic Information System (GIS) and FEMA Digital Flood Insurance Rate

Maps (DFIRM).<sup>2</sup> This includes Zone A (1-percent annual chance floodplain), Zone AE (1-percent annual chance floodplain with elevations), and Zone X-500 (0.2-percent annual chance floodplain). According to GIS analysis, of the 526 square miles that make up Jefferson County, there are 67.77 square miles of land in zones A and AE (1-percent annual chance floodplain/100-year floodplain) and less than 0.01 square miles of land in zone X-500 (0.2 percent annual change floodplain/500-year floodplain).

These flood zone values account for 12.9 percent of the total land area in Jefferson County. It is important to note that while FEMA digital flood data is recognized as best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Flooding and flood-related losses often do occur outside of delineated special flood hazard areas. **Figure D.4** illustrates the location and extent of currently mapped special flood hazard areas for Jefferson County based on best available FEMA Digital Flood Insurance Rate Map (DFIRM) data.

**FIGURE D.4: SPECIAL FLOOD HAZARD AREAS IN JEFFERSON COUNTY**



Source: Federal Emergency Management Agency

<sup>2</sup> The county-level DFIRM data used for Jefferson County were updated in 2010.

**HISTORICAL OCCURRENCES**

Floods were at least partially responsible for seven disaster declarations in Jefferson County in 1973, 1974, 1979, 1983, 2003, 2011, and 2017.<sup>3</sup> Information from the National Climatic Data Center was used to ascertain additional historical flood events. The National Climatic Data Center reported a total of 17 events in Jefferson County since 1997.<sup>4</sup> A summary of these events is presented in **Table D.6**. These events accounted for over \$4.5 million (2017 dollars) in property damage.<sup>5</sup> Specific information on flood events, including date, type of flooding, and deaths and injuries, can be found in **Table D.7**.

**TABLE D.6: SUMMARY OF FLOOD OCCURRENCES IN JEFFERSON COUNTY**

| Location                      | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Fayette                       | 4                     | 0/0             | \$76,511               | \$5,885                    |
| Unincorporated Area           | 13                    | 0/0             | \$4,464,466            | \$223,223                  |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>17</b>             | <b>0/0</b>      | <b>\$4,540,977</b>     | <b>\$229,109</b>           |

Source: National Climatic Data Center

**TABLE D.7: HISTORICAL FLOOD EVENTS IN JEFFERSON COUNTY**

| Location                   | Date      | Type        | Deaths/Injuries | Property Damage* |
|----------------------------|-----------|-------------|-----------------|------------------|
| <b>Fayette</b>             |           |             |                 |                  |
| FAYETTE                    | 2/5/2004  | Flash Flood | 0/0             | \$65,662         |
| FAYETTE                    | 5/14/2004 | Flash Flood | 0/0             | \$0              |
| FAYETTE                    | 8/13/2010 | Flash Flood | 0/0             | \$5,600          |
| FAYETTE                    | 5/10/2013 | Flash Flood | 0/0             | \$5,249          |
| <b>Unincorporated Area</b> |           |             |                 |                  |
| JEFFERSON (ZONE)           | 3/10/1997 | Flood       | 0/0             | \$305,655        |
| COUNTYWIDE                 | 1/29/1999 | Flash Flood | 0/0             | \$74,414         |
| STAMPLEY                   | 3/2/2001  | Flash Flood | 0/0             | \$11,102         |
| HARRISTON                  | 5/14/2004 | Flash Flood | 0/0             | \$0              |
| COUNTYWIDE                 | 9/25/2005 | Flash Flood | 0/0             | \$1,230,000      |
| RED LICK                   | 2/21/2008 | Flash Flood | 0/0             | \$231,018        |
| UNION CHURCH               | 8/12/2008 | Flash Flood | 0/0             | \$11,161         |
| UNION CHURCH               | 9/2/2008  | Flash Flood | 0/0             | \$223,531        |
| CHURCH HILL                | 9/2/2008  | Flash Flood | 0/0             | \$2,235,311      |
| CHURCH HILL                | 5/8/2011  | Flood       | 0/0             | \$113,624        |
| CHURCH HILL                | 6/1/2011  | Flood       | 0/0             | \$16,249         |
| UNION CHURCH               | 3/28/2014 | Flash Flood | 0/0             | \$10,348         |
| LORMAN                     | 7/9/2014  | Flash Flood | 0/0             | \$2,053          |

<sup>3</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>4</sup> These flood events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported. As additional local data becomes available, this hazard profile will be amended.

<sup>5</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| Location | Date | Type | Deaths/Injuries | Property Damage* |
|----------|------|------|-----------------|------------------|
|----------|------|------|-----------------|------------------|

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

**HISTORICAL SUMMARY OF INSURED FLOOD LOSSES**

According to FEMA flood insurance policy records as of March 31, 2017, there have been 84 flood losses reported in Jefferson County through the National Flood Insurance Program (NFIP) since 1978, totaling almost \$918,000 in claims payments. A summary of these figures for the county is provided in **Table D.8**. It should be emphasized that these numbers include only those losses to structures that were insured through the NFIP policies, and for losses in which claims were sought and received. It is likely that many additional instances of flood loss in Jefferson County were either uninsured, denied claims payment, or not reported.

**TABLE D.8: SUMMARY OF INSURED FLOOD LOSSES IN JEFFERSON COUNTY**

| Location                      | Number of Policies | Flood Losses | Claims Payments     |
|-------------------------------|--------------------|--------------|---------------------|
| Fayette                       | 0                  | 0            | \$0.00              |
| Unincorporated Area           | 6                  | 84           | \$917,583.88        |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>6</b>           | <b>84</b>    | <b>\$917,583.88</b> |

Source: National Flood Insurance Program

**REPETITIVE LOSS PROPERTIES**

According to the Mississippi Emergency Management Agency, there are 12 non-mitigated repetitive loss properties located in Jefferson County, which accounted for 40 losses and more than \$459,000 in claims payments under the NFIP. The average claim amount for these properties is \$11,477. Of the 12 properties, 7 are single family and 5 are other non-residential. Without mitigation, these properties will likely continue to experience flood losses. **Table D.9** presents detailed information on repetitive loss properties and NFIP claims and policies for Jefferson County.

**TABLE D.9: REPETITIVE LOSS PROPERTIES IN JEFFERSON COUNTY**

| Location                      | Number of Properties | Types of Properties                      | Number of Losses | Building Payments   | Content Payments   | Total Payments      | Average Payment    |
|-------------------------------|----------------------|--|------------------|---------------------|--------------------|---------------------|--------------------|
| Fayette                       | 0                    | --                                       | 0                | \$0.00              | \$0.00             | \$0.00              | \$0.00             |
| Unincorporated Area           | 12                   | 7 single family; 5 other non-residential | 40               | \$393,999.99        | \$65,064.66        | \$459,064.65        | \$11,476.62        |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>12</b>            |  | <b>40</b>        | <b>\$393,999.99</b> | <b>\$65,064.66</b> | <b>\$459,064.65</b> | <b>\$11,476.62</b> |

Source: National Flood Insurance Program

**PROBABILITY OF FUTURE OCCURRENCES**

Flood events will remain a threat in Jefferson County, and the probability of future occurrences will remain highly likely (100 percent annual probability). The probability of future flood events based on magnitude

and according to best available data is illustrated in the figure above, which indicates those areas susceptible to the 1-percent annual chance flood (100-year floodplain).

It can be inferred from the floodplain location maps, previous occurrences, and repetitive loss properties that risk varies throughout the county. For example, areas in the northwestern portion of the county have more floodplain and thus a higher risk of flood than the rest of the county. Flood is not the greatest hazard of concern but will continue to occur and cause damage. Therefore, mitigation actions may be warranted, particularly for repetitive loss properties.

## ***FIRE-RELATED HAZARDS***

### **D.2.4 Drought**

#### ***LOCATION AND SPATIAL EXTENT***

Drought typically covers a large area and cannot be confined to any geographic or political boundaries. Furthermore, it is assumed that Jefferson County would be uniformly exposed to drought, making the spatial extent potentially widespread. It is also notable that drought conditions typically do not cause significant damage to the built environment but may exacerbate wildfire conditions.

#### ***HISTORICAL OCCURRENCES***

According to the U.S. Drought Monitor, Jefferson County had drought levels of Severe or worse in 8 of the last 17 years (January 2000-December 2016). **Table D.10** shows the most severe drought classification for each year, according to U.S. Drought Monitor classifications. It should be noted that the U.S. Drought Monitor also estimates what percentage of the county is in each classification of drought severity. For example, the most severe classification reported may be exceptional but a majority of the county may actually be in a less severe condition.

**TABLE D.10: HISTORICAL DROUGHT OCCURRENCES IN JEFFERSON COUNTY**

Abnormally Dry (D0) Moderate Drought (D1) Severe Drought (D2) Extreme Drought (D3) Exceptional Drought (D4)



| Year | Jefferson County |
|------|------------------|
| 2000 | EXCEPTIONAL      |
| 2001 | MODERATE         |
| 2002 | MODERATE         |
| 2003 | MODERATE         |
| 2004 | ABNORMAL         |
| 2005 | MODERATE         |
| 2006 | SEVERE           |
| 2007 | SEVERE           |
| 2008 | SEVERE           |
| 2009 | MODERATE         |
| 2010 | SEVERE           |
| 2011 | SEVERE           |

| Year | Jefferson County |
|------|------------------|
| 2012 | ABNORMAL         |
| 2013 | MODERATE         |
| 2014 | MODERATE         |
| 2015 | EXTREME          |
| 2016 | EXTREME          |

Source: United States Drought Monitor

Some additional anecdotal information was provided from the National Climatic Data Center on droughts in Jefferson County.

**Summer to Fall 2006** – During a four and a half month period, from June to the middle of October, abnormally dry conditions prevailed across most of the Jackson, MS County Warning Area (CWA). Widespread drought conditions were reported across the area during this time period. The U.S. Drought Monitor classified the drought as extreme (D3) over Southeast Mississippi. Drought conditions in the region peaked in intensity during early August over this area.

**Summer 2007** – During the month of June, the drought peaked across the region. It held firm across the same areas since May with no expansion. What did expand was the severity as by the end of June, most of Central and East-Central Mississippi was now in extreme drought (D3) with some locations across Northeast Mississippi now experiencing exceptional drought (D4). The month of June did not offer much rain as most of the forecast area saw less than 40% of the normal rainfall.

**Summer to Fall 2010** – Very dry conditions continued across central Mississippi during most of October. There were some rains that came late in the month which provided some temporary relief. Rainfall amounts ranged from a half to two inches with locally higher amounts. Most locations were 1 to 3 inches below normal for the month. The dry stretch resulted in severe (D2) drought conditions to expand during the month with even the portions of extreme (D3) drought conditions expanding as well. Crops were put under stress under the warm and dry conditions.

**Fall 2015** – The very dry conditions continued across Central Mississippi in October. The extended dry stretch resulted in an area of Severe (D2) drought developing across the area by October 6th. The drought intensified and Extreme (D3) drought conditions developed by October 13th. Approximately 25 to 50 percent of normal rainfall occurred across this area from August into mid-October. Crops were put under more stress from the dry and hot conditions.

**Fall to Winter 2016** – Dry conditions continued into November, which created continued stress on crops. The drought continued to get worse across the state through the month before some relief came in the form of showers and thunderstorms near the end of November.

**PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that Jefferson County has a probability level of possible (between 1 and 10 percent annual probability) for future drought events. However, the extent (or magnitude) of drought and the amount of geographic area covered by drought, varies with each year. Historic information indicates that there is a much lower probability for extreme, long-lasting drought conditions.

## D.2.5 Lightning

### LOCATION AND SPATIAL EXTENT

Lightning occurs randomly, therefore it is impossible to predict where and with what frequency it will strike. It is assumed that all of Jefferson County is uniformly exposed to lightning.

### HISTORICAL OCCURRENCES

According to the National Climatic Data Center, there has been one recorded lightning event in Jefferson County since 2015.<sup>6</sup> This event resulted in over \$10,000 (2017 dollars) in damages, as listed in summary **Table D.11**.<sup>7</sup> Detailed information on historical lightning events can be found in **Table D.12**.

It is certain that more than one event has impacted the county. Many of the reported events are those that cause damage, and it should be expected that damages are likely much higher for this hazard than what is reported.

**TABLE D.11: SUMMARY OF LIGHTNING OCCURRENCES IN JEFFERSON COUNTY**

| Location                      | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Fayette                       | 1                     | 0/0             | \$10,247               | \$5,124                    |
| Unincorporated Area           | 0                     | 0/0             | \$0                    | \$0                        |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>1</b>              | <b>0/0</b>      | <b>\$10,247</b>        | <b>\$5,124</b>             |

Source: National Climatic Data Center

**TABLE D.12: HISTORICAL LIGHTNING OCCURRENCES IN JEFFERSON COUNTY**

| Location                   | Date | Deaths/Injuries | Property Damage* | Details |
|----------------------------|------|-----------------|------------------|---------|
| <b>Fayette</b>             |      |                 |                  |         |
|                            |      |                 |                  |         |
| <b>Unincorporated Area</b> |      |                 |                  |         |
| None reported              | --   | --              | --               | --      |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

<sup>6</sup> These lightning events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is certain that additional lightning events have occurred in Jefferson County. As additional local data becomes available, this hazard profile will be amended.

<sup>7</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

## ***PROBABILITY OF FUTURE OCCURRENCES***

Although there was not a high number of historical lightning events reported in Jefferson County via NCDC data, it is a regular occurrence accompanied by thunderstorms. In fact, lightning events will assuredly happen on an annual basis, though not all events will cause damage. According to Vaisala's U.S. National Lightning Detection Network (NLDN), Jefferson County is located in an area of the country that experienced an average of 12 to 20 lightning flashes per square mile per year between 2007 and 2016. Therefore, the probability of future events is highly likely (100 percent annual probability). It can be expected that future lightning events will continue to threaten life and cause minor property damages throughout the county.

## **D.2.6 Wildfire**

### ***LOCATION AND SPATIAL EXTENT***

The entire county is at risk to a wildfire occurrence. However, several factors such as drought conditions or high levels of fuel on the forest floor, may make a wildfire more likely. Furthermore, areas in the urban-wildland interface are particularly susceptible to fire hazard as populations abut formerly undeveloped areas. The Wildfire Ignition Density data shown in the figure below give an indication of historic location.

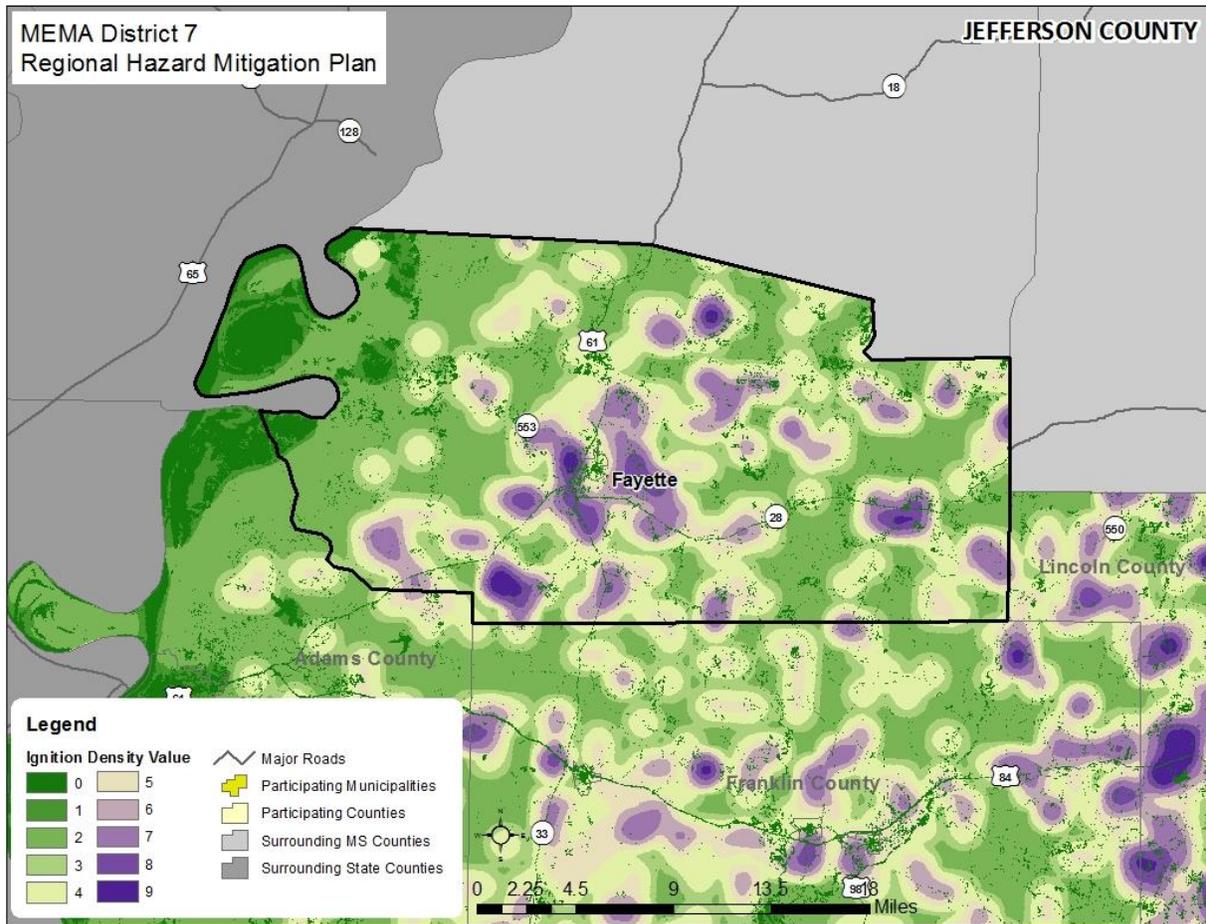
### ***HISTORICAL OCCURRENCES***

**Figure D.5** shows the Wildfire Ignition Density in Jefferson County based on data from the Southern Wildfire Risk Assessment. This data is based on historical fire ignitions and the likelihood of a wildfire igniting in an area. Occurrence is derived by modeling historic wildfire ignition locations to create an average ignition rate map. This is measured in the number of fires per year per 1,000 acres.<sup>8</sup>

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<sup>8</sup> Southern Wildfire Risk Assessment, 2014.

**FIGURE D.5: WILDFIRE IGNITION DENSITY IN JEFFERSON COUNTY**



Source: Southern Wildfire Risk Assessment

Based on data from the Mississippi Forestry Commission from 2007 to 2016, Jefferson County experienced an average of 13.2 wildfires annually which burned a combined 164.4 acres per year. The data indicate that most of these fires were small to moderate in size, averaging about 12.5 acres per fire. **Table D.13** provides a summary of wildfire occurrences in Jefferson County and **Table D.14** lists the number of reported wildfire occurrences in the county between the years 2007 and 2016.

**TABLE D.13: SUMMARY TABLE OF ANNUAL WILDFIRE OCCURRENCES (2007-2016)\***

|   | Jefferson County |
|---|------------------|
| Average Number of Fires per year        | 13.2             |
| Average Number of Acres Burned per year | 164.4            |
| Average Number of Acres Burned per fire | 12.5             |

\*These values reflect averages over a 10-year period.

Source: Mississippi Forestry Commission

**TABLE D.14: HISTORICAL WILDFIRE OCCURRENCES IN JEFFERSON COUNTY**

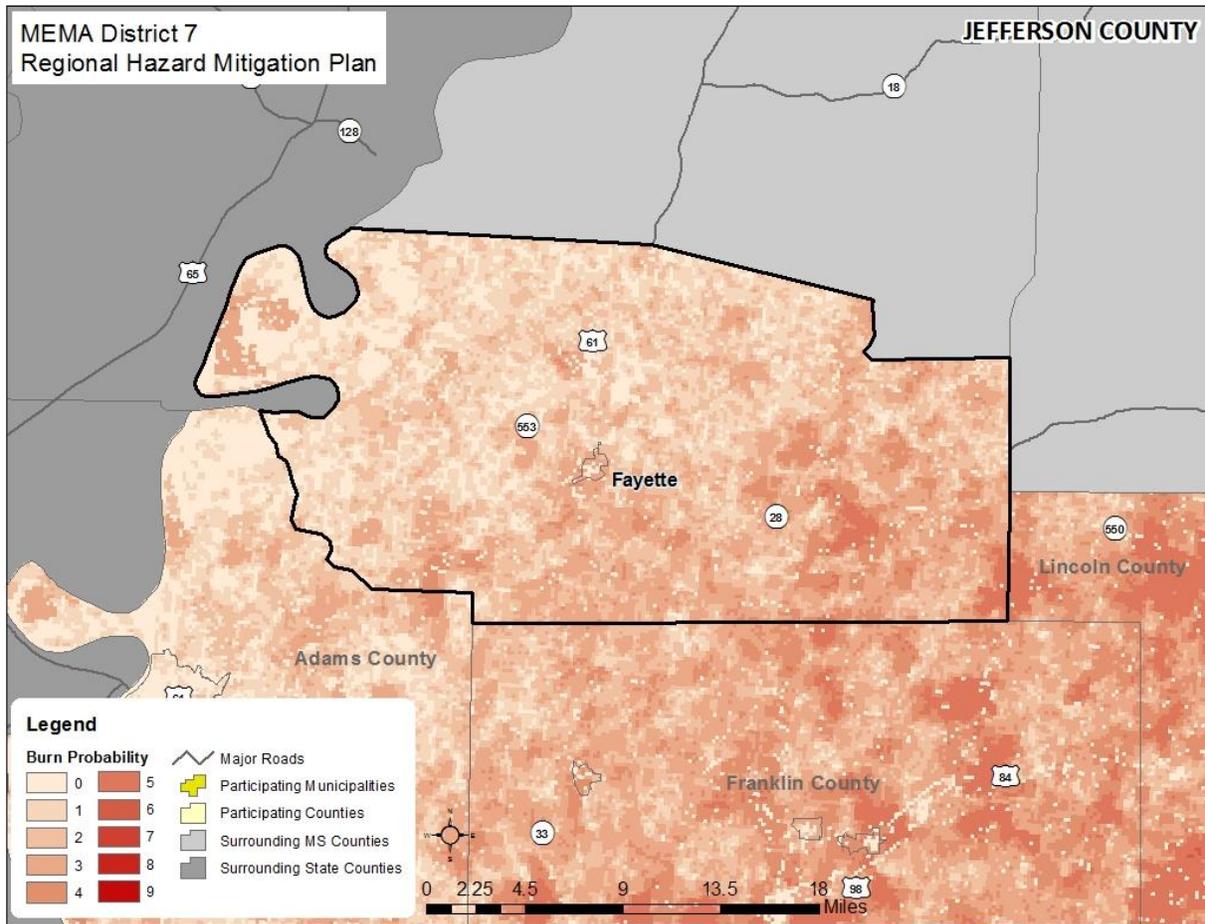
| Year                    | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|-------------------------|------|------|------|------|------|------|------|------|------|------|
| <b>Jefferson County</b> |      |      |      |      |      |      |      |      |      |      |
| Number of Fires         | 15   | 19   | 13   | 13   | 17   | 10   | 16   | 13   | 6    | 10   |
| Number of Acres Burned  | 281  | 105  | 57   | 137  | 119  | 29   | 187  | 365  | 119  | 245  |

Source: Mississippi Forestry Commission

### **PROBABILITY OF FUTURE OCCURRENCES**

Wildfire events will be an ongoing occurrence in Jefferson County. **Figure D.6** shows that there is some probability a wildfire will occur throughout the county. However, the likelihood of wildfires increases during drought cycles and abnormally dry conditions. Fires are likely to stay small in size but could increase due to local climate and ground conditions. Dry, windy conditions with an accumulation of forest floor fuel (potentially due to ice storms or lack of fire) could create conditions for a large fire that spreads quickly. It should also be noted that some areas do vary somewhat in risk. For example, highly developed areas are less susceptible unless they are located near the urban-wildland boundary. The risk will also vary due to assets. Areas in the urban-wildland interface will have much more property at risk, resulting in increased vulnerability and need to mitigate compared to rural, mainly forested areas. The probability assigned to Jefferson County for future wildfire events is possible (between 1 and 10 percent annual probability).

**FIGURE D.6: BURN PROBABILITY IN JEFFERSON COUNTY**



Source: Southern Wildfire Risk Assessment

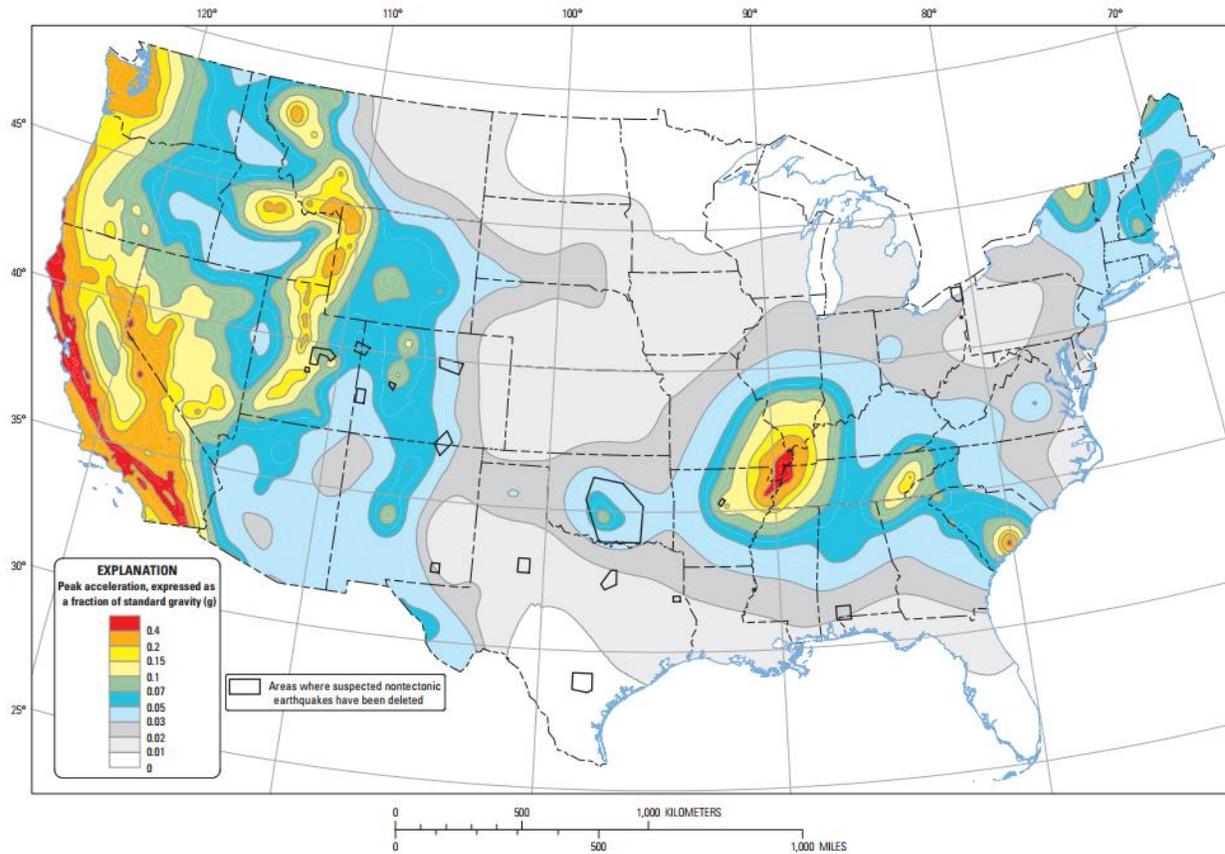
## ***GEOLOGIC HAZARDS***

### **D.2.7 Earthquake**

#### **LOCATION AND SPATIAL EXTENT**

Figure D.7 shows the intensity level associated with Jefferson County, based on the national USGS map of peak acceleration with 10 percent probability of exceedance in 50 years. It is the probability that ground motion will reach a certain level during an earthquake. The data show peak horizontal ground acceleration (the fastest measured change in speed, for a particle at ground level that is moving horizontally due to an earthquake) with a 10 percent probability of exceedance in 50 years. The map was compiled by the U.S. Geological Survey (USGS) Geologic Hazards Team, which conducts global investigations of earthquake, geomagnetic, and landslide hazards. According to this map, Jefferson County lies within an approximate zone of level “0.02” to “0.03” ground acceleration. This indicates that the county exists within an area of low seismic risk.

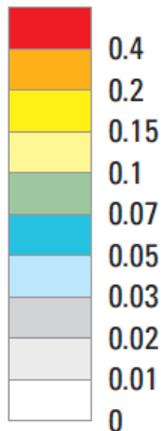
**FIGURE D.7: PEAK ACCELERATION WITH 10 PERCENT PROBABILITY OF EXCEEDANCE IN 50 YEARS**



**Ten-percent probability of exceedance in 50 years map of peak ground acceleration**

**EXPLANATION**

Peak acceleration, expressed as a fraction of standard gravity (g)



**Areas where suspected nontectonic earthquakes have been deleted**

Source: United States Geological Survey, 2014

The primary source of potential damage to Jefferson County from an earthquake is the New Madrid Seismic Zone (NMSZ). Historically, a series of earthquakes in 1811 and 1812 demonstrated that this fault zone can produce high magnitude seismic events, sometimes on the scale of a 7.5-8.0 on the Richter scale. The biggest challenge with earthquakes that occur in this area of seismic activity is predicting the recurrence of earthquakes emanating from this zone. Although the magnitude of earthquakes from the NMSZ can be large, they occur very irregularly and fairly infrequently. This makes it extremely difficult to project when they will occur.

It should also be noted that the State of Mississippi Hazard Mitigation Plan identifies certain areas of concern for liquefaction and lists the counties and corresponding zones within those counties that have the highest liquefaction potential. Jefferson County does not have any identified liquefaction potential risk.

**HISTORICAL OCCURRENCES**

No earthquakes are known to have affected Jefferson County since 1638. **Table D.15** provides a summary of earthquake events reported by the National Centers for Environmental Information (formerly National Geophysical Data Center) between 1638 and 1985, and **Figure D.8** presents a map showing earthquakes whose epicenters have occurred near the county between 1985 and 2015 (no earthquakes occurred within the county’s boundaries during this period). **Table D.16** presents a detailed occurrence of each event including the date, distance for the epicenter, magnitude and Modified Mercalli Intensity (if known).<sup>9</sup>

**TABLE D.15: SUMMARY OF SEISMIC ACTIVITY IN JEFFERSON COUNTY**

| Location                      | Number of Occurrences | Greatest MMI Reported | Greatest Richter Scale Reported |
|-------------------------------|-----------------------|-----------------------|---------------------------------|
| Fayette                       | 0                     | --                    | --                              |
| Unincorporated Area           | 0                     | --                    | --                              |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>0</b>              | <b>--</b>             | <b>--</b>                       |

Source: National Centers for Environmental Information

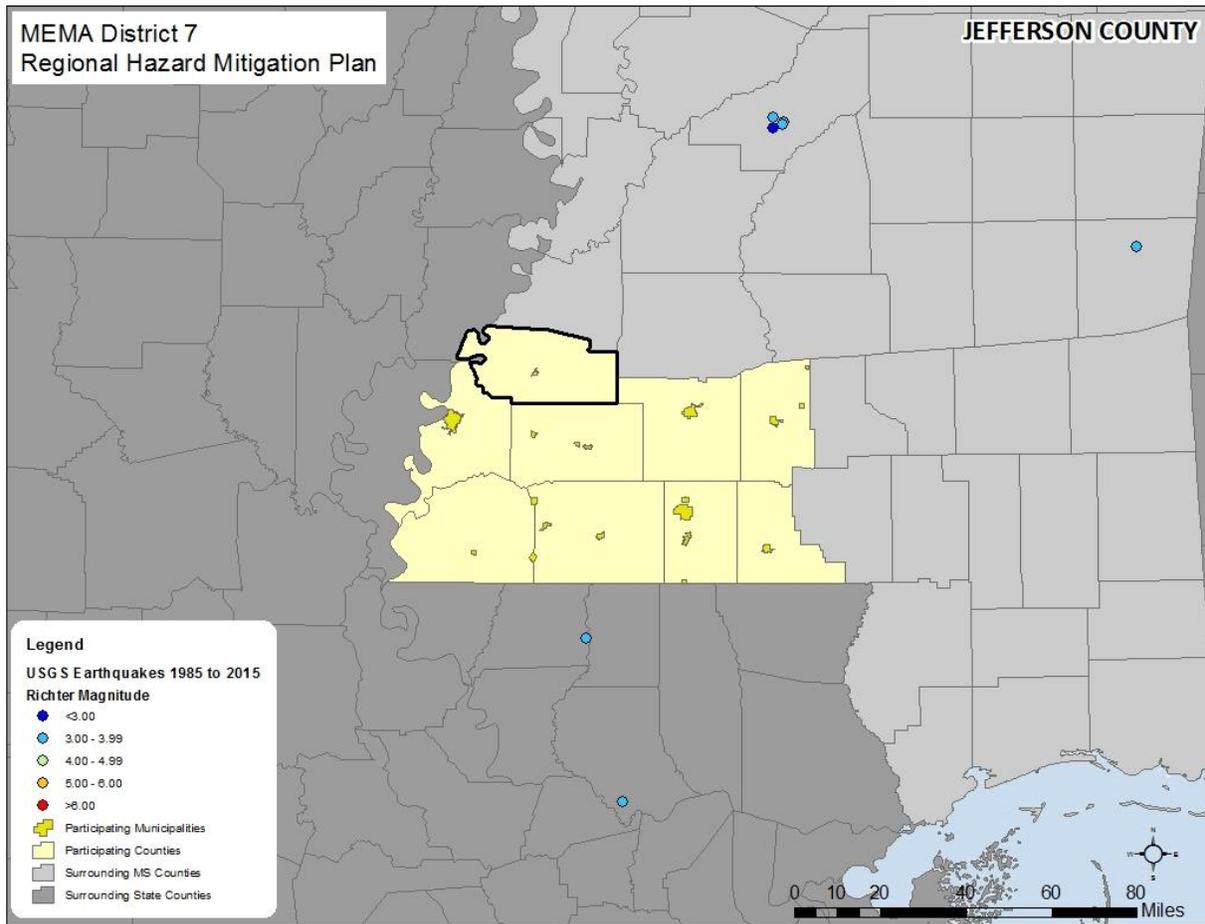
**TABLE D.16: SIGNIFICANT SEISMIC EVENTS IN JEFFERSON COUNTY (1638 -1985)**

| Location                   | Date | Epicentral Distance | Magnitude | MMI |
|----------------------------|------|---------------------|-----------|-----|
| <b>Fayette</b>             |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |
| <b>Unincorporated Area</b> |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |

Source: National Centers for Environmental Information

<sup>9</sup> Due to reporting mechanisms, not all earthquakes events were recorded during this time. Furthermore, some are missing data, such as the epicenter location, due to a lack of widely used technology. In these instances, a value of “unknown” is reported.

**FIGURE D.8: HISTORIC EARTHQUAKES WITH EPICENTERS NEAR JEFFERSON COUNTY (1985-2015)**



Source: United States Geological Survey

**PROBABILITY OF FUTURE OCCURRENCES**

The probability of significant, damaging earthquake events affecting Jefferson County is unlikely. However, it is certainly possible that future earthquakes resulting in light or moderate perceived shaking and damages will affect the county much more frequently. The annual probability level for the county is estimated to be less than 1 percent (unlikely).

**WIND-RELATED HAZARDS**

**D.2.8 Extreme Heat**

**LOCATION AND SPATIAL EXTENT**

Heat waves typically impact a large area and cannot be confined to any geographic or political boundaries. Therefore, the entire county is considered to be equally susceptible to extreme heat.

## **HISTORICAL OCCURRENCES**

The National Climatic Data Center was used to determine historical heat wave occurrences in the county.

**August 2005** – A "HOT" stretch of weather occurred during the middle to later part of August 2005. This "Heat Wave" covered a large portion of the south and lasted for a period of about 10 days. Each of these days had high temperatures consistently between 95 and 100 degrees, with 1 or 2 of these days actually reaching 100 degrees or more. Additionally, overnight lows remained warm with lower and middle 70s recorded. This is the first time since August 2000 where 100 degree temperatures were reached in this area as well as having such an extended period of "HOT" weather.

**July 2006** – A small "heat wave" gripped the region during the middle of July with high temperature ranging from the upper 90s to around 100 degrees for five days with overnight lows only reaching the middle 70s. The hottest temperatures during this period occurred from the Mississippi Delta, across northern Mississippi and then down to the Jackson Metro and toward Meridian. This area peaked between 100 and 102 degrees for at least two days during the hot five day stretch.

**August 2007** – During the first half of August, a heat wave took hold of the region and brought some of the warmest temperatures since the summer of 2000. This heat wave began around August 5th and lasted until the 16th. Between August 10th and 15th, the entire area reached 100 degrees or higher. Twenty-three record highs were also set during this time. As the temperature soared each day, high relative humidities resulted in heat index values between 105 and 112 degrees.

**August 2010** – A four day stretch of extreme temperatures occurred across the region to start off the month of August. High pressure was firmly entrenched across the southeast and allowed temperatures to soar into the triple digits across much of the region. Across the NWS Jackson, MS forecast area, 19 record highs were set between August 1st and 4th. On August 2nd, the 2nd warmest average temperature was recorded. The low was 78 and the high 105, this resulted in an average temperature of 91.5 degrees. Additionally, relatively high humidity levels made conditions even more oppressive, with heat index readings surpassing 110 degrees in many areas. This extreme heat resulted in 3 fatalities across the forecast area.

## **PROBABILITY OF FUTURE OCCURRENCES**

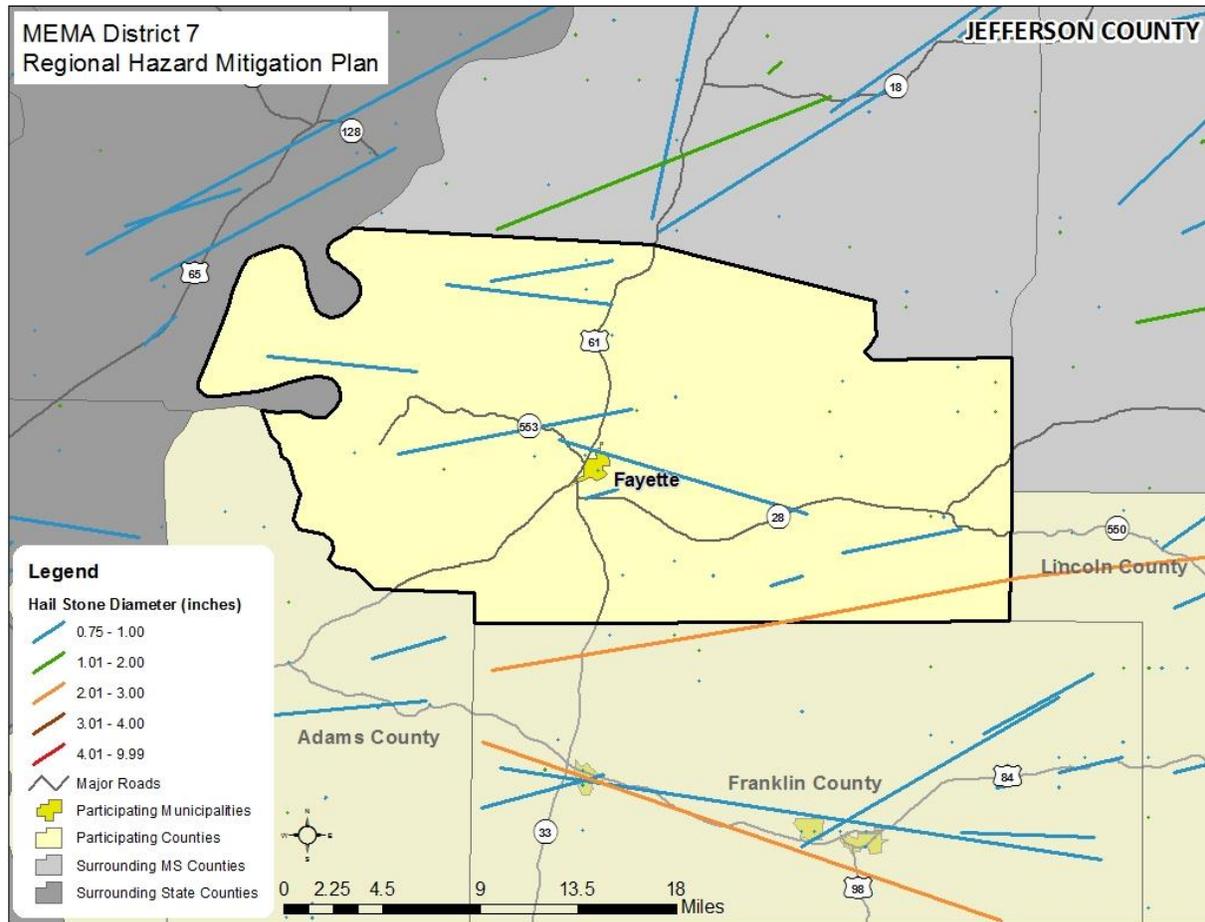
Based on historical occurrence information, it is assumed that all of Jefferson County has a probability level of likely (between 10 and 100 percent annual probability) for future heat wave events.

### **D.2.9 Hailstorm**

#### **LOCATION AND SPATIAL EXTENT**

Hailstorms frequently accompany thunderstorms, so their locations and spatial extents coincide. It is assumed that Jefferson County is uniformly exposed to severe thunderstorms; therefore, all areas of the county are equally exposed to hail which may be produced by such storms. With that in mind, **Figure D.9** shows the location of hail events that have impacted the county between 1955 and 2015.

FIGURE D.9: HAILSTORM TRACKS IN JEFFERSON COUNTY



Source: National Weather Service Storm Prediction Center

### HISTORICAL OCCURRENCES

According to the National Climatic Data Center, 59 recorded hailstorm events have affected Jefferson County since 1969.<sup>10</sup> **Table D.17** is a summary of the hail events in Jefferson County. **Table D.18** provides detailed information about each event that occurred in the county. In all, hail occurrences resulted in approximately \$209,000 (2017 dollars) in property damages.<sup>11</sup> Hail ranged in diameter from 0.75 inches to 2.75 inches. It should be noted that hail is notorious for causing substantial damage to cars, roofs, and other areas of the built environment that may not be reported to the National Climatic Data Center. Therefore, it is likely that damages are greater than the reported value.

<sup>10</sup> These hail events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017. It is likely that additional hail events have affected Jefferson County. As additional local data becomes available, this hazard profile will be amended.

<sup>11</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE D.17: SUMMARY OF HAIL OCCURRENCES IN JEFFERSON COUNTY**

| Location                      | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Fayette                       | 16                    | 0/0             | \$1,333                | \$63                       |
| Unincorporated Area           | 43                    | 0/0             | \$207,244              | \$4,318                    |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>59</b>             | <b>0/0</b>      | <b>\$208,577</b>       | <b>\$4,381</b>             |

Source: National Climatic Data Center

**TABLE D.18: HISTORICAL HAIL OCCURRENCES IN JEFFERSON COUNTY**

| Location                   | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-----------|-----------------|------------------|
| <b>Fayette</b>             |            |           |                 |                  |
| FAYETTE                    | 2/19/1996  | 0.75 in.  | 0/0             | \$0              |
| FAYETTE                    | 3/18/1996  | 1.75 in.  | 0/0             | \$0              |
| FAYETTE                    | 3/5/1998   | 0.75 in.  | 0/0             | \$0              |
| FAYETTE                    | 5/24/2001  | 0.88 in.  | 0/0             | \$0              |
| FAYETTE                    | 12/24/2002 | 0.88 in.  | 0/0             | \$0              |
| FAYETTE                    | 5/14/2003  | 0.75 in.  | 0/0             | \$1,333          |
| FAYETTE                    | 2/22/2005  | 1.00 in.  | 0/0             | \$0              |
| FAYETTE                    | 5/24/2005  | 0.75 in.  | 0/0             | \$0              |
| FAYETTE                    | 6/24/2008  | 0.75 in.  | 0/0             | \$0              |
| FAYETTE                    | 6/24/2008  | 1.00 in.  | 0/0             | \$0              |
| FAYETTE                    | 10/12/2010 | 1.00 in.  | 0/0             | \$0              |
| FAYETTE                    | 2/12/2013  | 0.75 in.  | 0/0             | \$0              |
| FAYETTE                    | 2/21/2013  | 0.75 in.  | 0/0             | \$0              |
| FAYETTE                    | 1/21/2016  | 1.00 in.  | 0/0             | \$0              |
| FAYETTE                    | 3/17/2016  | 1.00 in.  | 0/0             | \$0              |
| FAYETTE                    | 3/17/2016  | 1.00 in.  | 0/0             | \$0              |
| <b>Unincorporated Area</b> |            |           |                 |                  |
| JEFFERSON CO.              | 1/23/1969  | 2.75 in.  | 0/0             | \$0              |
| JEFFERSON CO.              | 3/12/1986  | 1.75 in.  | 0/0             | \$0              |
| JEFFERSON CO.              | 3/12/1986  | 0.75 in.  | 0/0             | \$0              |
| JEFFERSON CO.              | 4/12/1986  | 1.75 in.  | 0/0             | \$0              |
| JEFFERSON CO.              | 4/12/1986  | 1.75 in.  | 0/0             | \$0              |
| JEFFERSON CO.              | 4/12/1986  | 1.75 in.  | 0/0             | \$0              |
| JEFFERSON CO.              | 4/28/1989  | 0.75 in.  | 0/0             | \$0              |
| JEFFERSON CO.              | 5/18/1989  | 0.75 in.  | 0/0             | \$0              |
| JEFFERSON CO.              | 3/30/1993  | 0.75 in.  | 0/0             | \$0              |
| Church Hill                | 4/20/1995  | 0.88 in.  | 0/0             | \$0              |
| De Soto                    | 6/7/1995   | 1.00 in.  | 0/0             | \$0              |
| Danby                      | 6/8/1995   | 1.75 in.  | 0/0             | \$0              |
| LORMAN                     | 5/15/1997  | 0.75 in.  | 0/0             | \$0              |
| LORMAN                     | 3/5/1998   | 1.75 in.  | 0/0             | \$0              |
| CHURCH HILL                | 3/8/1999   | 1.75 in.  | 0/0             | \$37,049         |
| LORMAN                     | 4/2/2000   | 0.75 in.  | 0/0             | \$0              |
| CHURCH HILL                | 5/24/2001  | 0.88 in.  | 0/0             | \$0              |

| Location     | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|--------------|------------|-----------|-----------------|------------------|
| COUNTYWIDE   | 5/24/2001  | 1.75 in.  | 0/0             | \$48,162         |
| LORMAN       | 5/3/2003   | 0.75 in.  | 0/0             | \$1,333          |
| LORMAN       | 5/14/2003  | 1.00 in.  | 0/0             | \$1,333          |
| CHURCH HILL  | 11/23/2004 | 0.75 in.  | 0/0             | \$0              |
| LORMAN       | 11/23/2004 | 0.75 in.  | 0/0             | \$0              |
| CHURCH HILL  | 3/26/2005  | 1.00 in.  | 0/0             | \$0              |
| MC BRIDE     | 11/15/2005 | 1.00 in.  | 0/0             | \$0              |
| LORMAN       | 2/3/2006   | 1.00 in.  | 0/0             | \$0              |
| MC BRIDE     | 5/8/2006   | 1.00 in.  | 0/0             | \$0              |
| CHURCH HILL  | 5/10/2006  | 1.00 in.  | 0/0             | \$0              |
| UNION CHURCH | 5/10/2006  | 2.00 in.  | 0/0             | \$24,151         |
| CHURCH HILL  | 1/8/2008   | 1.00 in.  | 0/0             | \$0              |
| STORINGTON   | 4/1/2008   | 0.75 in.  | 0/0             | \$0              |
| ELMO         | 4/11/2008  | 2.75 in.  | 0/0             | \$79,678         |
| CHURCH HILL  | 6/20/2008  | 0.88 in.  | 0/0             | \$0              |
| ELMO         | 6/25/2008  | 0.88 in.  | 0/0             | \$0              |
| BLUE HILL    | 8/3/2008   | 0.75 in.  | 0/0             | \$0              |
| UNION CHURCH | 3/31/2009  | 0.75 in.  | 0/0             | \$0              |
| BRASFIELD    | 5/3/2009   | 1.00 in.  | 0/0             | \$0              |
| RODNEY       | 10/12/2010 | 1.00 in.  | 0/0             | \$0              |
| UNION CHURCH | 4/3/2012   | 1.00 in.  | 0/0             | \$0              |
| HURNALD COMM | 3/18/2013  | 1.75 in.  | 0/0             | \$10,505         |
| MC NAIR      | 3/27/2014  | 1.00 in.  | 0/0             | \$0              |
| ELMO         | 10/13/2014 | 1.00 in.  | 0/0             | \$0              |
| UNION CHURCH | 3/30/2016  | 1.00 in.  | 0/0             | \$0              |
| CHURCH HILL  | 1/21/2017  | 1.75 in.  | 0/0             | \$5,035          |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

### **PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that the probability of future hail occurrences is highly likely (100 percent annual probability). Since hail is an atmospheric hazard, it is assumed that Jefferson County has equal exposure to this hazard. It can be expected that future hail events will continue to cause minor damage to property and vehicles throughout the county.

## **D.2.10 Hurricane and Tropical Storm**

### **LOCATION AND SPATIAL EXTENT**

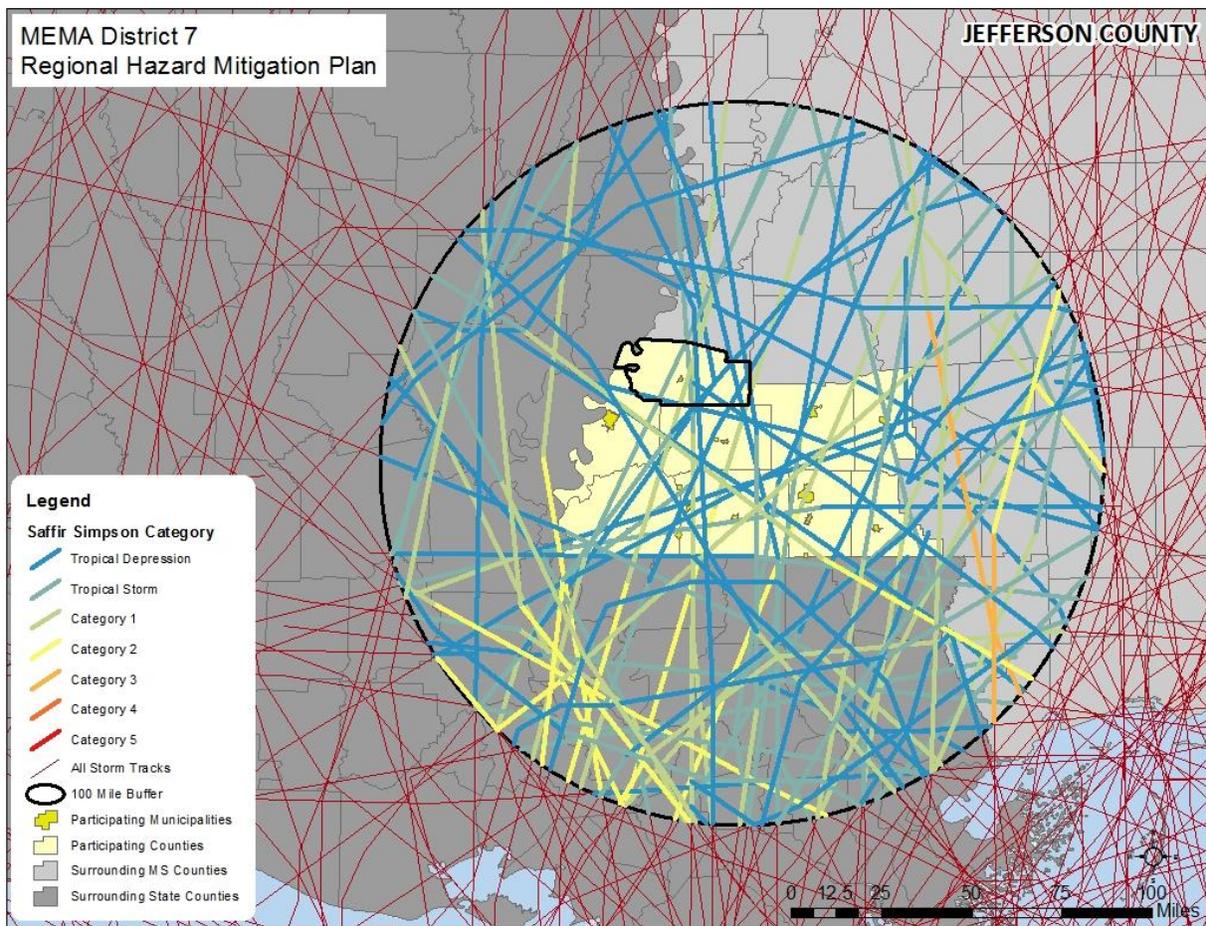
Hurricanes and tropical storms threaten the entire Atlantic and Gulf seaboard of the United States. While coastal areas are most directly exposed to the brunt of landfalling storms, their impact is often felt hundreds of miles inland and they can affect Jefferson County. All areas in Jefferson County are equally susceptible to hurricane and tropical storms.

**HISTORICAL OCCURRENCES**

According to the National Hurricane Center’s historical storm track records, 86 hurricane or tropical storm/depression tracks have passed within 100 miles of the MEMA District 7 Region since 1854.<sup>12</sup> This includes: 35 hurricanes, 21 tropical storms, and 30 tropical depressions.

A total of 61 tracks passed directly through the region as shown in **Figure D.10**. **Table D.19** provides the date of occurrence, name (if applicable), maximum wind speed (as recorded within 100 miles of the MEMA District 7 Region) and category of the storm based on the Saffir-Simpson Scale for each event.

**FIGURE D.10: HISTORICAL HURRICANE STORM TRACKS WITHIN 100 MILES OF THE MEMA DISTRICT 7 REGION**



Source: National Oceanic and Atmospheric Administration; National Hurricane Center

<sup>12</sup> These storm track statistics include tropical depressions, tropical storms, and hurricanes. Lesser events may still cause significant local impact in terms of rainfall and high winds.

**TABLE D.19: HISTORICAL STORM TRACKS WITHIN 100 MILES OF THE MEMA 7 DISTRICT REGION (1850–2016)**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/21/1854          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/5/1855           | NOT NAMED  | Not Available              | Tropical Depression |
| 8/11/1856          | UNNAMED    | 85.03                      | Category 2          |
| 10/2/1860          | UNNAMED    | 89.03                      | Category 2          |
| 8/18/1861          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/16/1862          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/30/1863          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/5/1869           | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/12/1872          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/18/1875          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/1/1879           | UNNAMED    | 89.03                      | Category 2          |
| 10/7/1879          | UNNAMED    | 58.6                       | Tropical Storm      |
| 10/7/1879          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/3/1881           | NOT NAMED  | Not Available              | Tropical Depression |
| 6/15/1886          | UNNAMED    | 69.67                      | Category 1          |
| 8/20/1888          | UNNAMED    | 81.90                      | Category 1          |
| 8/27/1890          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/7/1893           | UNNAMED    | 78.78                      | Category 1          |
| 8/8/1894           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/20/1898          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/29/1905          | UNNAMED    | 42.69                      | Tropical Storm      |
| 10/9/1905          | UNNAMED    | 42.69                      | Tropical Storm      |
| 8/2/1908           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/21/1909          | UNNAMED    | 92.89                      | Category 2          |
| 8/12/1911          | UNNAMED    | 50.35                      | Tropical Storm      |
| 6/13/1912          | UNNAMED    | 64.34                      | Category 1          |
| 7/17/1912          | UNNAMED    | 0.87                       | Tropical Depression |
| 9/18/1914          | UNNAMED    | 32.60                      | Tropical Depression |
| 9/29/1915          | UNNAMED    | 95.53                      | Category 2          |
| 7/6/1916           | UNNAMED    | 85.03                      | Category 2          |
| 9/22/1920          | UNNAMED    | 87.29                      | Category 2          |
| 10/16/1923         | UNNAMED    | 78.78                      | Category 1          |
| 8/26/1926          | UNNAMED    | 78.78                      | Category 1          |
| 9/21/1926          | UNNAMED    | 58.60                      | Tropical Storm      |
| 7/15/1931          | UNNAMED    | 50.35                      | Tropical Storm      |
| 9/19/1932          | UNNAMED    | 64.34                      | Category 1          |
| 10/16/1932         | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/26/1933          | UNNAMED    | 17.56                      | Tropical Depression |
| 6/16/1934          | UNNAMED    | 87.29                      | Category 2          |
| 7/27/1936          | UNNAMED    | 42.69                      | Tropical Storm      |
| 8/23/1936          | UNNAMED    | 4.99                       | Tropical Depression |
| 10/3/1937          | UNNAMED    | 32.6                       | Tropical Depression |
| 9/24/1940          | UNNAMED    | 32.6                       | Tropical Depression |
| 9/6/1945           | UNNAMED    | 17.56                      | Tropical Depression |

**ANNEX D: JEFFERSON COUNTY**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/8/1947           | UNNAMED    | 32.6                       | Tropical Depression |
| 9/19/1947          | UNNAMED    | 91.63                      | Category 2          |
| 9/4/1948           | UNNAMED    | 69.67                      | Category 1          |
| 9/4/1949           | UNNAMED    | 58.6                       | Tropical Storm      |
| 8/1/1955           | BRENDA     | 64.34                      | Category 1          |
| 8/27/1955          | UNNAMED    | 50.35                      | Tropical Storm      |
| 6/13/1956          | UNNAMED    | 58.60                      | Tropical Storm      |
| 9/18/1957          | ESTHER     | 64.34                      | Category 1          |
| 5/31/1959          | ARLENE     | 64.34                      | Category 1          |
| 10/4/1964          | HILDA      | 91.63                      | Category 2          |
| 9/10/1965          | BETSY      | 89.03                      | Category 2          |
| 8/18/1969          | CAMILLE    | 99.88                      | Category 3          |
| 8/9/1971           | UNNAMED    | 4.99                       | Tropical Depression |
| 9/1/1971           | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1971           | FERN       | 4.99                       | Tropical Depression |
| 9/16/1971          | EDITH      | 87.29                      | Category 2          |
| 7/29/1975          | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1977           | BABE       | 58.60                      | Tropical Storm      |
| 7/11/1979          | BOB        | 73.83                      | Category 1          |
| 7/20/1980          | UNNAMED    | 0.87                       | Tropical Depression |
| 8/15/1985          | DANNY      | 78.78                      | Category 1          |
| 9/2/1985           | ELENA      | 92.89                      | Category 2          |
| 10/29/1985         | JUAN       | 73.83                      | Category 1          |
| 8/11/1987          | UNNAMED    | 4.99                       | Tropical Depression |
| 8/9/1988           | BERYL      | 50.35                      | Tropical Storm      |
| 9/10/1988          | FLORENCE   | 69.67                      | Category 1          |
| 8/26/1992          | ANDREW     | 85.03                      | Category 2          |
| 9/20/1998          | HERMINE    | 32.60                      | Tropical Depression |
| 6/11/2001          | ALLISON    | 42.69                      | Tropical Storm      |
| 8/5/2002           | BERTHA     | 32.60                      | Tropical Depression |
| 9/26/2002          | ISIDORE    | 64.34                      | Category 1          |
| 10/3/2002          | LILI       | 69.67                      | Category 1          |
| 6/30/2003          | BILL       | 58.60                      | Tropical Storm      |
| 10/10/2004         | MATTHEW    | 17.56                      | Tropical Depression |
| 8/29/2005          | KATRINA    | 94.63                      | Category 3          |
| 9/13/2007          | HUMBERTO   | 32.60                      | Tropical Depression |
| 8/24/2008          | FAY        | 17.56                      | Tropical Depression |
| 9/1/2008           | GUSTAV     | 87.29                      | Category 2          |
| 7/25/2010          | BONNIE     | 0.87                       | Tropical Depression |
| 8/17/2010          | FIVE       | 4.99                       | Tropical Depression |
| 9/4/2011           | LEE        | 32.60                      | Tropical Depression |
| 8/29/2012          | ISAAC      | 69.67                      | Category 1          |

Source: National Hurricane Center

Federal records indicate that five disaster declarations were made in 1965 (Hurricane Betsy), 2004 (Hurricane Ivan), 2005 (Hurricane Katrina), 2008 (Hurricane Gustav), and 2012 (Hurricane Isaac) in

Jefferson County.<sup>13</sup> Hurricane and tropical storm events can cause substantial damage in the area due to high winds and flooding.

The National Climatic Data Center also reported four hurricane or tropical storm events in Jefferson County since 2005.<sup>14</sup> These storms are listed in **Table D.20** and are generally representative of storms with the greatest impact on the county over that time period.

**TABLE D.20: HISTORICAL HURRICANE/TROPICAL STORM OCCURRENCES IN JEFFERSON COUNTY**

| Date of Occurrence | Storm Name        | Deaths/Injuries | Property Damage (2017) <sup>15</sup> |
|--------------------|-------------------|-----------------|--------------------------------------|
| 8/29/2005          | Hurricane Katrina | 0/0             | \$24,900,611                         |
| 9/24/2005          | Hurricane Rita    | 0/0             | \$49,200                             |
| 9/1/2008           | Hurricane Gustav  | 0/0             | \$335,297                            |
| 8/29/2012          | Hurricane Isaac   | 0/0             | \$106,140                            |

*Source: National Climatic Data Center*

Flooding and high winds from hurricanes and tropical storms can cause damage throughout the county. Anecdotes are available from NCDC for the major storms that have impacted the county as found below:

**Hurricane Katrina – August 29, 2005**

The damage from Hurricane Katrina was devastating and widespread. Damage occurred across all of the Jackson forecast area which includes 9 parishes in Northeast Louisiana, 2 counties in Southeast Arkansas and about 2/3 of Central and Southern Mississippi. As widespread as the damage was, the more concentrated and most significant damage occurred across Southeast and East-Central Mississippi. For other areas, especially those west of Natchez to Yazoo City to Grenada line, damage to trees and power lines was significant and scattered across the landscape. As you move toward Central Mississippi and along Interstate 55 the damage and impacts increase. This portion of the state sustained widespread damage to trees and power lines.

**Hurricane Gustav – September 1, 2008**

As the center of Gustav crossed much of southern Louisiana, tropical storm force winds extended into southern Mississippi and portions of east central Louisiana. Sustained winds were between 35 and 45 mph with higher gusts between 70 and 100 mph occurred. Tree and power line damage was extensive across these areas which resulted in widespread power outages, some of which lasted for 3 to 5 days. As Gustav slowed across central Louisiana, the outer rainbands continued to rotate across much of southern and central Mississippi. This kept those portions of Mississippi in the region which was favorable for tornadoes. Over 3 days, 26 tornadoes were confirmed, all of which were in the EF0 to EF1 range.

**Hurricane Isaac – August 29, 2012**

Isaac moved very slowly to the north and northwest over the course of August 29th, which made for prolonged impacts. Forward motion of about 5 mph lead to tremendous flooding issues for both Louisiana

<sup>13</sup> A complete listing of historical disaster declarations can be found in Section 4: Hazard Identification.

<sup>14</sup> These hurricane events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported.

<sup>15</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

and portions of Mississippi south of I-20. Around noon on August 29th, Isaac was downgraded to a Tropical Storm, but this was not much relief to the many residents who were being inundated with rain and wind. The worst of the wind was felt generally along and south of an axis from Marion County to Adams County. Numerous trees were down in Adams County, leaving many without power for several days. Eighty percent of the roads were blocked in Franklin County due to downed trees.

### ***PROBABILITY OF FUTURE OCCURRENCES***

Given the inland location of the county, Jefferson County will not be susceptible to many of the sub-hazards that are often associated with hurricanes and tropical storms such as storm surge. Although the probability of experiencing major impacts is somewhat less than coastal areas because of this, hurricanes and tropical storms remain a real threat to Jefferson County due to induced events like flooding and high wind. Based on historical evidence, the probability level of future occurrence is likely (between 10 and 100 percent annual probability). Given the regional nature of the hazard, all areas in the county are equally exposed to this hazard. However, when the county is impacted, the damage could be significant, threatening lives and property throughout the planning area.

### ***HURRICANE EVACUATIONS***

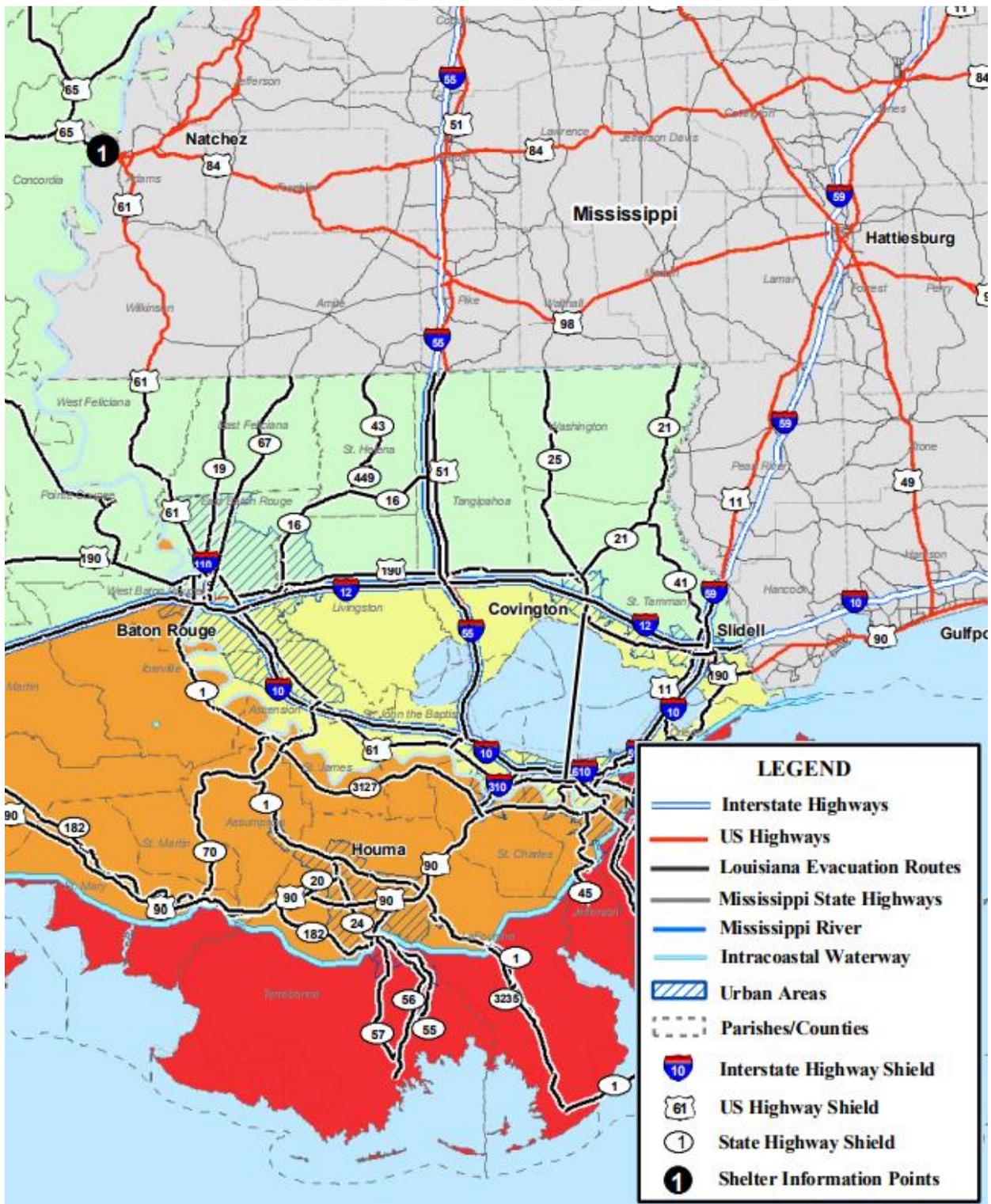
As discussed above, the MEMA District 7 Region has been directly impacted by a number of hurricane and tropical storm events historically. However, it should be noted that the region is also susceptible to indirect effects from hurricanes and tropical storms, particularly in the form of evacuations from coastal counties. The counties within MEMA District 7 are located far enough inland that they are often the primary recipients of evacuees from counties that will be (or have been) impacted by major storm events.

For example, during Hurricane Katrina in 2005, thousands of evacuees made their way to counties in southwest Mississippi to take temporary refuge from the storm. Due to the severe and devastating effects of the storm, temporary sheltering within these counties was extended much longer than originally anticipated and in some cases, the evacuees ended up staying for weeks or months. This additional population caused a major strain on resources within these relatively rural counties, as local communities with limited resources had an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people.

Caring for all of these evacuees was especially challenging for counties in the MEMA District 7 Region because most had been impacted themselves by the storm and were attempting to help their own citizens recover from the storm. Undoubtedly, recovering from a major disaster while simultaneously attempting to help evacuees from surrounding counties poses a number of difficulties for emergency management personnel and other local officials.

Based on Hurricane Katrina and other major hurricane events that have impacted the Gulf Coast in the past, it is likely that many of the MEMA District 7 counties will be receiver counties when it comes to evacuees. Many of these evacuees will likely come from locations in Louisiana, including New Orleans. Indeed, the State of Louisiana evacuation plan indicates that one of the primary evacuation routes from the City of New Orleans will direct evacuees north along Interstate 55, sending people through Pike County and Lincoln County (**Figure D.11**). Depending on the severity of the event, officials in Louisiana may even change Interstate 55 over to a contraflow traffic pattern to enable quicker evacuations.

FIGURE D.11: STATE OF LOUISIANA EVACUATION ROUTES



Source: State of Louisiana Evacuation Plan

As a result of the influx of evacuees during storm events, it is critical for local officials in MEMA District 7 to prepare for evacuations during hurricanes and other tropical storms, even if the counties themselves

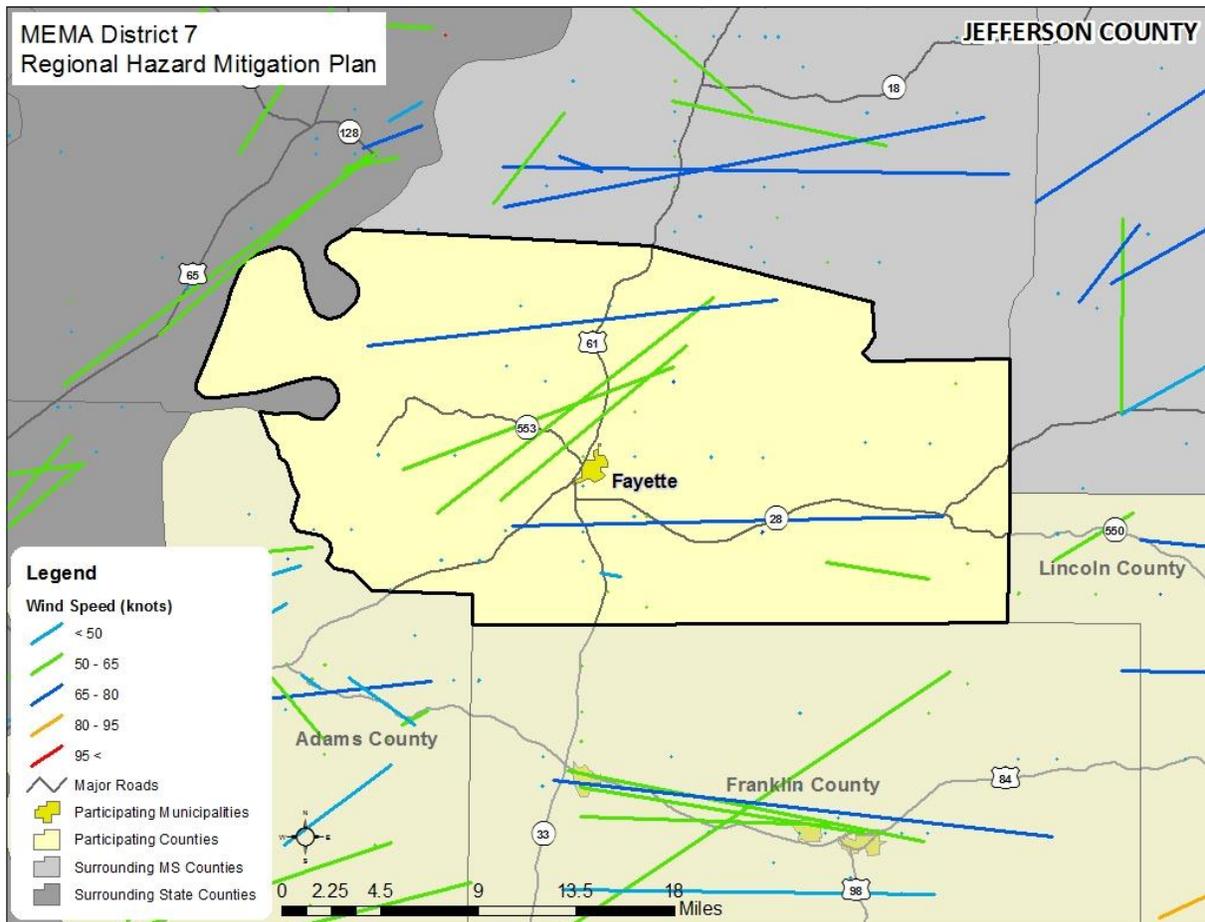
may not be directly impacted by the storm. As in past storms, it is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future storm events.

### D.2.11 Severe Thunderstorm/High Wind

#### LOCATION AND SPATIAL EXTENT

A thunderstorm event is an atmospheric hazard, and thus has no geographic boundaries. It is typically a widespread event that can occur in all regions of the United States. However, thunderstorms are most common in the central and southern states because atmospheric conditions in those regions are favorable for generating these powerful storms. It is assumed that Jefferson County has uniform exposure to an event and the spatial extent of an impact could be large. With that in mind, **Figure D.12** shows the location of wind events that have impacted the county between 1955 and 2015.

**FIGURE D.12: SEVERE THUNDERSTORM TRACKS IN JEFFERSON COUNTY**



Source: National Weather Service Storm Prediction Center

**HISTORICAL OCCURRENCES**

Severe storms were at least partially responsible for four disaster declarations in Jefferson County in 1979, 1983, 2003, and 2017.<sup>16</sup> According to NCDC, there have been 109 reported thunderstorm and high wind events since 1988 in Jefferson County.<sup>17</sup> These events caused over \$1.7 million (2017 dollars) in damages.<sup>18</sup> There were also reports of five injuries. **Table D.21** summarizes this information. **Table D.22** presents detailed thunderstorm and high wind event reports including date, magnitude, and associated damages for each event.

**TABLE D.21: SUMMARY OF THUNDERSTORM/HIGH WIND OCCURRENCES IN JEFFERSON COUNTY**

| Location                      | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Fayette                       | 33                    | 0/0             | \$965,357              | \$43,880                   |
| Unincorporated Area           | 76                    | 0/5             | \$773,338              | \$26,667                   |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>109</b>            | <b>0/5</b>      | <b>\$1,738,695</b>     | <b>\$70,547</b>            |

Source: National Climatic Data Center

**TABLE D.22: HISTORICAL THUNDERSTORM/HIGH WIND OCCURRENCES IN JEFFERSON COUNTY**

| Location       | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------------|------------|-------------------|------------|-----------------|------------------|
| <b>Fayette</b> |            |                   |            |                 |                  |
| Fayette        | 3/7/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$3,230          |
| FAYETTE        | 11/7/1996  | Thunderstorm Wind | --         | 0/0             | \$3,084          |
| FAYETTE        | 2/21/1997  | Thunderstorm Wind | --         | 0/0             | \$7,661          |
| FAYETTE        | 10/23/1997 | Thunderstorm Wind | --         | 0/0             | \$7,566          |
| FAYETTE        | 2/26/1998  | Thunderstorm Wind | --         | 0/0             | \$151,034        |
| FAYETTE        | 8/9/1999   | Thunderstorm Wind | --         | 0/0             | \$7,317          |
| FAYETTE        | 3/10/2000  | Thunderstorm Wind | --         | 0/0             | \$2,857          |
| FAYETTE        | 7/21/2000  | Thunderstorm Wind | --         | 0/0             | \$2,830          |
| FAYETTE        | 3/12/2001  | Thunderstorm Wind | --         | 0/0             | \$2,776          |
| FAYETTE        | 7/12/2001  | Thunderstorm Wind | --         | 0/0             | \$1,378          |
| FAYETTE        | 11/28/2001 | Thunderstorm Wind | --         | 0/0             | \$1,378          |
| FAYETTE        | 5/17/2002  | Thunderstorm Wind | --         | 0/0             | \$1,360          |
| FAYETTE        | 7/15/2002  | Thunderstorm Wind | --         | 0/0             | \$2,715          |
| FAYETTE        | 7/27/2002  | Thunderstorm Wind | --         | 0/0             | \$2,715          |
| FAYETTE        | 6/2/2004   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$3,867          |
| FAYETTE        | 8/5/2004   | Thunderstorm Wind | 60 kts. EG | 0/0             | \$12,904         |
| FAYETTE        | 11/24/2004 | Thunderstorm Wind | 60 kts. EG | 0/0             | \$5,121          |

<sup>16</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>17</sup> These thunderstorm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017 and these high wind events are only inclusive of those reported by NCDC from 1996 through February 2017. It is likely that additional thunderstorm and high wind events have occurred in Jefferson County. As additional local data becomes available, this hazard profile will be amended.

<sup>18</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**ANNEX D: JEFFERSON COUNTY**

| Location                   | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-------------------|------------|-----------------|------------------|
| FAYETTE                    | 3/22/2005  | Thunderstorm Wind | 63 kts. EG | 0/0             | \$18,975         |
| FAYETTE                    | 3/26/2005  | Thunderstorm Wind | 70 kts. EG | 0/0             | \$37,950         |
| FAYETTE                    | 5/24/2005  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| FAYETTE                    | 9/24/2005  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| FAYETTE                    | 3/9/2006   | Thunderstorm Wind | 70 kts. EG | 0/0             | \$244,769        |
| FAYETTE                    | 8/5/2006   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| FAYETTE                    | 1/8/2008   | Thunderstorm Wind | 57 kts. EG | 0/0             | \$5,792          |
| FAYETTE                    | 3/27/2009  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,150          |
| FAYETTE                    | 10/20/2010 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$27,951         |
| FAYETTE                    | 2/1/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,210          |
| FAYETTE                    | 6/8/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$324,989        |
| FAYETTE                    | 3/21/2012  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$53,298         |
| FAYETTE                    | 4/2/2012   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$6,377          |
| FAYETTE                    | 1/10/2013  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$15,928         |
| FAYETTE                    | 5/25/2015  | Thunderstorm Wind | 48 kts. EG | 0/0             | \$3,085          |
| FAYETTE                    | 2/23/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,094          |
| <b>Unincorporated Area</b> |            |                   |            |                 |                  |
| JEFFERSON CO.              | 8/3/1988   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| JEFFERSON CO.              | 2/20/1989  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| JEFFERSON CO.              | 3/28/1991  | Thunderstorm Wind | 0 kts.     | 0/2             | \$0              |
| JEFFERSON CO.              | 6/5/1991   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| JEFFERSON CO.              | 11/19/1991 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| JEFFERSON CO.              | 12/15/1992 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| Lorman                     | 4/20/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$3,220          |
| Cedar Hill                 | 6/7/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$321            |
| House Springs              | 6/7/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$321            |
| House Springs              | 6/7/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$321            |
| Hillsboro                  | 6/7/1995   | Thunderstorm Wind | 0 kts.     | 0/3             | \$10,743         |
| De Soto                    | 6/7/1995   | Thunderstorm Wind | 61 kts.    | 0/0             | \$13,629         |
| High Ridge                 | 6/10/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$481            |
| House Springs              | 6/10/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$321            |
| COUNTYWIDE                 | 6/5/1998   | Thunderstorm Wind | --         | 0/0             | \$15,001         |
| COUNTYWIDE                 | 3/2/1999   | Thunderstorm Wind | --         | 0/0             | \$22,229         |
| COUNTYWIDE                 | 3/13/1999  | Thunderstorm Wind | --         | 0/0             | \$14,820         |
| CANNONSBURG                | 3/10/2000  | Thunderstorm Wind | --         | 0/0             | \$2,857          |
| COUNTYWIDE                 | 3/19/2000  | Thunderstorm Wind | --         | 0/0             | \$7,141          |
| UNION CHURCH               | 4/2/2000   | Thunderstorm Wind | --         | 0/0             | \$2,855          |
| COUNTYWIDE                 | 4/23/2000  | Thunderstorm Wind | --         | 0/0             | \$4,282          |
| UNION CHURCH               | 7/17/2000  | Thunderstorm Wind | --         | 0/0             | \$2,830          |
| STAMPLEY                   | 7/17/2000  | Thunderstorm Wind | --         | 0/0             | \$2,830          |
| UNION CHURCH               | 8/8/2000   | Thunderstorm Wind | --         | 0/0             | \$1,415          |
| COUNTYWIDE                 | 5/24/2001  | Thunderstorm Wind | --         | 0/0             | \$6,880          |
| HARRISTON                  | 7/12/2001  | Thunderstorm Wind | --         | 0/0             | \$1,378          |
| UNION CHURCH               | 10/11/2001 | Thunderstorm Wind | --         | 0/0             | \$1,376          |
| COUNTYWIDE                 | 10/13/2001 | Thunderstorm Wind | --         | 0/0             | \$1,376          |
| LORMAN                     | 7/12/2002  | Thunderstorm Wind | --         | 0/0             | \$1,358          |

**ANNEX D: JEFFERSON COUNTY**

| Location     | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|--------------|------------|-------------------|------------|-----------------|------------------|
| RODNEY       | 7/16/2002  | Thunderstorm Wind | --         | 0/0             | \$2,715          |
| COUNTYWIDE   | 12/19/2002 | Thunderstorm Wind | 60 kts. EG | 0/0             | \$6,759          |
| UNION CHURCH | 4/6/2003   | Thunderstorm Wind | 60 kts. ES | 0/0             | \$133,038        |
| COUNTYWIDE   | 6/2/2003   | Thunderstorm Wind | 55 kts. ES | 0/0             | \$13,311         |
| UNION CHURCH | 6/2/2003   | Thunderstorm Wind | 50 kts. ES | 0/0             | \$13,311         |
| MC NAIR      | 2/5/2004   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,940          |
| COUNTYWIDE   | 6/27/2004  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$6,445          |
| MC NAIR      | 12/7/2004  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$19,274         |
| MC BRIDE     | 3/26/2005  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$2,530          |
| UNION CHURCH | 7/19/2006  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$0              |
| UNION CHURCH | 10/19/2006 | Thunderstorm Wind | 55 kts. EG | 0/0             | \$12,117         |
| CHURCH HILL  | 4/14/2007  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$35,492         |
| BLUE HILL    | 9/13/2007  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| LORMAN       | 2/6/2008   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$5,775          |
| PERTH        | 2/12/2008  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$23,102         |
| UNION CHURCH | 3/19/2008  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$11,452         |
| CHURCH HILL  | 5/3/2008   | Thunderstorm Wind | 60 kts. EG | 0/0             | \$28,219         |
| STAMPLEY     | 6/20/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| STUMPLEY     | 6/25/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| RED LICK     | 8/2/2008   | Thunderstorm Wind | 60 kts. EG | 0/0             | \$133,933        |
| STAMPLEY     | 12/9/2008  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| MC NAIR      | 3/25/2009  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,150          |
| CHURCH HILL  | 5/3/2009   | Thunderstorm Wind | 70 kts. EG | 0/0             | \$22,868         |
| STAMPLEY     | 5/3/2009   | Thunderstorm Wind | 67 kts. EG | 0/0             | \$22,868         |
| LORMAN       | 10/15/2009 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| PERTH        | 10/12/2010 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| STORINGTON   | 12/31/2010 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,116          |
| BLUE HILL    | 12/31/2010 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| BRASFIELD    | 3/9/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$16,413         |
| STUMPLEY     | 4/4/2011   | Thunderstorm Wind | 58 kts. EG | 0/0             | \$3,262          |
| DENNIS XRDS  | 4/4/2011   | Thunderstorm Wind | 60 kts. EG | 0/0             | \$8,698          |
| BRASFIELD    | 6/3/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$8,666          |
| HARRISTON    | 6/7/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,250          |
| MC NAIR      | 7/12/2011  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$4,329          |
| UNION CHURCH | 4/20/2012  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,126          |
| CHURCH HILL  | 12/25/2012 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,130          |
| LORMAN       | 6/28/2013  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$10,472         |
| UNION CHURCH | 7/14/2013  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,047          |
| STUMPLEY     | 3/28/2014  | Thunderstorm Wind | 54 kts. EG | 0/0             | \$15,523         |
| UNION CHURCH | 3/28/2014  | Thunderstorm Wind | 56 kts. EG | 0/0             | \$31,045         |
| LORMAN       | 4/8/2014   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,094          |
| CANNONSBURG  | 5/17/2015  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$15,424         |
| PERTH        | 5/30/2015  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,141          |
| STUMPLEY     | 2/15/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,094          |
| UNION CHURCH | 2/15/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,094          |
| CHURCH HILL  | 1/2/2017   | Thunderstorm Wind | 54 kts. EG | 0/0             | \$15,104         |

| Location | Date     | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------|----------|-------------------|------------|-----------------|------------------|
| MC NAIR  | 1/2/2017 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$4,028          |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

†E = estimated; EG = estimated gust; ES = estimated sustained; M = measured; MG = measured gust; MS = measured sustained

Source: National Climatic Data Center

**PROBABILITY OF FUTURE OCCURRENCES**

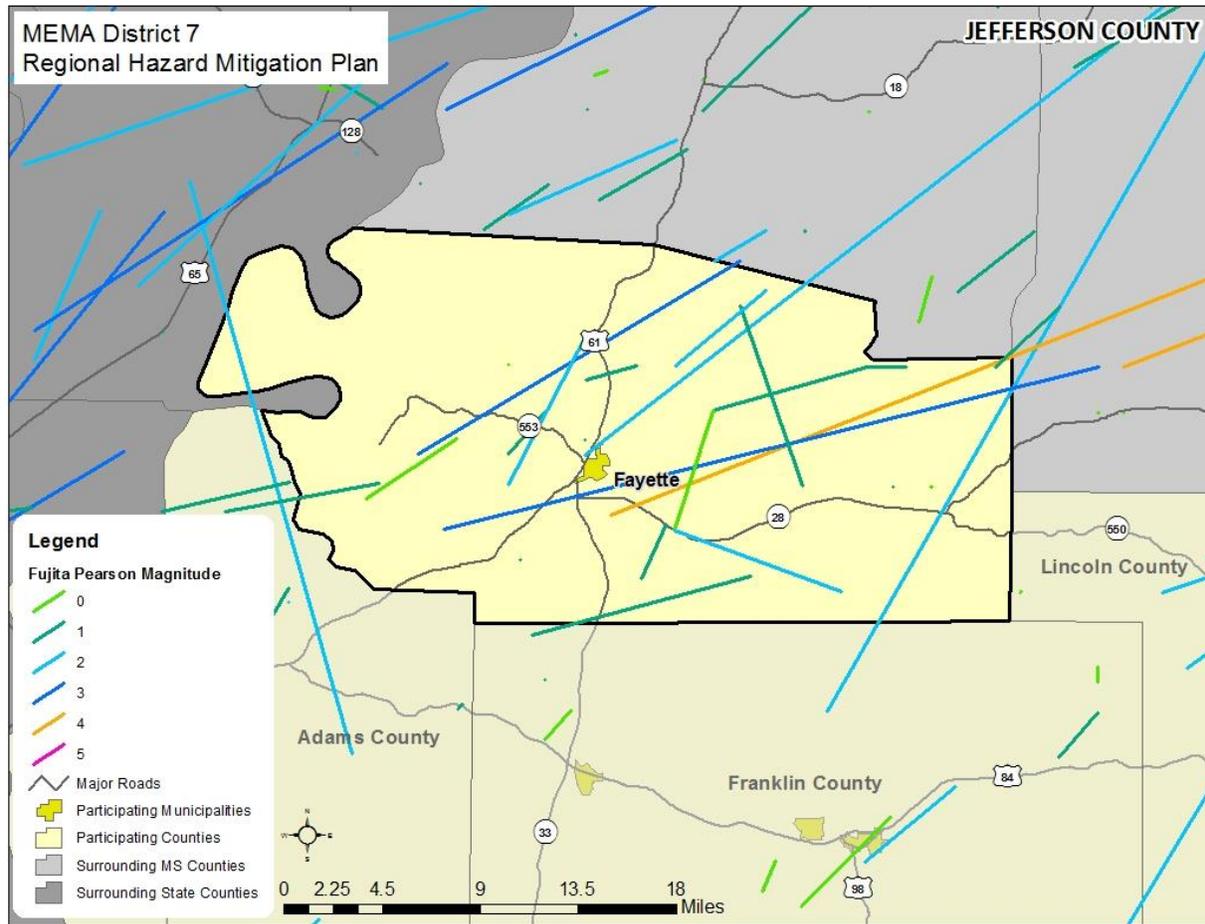
Given the high number of previous events, it is certain that thunderstorm events, including straight-line wind events, will occur in the future. This results in a probability level of highly likely (100 percent annual probability) for the entire county.

**D.2.12 Tornado**

**LOCATION AND SPATIAL EXTENT**

Tornadoes occur throughout the state of Mississippi, and thus in Jefferson County. Tornadoes typically impact a relatively small area, but damage may be extensive. Event locations are completely random and it is not possible to predict specific areas that are more susceptible to tornado strikes over time. Therefore, it is assumed that Jefferson County is uniformly exposed to this hazard. With that in mind, **Figure D.13** shows tornado track data for many of the major tornado events that have impacted the county between 1950 and 2015. While no definitive pattern emerges from this data, some areas that have been impacted in the past may be potentially more susceptible in the future.

FIGURE D.13: HISTORICAL TORNADO TRACKS IN JEFFERSON COUNTY



Source: National Weather Service Storm Prediction Center

### HISTORICAL OCCURRENCES

Tornadoes were at least partially responsible for five disaster declarations in Jefferson County in 1973, 1979, 1983, 2003, and 2017.<sup>19</sup> According to the National Climatic Data Center, there have been a total of 22 recorded tornado events in Jefferson County since 1950 (**Table D.23**), resulting in almost \$5.4 million (2017 dollars) in property damages.<sup>20 21</sup> In addition, one injury was reported. The magnitude of these tornadoes ranges from F0 to F4, although an F5 event is possible. Detailed information on historic tornado events can be found in **Table D.24**.

<sup>19</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>20</sup> These tornado events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1950 through February 2017. It is likely that additional tornadoes have occurred in Jefferson County. As additional local data becomes available, this hazard profile will be amended.

<sup>21</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE D.23: SUMMARY OF TORNADO OCCURRENCES IN JEFFERSON COUNTY**

| Location                      | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Fayette                       | 7                     | 0/0             | \$892,587              | \$49,588                   |
| Unincorporated Area           | 15                    | 0/1             | \$4,501,251            | \$67,183                   |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>22</b>             | <b>0/1</b>      | <b>\$5,393,838</b>     | <b>\$116,771</b>           |

Source: National Climatic Data Center

**TABLE D.24: HISTORICAL TORNADO IMPACTS IN JEFFERSON COUNTY**

| Location       | Date       | Magnitude | Deaths/Injuries | Property Damage* | Details   |
|----------------|------------|-----------|-----------------|------------------|---|
| <b>Fayette</b> |            |           |                 |                  |   |
| FAYETTE        | 1/22/1999  | F0        | 0/0             | \$4,465          | Several trees were blown down along Natchez Trace Parkway.  |
|                |            |           |                 |                  | This tornado touched down just west of the Natchez Trace, 8 miles west of Fayette and tracked northeast for 18 miles across Jefferson county. Between the Natchez Trace and highway 553 the tornado was in its early stages and produced F0 damage by downing several trees. Between highway 553 and US Highway 61 this tornado began to intensify and downed or snapped hundreds of trees. One mobile home and two sheds sustained minor damage as they were located on the northern edge of the circulation. As it approached US Highway 61, it moved through an open field and was at its widest point, 600 yards. Here a string of seven power poles were snapped and a large tractor shed was destroyed. The frame of the shed was made of large I-beams. These beams were snapped from their base as the shed was blown away. In the area around US Highway 61 four homes sustained major roof damage. On the east side of the highway one of these homes lost almost the entire roof and had every window blown out. For a three mile stretch between US Highway 61 and highway 552 the tornado was at its strongest and produced F3 damage. Every tree in the forest, along this stretch, was uprooted or snapped. The tornado began to weaken after passing across highway 552 and dissipated just on the other side of the Claiborne County line. |
| FAYETTE        | 11/23/2004 | F3        | 0/0             | \$384,069        |   |
| FAYETTE        | 3/26/2005  | F1        | 0/0             | \$88,550         | --  |
| FAYETTE        | 9/25/2005  | F2        | 0/0             | \$221,400        | This strong tornado touched down a few miles west-southwest of Fayette and tracked north-northeast for 10 miles. Extensive tree damage occurred along the path with hundreds of trees snapped and uprooted. A couple of   |

**ANNEX D: JEFFERSON COUNTY**

| Location                   | Date       | Magnitude | Deaths/<br>Injuries | Property<br>Damage* | Details  |
|----------------------------|------------|-----------|---------------------|---------------------|--|
|                            |            |           |                     |                     | mobile homes were damaged and a house had part of its roof taken off.  |
| FAYETTE                    | 9/25/2005  | F1        | 0/0                 | \$0                 | This tornado briefly touched down north of Fayette and snapped the tops off a number of trees.   |
| FAYETTE                    | 9/25/2005  | F0        | 0/0                 | \$49,200            | This tornado touched down southeast of Fayette and took down a few power lines and damaged several trees. One mobile home sustained minor damage.  |
| FAYETTE                    | 5/10/2006  | F2        | 0/0                 | \$144,903           | This tornado was the 3rd tornado to occur from supercell 3. The tornado touched down about 5 miles southeast of Fayette and tracked east for 7 miles across southern Jefferson County. Much of the damage along the path was to trees, where thousands were snapped and uprooted. The most intense damage was in a small area about 6 miles west-southwest of Union Church along Perth Road where nearly every tree, many of them large, in a heavily forested area were snapped or uprooted. The damage here was rated at the low end of F2 with the rest of the path consisting of F1 damage. Luckily no homes were in the path of the tornado, but two sheds were destroyed and a gazebo was heavily damaged. |
| <b>Unincorporated Area</b> |            |           |                     |                     |  |
| JEFFERSON CO.              | 5/1/1950   | F1        | 0/0                 | \$257,937           | --   |
| JEFFERSON CO.              | 4/24/1953  | F2        | 0/0                 | \$229,816           | --   |
| JEFFERSON CO.              | 2/14/1966  | F1        | 0/0                 | \$0                 | --   |
| JEFFERSON CO.              | 1/23/1969  | F4        | 0/0                 | \$1,717,163         | --   |
| JEFFERSON CO.              | 3/30/1976  | F3        | 0/0                 | \$1,093,578         | --   |
| JEFFERSON CO.              | 4/12/1986  | F1        | 0/0                 | \$56,290            | --   |
| JEFFERSON CO.              | 3/17/1987  | F1        | 0/0                 | \$545,326           | --   |
| STAMPLEY                   | 10/23/1997 | F1        | 0/0                 | \$45,394            | One house was move off its foundation, the top of a mobile home was taken off, and several trees were blown down across the road.  |
| CHURCH HILL                | 3/26/2005  | F1        | 0/0                 | \$25,300            | This tornado moved into far northern Adams County after crossing the Mississippi River from Concordia parish. This tornado moved just north of the Pine Ridge Community and uprooted/snapped a few hundred trees. One hunting camp was destroyed by large fallen trees along Church Hill Road. This tornado continued to track north-northeast into  |

**ANNEX D: JEFFERSON COUNTY**

| Location    | Date      | Magnitude | Deaths/<br>Injuries | Property<br>Damage* | Details   |
|-------------|-----------|-----------|---------------------|---------------------|---|
|             |           |           |                     |                     | southwest Jefferson county where it dissipated one mile into the county. The total path length across Concordia parish, Adams and Jefferson counties was 9 miles.   |
| CHURCH HILL | 3/26/2005 | F0        | 0/0                 | \$31,625            | Another tornado developed just to the south of where the first northern Adams County tornado tracked. This tornado first touched down 3 miles north of the Pine Ridge Community and tracked north-northeast into Jefferson county where it dissipated 1 mile southeast of Church Hill. Dozens of trees were uprooted/snapped along the 8 mile path across northern Adams and southwest Jefferson counties.  |
| RED LICK    | 9/25/2005 | F2        | 0/1                 | \$369,000           | This strong tornado touched down in the Red Lick Community, of Jefferson county, and tracked northeast into Claiborne county. Extensive tree damage occurred along the path with hundreds of trees uprooted and snapped. One mobile home was destroyed and a framed house had most of the roof torn off and an outside wall blown out. One injury occurred as the mobile home was rolled over and destroyed.  |
| CHURCH HILL | 1/8/2008  | EFO       | 0/0                 | \$0                 | This weak tornado occurred in a rural area of western Jefferson County. Several trees were downed across both Highway 533 and the Natchez Trace Parkway in a convergent path.   |
| HICKS       | 12/9/2008 | EF1       | 0/0                 | \$58,157            | The tornado started out in a forested area west of Hamburg. The timber damage in this area became quite intense, with swaths of pine trees snapped and leveled. As the tornado crossed Highway 33, it moved through a small community of homes, causing roof damage to a frame home and several mobile homes. Additionally, several outbuildings were destroyed, and windows were blown out of vehicles. The rest of the tornado's path was across rural forested areas of southern Jefferson County, and damage was mainly limited to tree damage. However, one home did suffer some minor roof damage and some farm outbuildings sustained some roof damage. Maximum winds were around 105 mph. Total path length across northwest Franklin and southern Jefferson Counties was 11 miles. |
| MC NAIR     | 3/21/2012 | EF1       | 0/0                 | \$21,319            | The tornado snapped numerous pine trees and uprooted oak trees over a rural part of the county. Maximum wind speed was estimated at 94 mph.   |
| PERTH       | 1/2/2017  | EFO       | 0/0                 | \$50,347            | This tornado touched down along Perth Road and tracked northeast across Highway 28 in central Jefferson County. Damage was only to  |

| Location | Date | Magnitude | Deaths/<br>Injuries | Property<br>Damage* | Details  |
|----------|------|-----------|---------------------|---------------------|--|
|          |      |           |                     |                     | trees with many limbs broken and a couple dozen snapped or uprooted trees. After crossing Highway 28, the tornado mainly tracked just to the south of Old 20 Road for a couple of miles before dissipating. Maximum estimated winds were 85 mph. |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

**PROBABILITY OF FUTURE OCCURRENCES**

According to historical information, tornado events pose a significant threat to Jefferson County. The probability of future tornado occurrences affecting Jefferson County is likely (between 10 and 100 percent annual probability).

**D.2.13 Winter Storm and Freeze**

**LOCATION AND SPATIAL EXTENT**

Nearly the entire continental United States is susceptible to winter storm and freeze events. Some ice and winter storms may be large enough to affect several states, while others might affect limited, localized areas. The degree of exposure typically depends on the normal expected severity of local winter weather. Jefferson County is not accustomed to severe winter weather conditions and seldom receives severe winter weather, even during the winter months. Events tend to be mild in nature; however, this creates a situation where even relatively small accumulations of snow, ice, or other wintry precipitation can lead to losses and damage due to the fact that these events are not commonplace. Given the atmospheric nature of the hazard, the entire county has uniform exposure to a winter storm.

**HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, there have been a total of nine recorded winter storm events in Jefferson County since 1996 (Table D.25).<sup>22</sup> These events resulted in over \$947,000 (2017 dollars) in damages.<sup>23</sup> Detailed information on the recorded winter storm events can be found in Table D.26.

**TABLE D.25: SUMMARY OF WINTER STORM EVENTS IN JEFFERSON COUNTY**

| Location         | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------|-----------------------|-----------------|------------------------|----------------------------|
| Jefferson County | 9                     | 0/0             | \$947,462              | \$45,117                   |

Source: National Climatic Data Center

<sup>22</sup> These ice and winter storm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional winter storm conditions have affected Jefferson County.

<sup>23</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE D.26: HISTORICAL WINTER STORM IMPACTS IN JEFFERSON COUNTY**

| Location                   | Date      | Type       | Deaths/Injuries | Property Damage* |
|----------------------------|-----------|------------|-----------------|------------------|
| <b>Fayette</b>             |           |            |                 |                  |
| <i>None reported</i>       | --        | --         | --              | --               |
| <b>Unincorporated Area</b> |           |            |                 |                  |
| JEFFERSON (ZONE)           | 2/1/1996  | Ice Storm  | 0/0             | \$157,859        |
| JEFFERSON (ZONE)           | 1/19/2008 | Heavy Snow | 0/0             | \$0              |
| JEFFERSON (ZONE)           | 12/4/2009 | Heavy Snow | 0/0             | \$0              |
| JEFFERSON (ZONE)           | 2/11/2010 | Heavy Snow | 0/0             | \$451,274        |
| JEFFERSON (ZONE)           | 1/9/2011  | Ice Storm  | 0/0             | \$16,655         |
| JEFFERSON (ZONE)           | 2/3/2011  | Ice Storm  | 0/0             | \$220,980        |
| JEFFERSON (ZONE)           | 1/28/2014 | Heavy Snow | 0/0             | \$0              |
| JEFFERSON (ZONE)           | 2/11/2014 | Ice Storm  | 0/0             | \$0              |
| JEFFERSON (ZONE)           | 1/6/2017  | Sleet      | 0/0             | \$100,694        |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

There have been several severe winter weather events in Jefferson County. The text below describes two of the major events and associated impacts on the county. Similar impacts can be expected with severe winter weather.

### **February 2010**

Heavy snow affected a large portion of the region, especially locations across central and southern Mississippi, on Thursday night and Friday, February 11th and 12th. The heavy snow was a result of a low pressure system that tracked eastward across the northern Gulf of Mexico, and a vigorous upper level disturbance that moved across the region while a cold air mass was in place. Light precipitation overspread the region late Thursday afternoon into the evening before becoming heavy Thursday night into early Friday morning. The snow tapered off from west to east during the midday hours Friday.

### **February 2011**

An ice storm developed across the area on February 3rd into the early morning hours of the 4th. While this icing event was not devastating, the impact to travel was a major issue across the region. Thousands of accidents occurred from slick roads. As a result of the accidents, three fatalities occurred along with a handful of injuries. Overall, most areas received 0.25 to 0.5 inches of ice accumulation from freezing rain. Additionally, some areas had a mix of precipitation with sleet accumulating. Some snow did occur, but those were just across select areas and the accumulation was mainly one inch or less.

Winter storms throughout the planning area have several negative externalities including hypothermia, cost of snow and debris cleanup, business and government service interruption, traffic accidents, and power outages. Furthermore, citizens may resort to using inappropriate heating devices that could to fire or an accumulation of toxic fumes.

### **PROBABILITY OF FUTURE OCCURRENCES**

Winter storm events will continue to occur in Jefferson County. Based on historical information, the probability is likely (between 10 and 100 percent annual probability).

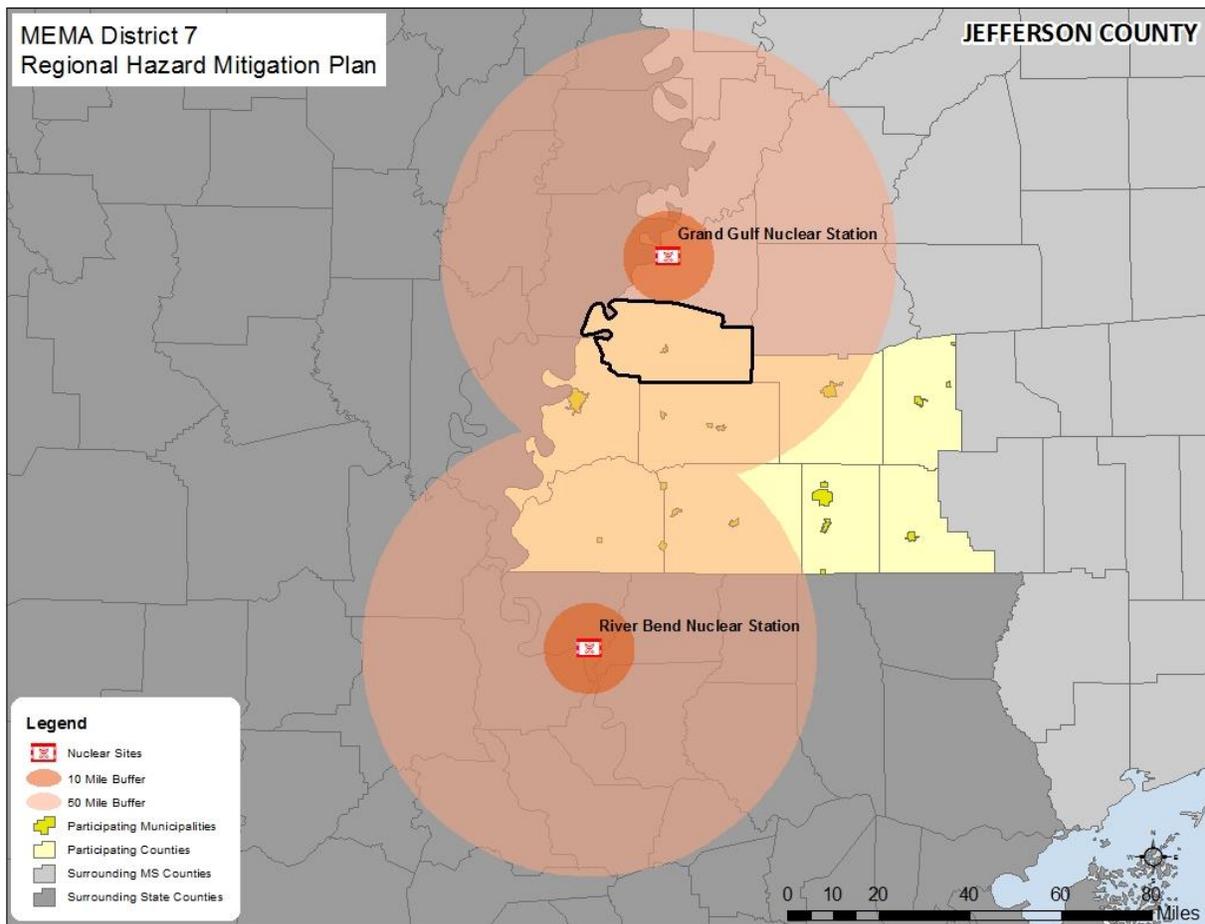
## HUMAN-CAUSED HAZARDS

### D.2.14 Radiological Event

#### LOCATION AND SPATIAL EXTENT

The Grand Gulf Nuclear Station and River Bend Nuclear Station are both located within a 50-mile radius of the MEMA District 7 Region. The Nuclear Regulatory Commission defines two emergency planning zones around nuclear plants. Areas located within 10 miles of the station are considered to be within the zone of highest risk to a nuclear incident and this radius is the designated evacuation radius recommended by the Nuclear Regulatory Commission. Within the 10-mile zone, the primary concern is exposure to and inhalation of radioactive contamination. The very northern part of Jefferson County is located on the edge of the 10-mile radius of the Grand Gulf Nuclear Station, although no part of the county is actually located within this zone. The most concerning effects in the secondary 50-mile zone are related to ingestion of food and liquids that may have been contaminated. All of Jefferson County is located within this 50-mile radius. The 50-mile zone is still considered to be at risk from a nuclear incident, though the impacts may be less severe than in the 10-mile zone (Figure D.14).

**FIGURE D.14: NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN JEFFERSON COUNTY**



Source: International Atomic Energy Agency

**HISTORICAL OCCURRENCES**

Although there have been no major nuclear events at either the Grand Gulf or River Bend Nuclear Stations, there is some possibility that one could occur as there have been incidents in the past in the United States at other facilities and at facilities around the world. Additionally, a list of minor events/notifications was acquired from reports collected by the Nuclear Regulatory Commission (NRC). The NRC classifies events using the scale found in **Table D.27**. A list of events at Grand Gulf Nuclear Station can be found in **Table D.28** and a list of events at River Bend Nuclear Station can be found in **Table D.29**. It is noteworthy that all of the events were minor in magnitude and many were insignificant enough that they did not register on the classification scale.

**TABLE D.27: NUCLEAR REGULATORY COMMISSION EMERGENCY CLASSIFICATION SCALE FOR EVENTS OCCURRING AT NUCLEAR POWER PLANTS**

| Classification                       | Description   |
|--------------------------------------|---|
| Notification of Unusual Event (NOUE) | Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. [Note: This term is sometimes shortened to Unusual Event (UE). The terms Notification of Unusual Event, NOUE and Unusual Event are used interchangeably.]  |
| Alert                                | Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) protective action guides (PAGs)  |
| Site Area Emergency                  | Site Area Emergency (SAE) – Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile action that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary. |
| General Emergency                    | Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile action that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.  |

Source: Nuclear Regulatory Commission

**TABLE D.28: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT GRAND GULF NUCLEAR STATION**

| Date      | Retrieved From*                  | Classification | Plant             | Description  |
|-----------|----------------------------------|----------------|-------------------|--|
| 8/29/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST |
| 10/1/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF NUCLEAR STATION SECURITY OFFICER LOCKOUT          |

| Date      | Retrieved From*                  | Classification | Plant             | Description  |
|-----------|----------------------------------|----------------|-------------------|--|
| 9/29/2016 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF EXTENDED PLANT SHUTDOWN TO ADDRESS OPERATIONS PERFORMANCE |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lersearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

**TABLE D.29: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT RIVER BEND NUCLEAR STATION**

| Date       | Retrieved From*                  | Classification                               | Plant             | Description   |
|------------|----------------------------------|--|-------------------|---|
| 11/26/1985 | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | ECCS Initiation: Improper restoration of a level transmitter causes HPSC injection    |
| 11/27/1985 | Licensee Event Report            | Alert  | River Bend Unit 1 | Failure to Perform Surveillance Tests   |
| 3/5/1992   | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | REACTOR SCRAM CAUSED BY A GENERATOR TRIP DUE TO HIGH WINDS CAUSING TRANSFORMER DAMAGE |
| 9/15/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE IVAN  |
| 10/4/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | Shutdown Greater than 72 Hours  |
| 9/23/2005  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | NRC ENTERS MONITORING MODE DUE TO HURRICANE RITA                                      |
| 5/23/2007  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REACTOR SHUTDOWN DUE TO UNEXPECTED CHANGE IN RECIRCULATION FLOW                       |
| 9/2/2008   | Preliminary Notification Reports | Notification of Unusual Event/Not Applicable | River Bend Unit 1 | NRC RESPONSE TO HURRICANE GUSTAV  |
| 5/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | AUGMENTED INSPECTION TEAM ONSITE AT RIVER BEND STATION                                |
| 8/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST                          |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lersearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

### **PROBABILITY OF FUTURE OCCURRENCES**

A nuclear event is a very rare occurrence in the United States due to the intense regulation of the industry. There have been minor incidents in the past, but it is considered unlikely (less than 1 percent annual probability).

### **RADIOLOGICAL EVACUATIONS**

Similar to the hurricane evacuations discussed above, in many ways the MEMA District 7 Region would potentially be impacted to a greater degree by evacuations caused by a radiological event than by the event itself. Since the region is not directly located within the 10-mile evacuation area but neighboring counties are located within this zone, it is highly likely that populations from those neighboring counties will be evacuated to the counties within the MEMA District 7 Region.

Due to the severe and long-term effects of a major radiological event, temporary sheltering will be an initial concern, but the greater challenge may be in the long-term. As has happened with historical radiological accidents in other locations, the danger in the impacted area will likely extend for a very long period after the event and evacuees may be unable to return to their homes for months or years. This additional influx of population will cause a major strain on resources within these relatively rural counties in the short-term, as local communities with limited resources will have an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people. In the long-term, there may be challenges for local officials as existing infrastructure will likely be inadequate to handle larger populations.

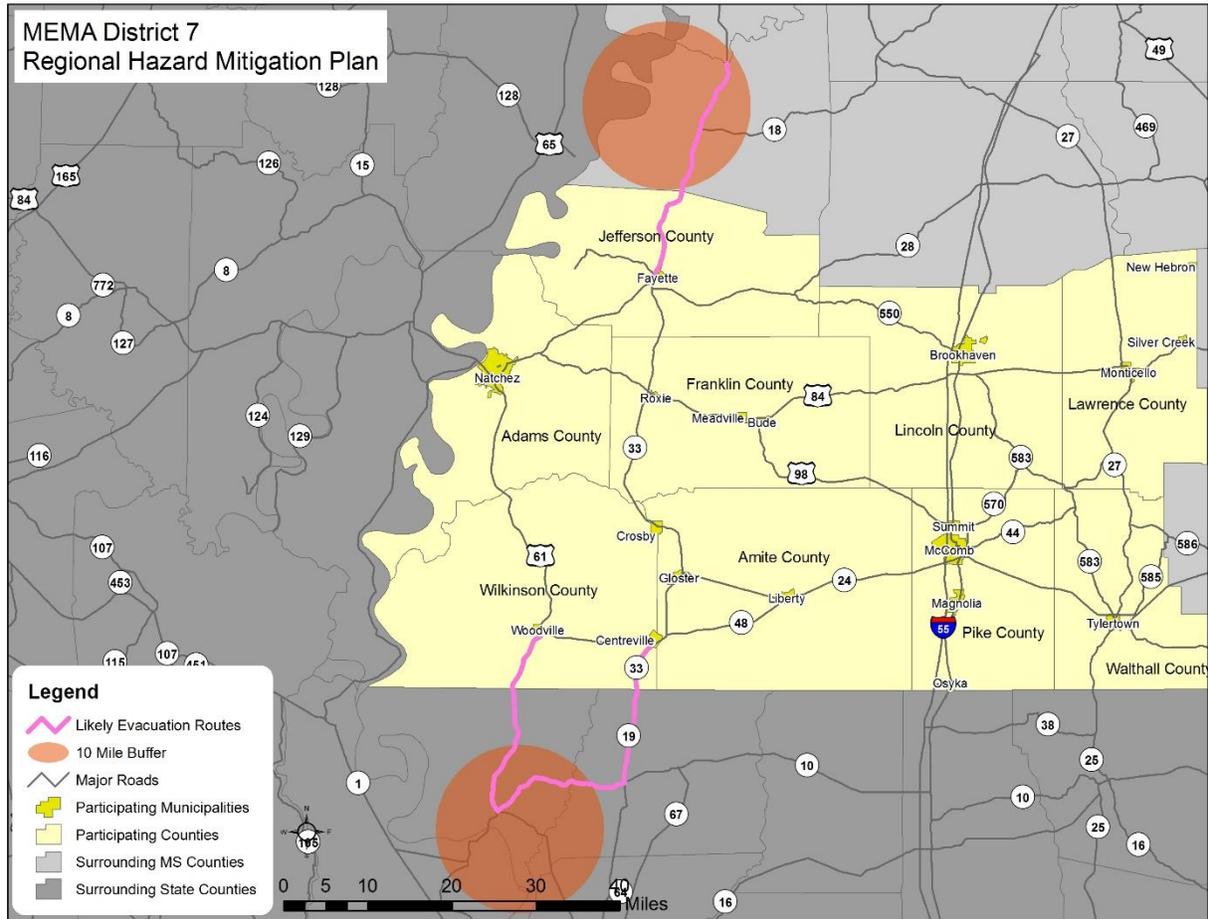
Although there have not been any major radiological events in the region historically, hurricane evacuations (discussed above) provide a similar scenario in terms of what the region might expect. However, one additional concern that officials will need to consider in a radiological event is that evacuees may be contaminated by radioactivity. According to the Centers for Disease Control, radioactive contamination can occur when radioactive materials are released into the environment and become deposited into the air, water, surfaces, soil, plants, buildings, people or animals. This contamination can then be spread when people touch other people, surfaces, or objects. Therefore, when people evacuate a contaminated zone, they pose a potential risk of spreading the contamination to others if they are not properly treated. Local officials in MEMA District 7 may need to be prepared to set up decontamination centers along major evacuation routes to ensure that the contamination is not spread. It is also important for citizens to understand the steps they can take to reduce the risk of spreading contamination such as evacuating quickly after an event and following decontamination instructions as directed by local officials.<sup>24</sup>

Based on the locations of the 10-mile evacuation areas near the region, many of these evacuees will likely come from Claiborne County to the north and West Feliciana and East Feliciana Parishes to the south. The main roads for these evacuees will probably be U.S. Highway 61 and Mississippi State Highway 33 since these are the primary and most direct roads into and out of the aforementioned evacuation counties and into MEMA District 7 (**Figure D.15**). Depending on the severity of the event, officials may even change these roads over to a contraflow traffic pattern to enable quicker evacuations.

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<sup>24</sup> Centers for Disease Control and Prevention. *Emergency Preparedness and Response: Contamination vs. Exposure*. Retrieved on September 1, 2017 from <https://emergency.cdc.gov/radiation/contamination.asp>

**FIGURE D.15: LIKELY EVACUATION ROUTES FOR A RADIOLOGICAL EVENT IN THE MEMA DISTRICT 7 REGION**



Source: International Atomic Energy Agency

As a result of the potential for an influx of evacuees during a radiological event, it is critical for local officials in MEMA District 7 to prepare for evacuations. It is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future events.

### D.2.15 Conclusions on Hazard Risk

The hazard profiles presented in this subsection were developed using best available data and result in what may be considered principally a qualitative assessment as recommended by FEMA in its “How-to” guidance document titled *Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA Publication 386-2). It relies heavily on historical and anecdotal data, stakeholder input, and professional and experienced judgment regarding observed and/or anticipated hazard impacts. It also carefully considers the findings in other relevant plans, studies, and technical reports.

**HAZARD EXTENT**

**Table D.30** describes the extent of each natural hazard identified for Jefferson County. The extent of a hazard is defined as its severity or magnitude, as it relates to the planning area.

**TABLE D.30: EXTENT OF JEFFERSON COUNTY HAZARDS**

| Flood-related Hazards |   |             |  |                                     |                                 |  |   |    |
|-----------------------|---|-------------|--|-------------------------------------|---------------------------------|--|---|----|
| Dam and Levee Failure | Dam Failure extent is defined using the Mississippi Department of Environmental Quality classifications which include Low, Significant, and High. No dams are classified as high-hazard in Jefferson County.  |             |  |                                     |                                 |  |   |    |
| Erosion               | The extent of erosion can be defined by the measurable rate of erosion that occurs. There are no official erosion rate records in Jefferson County but local estimates are around 0.25 to 0.50 feet per year. Some areas of erosion have been identified by local coordinators.   |             |  |                                     |                                 |  |   |    |
| Flood                 | Flood extent can be measured by the amount of land and property in the floodplain as well as flood height and velocity. The amount of land in the floodplain accounts for 12.9 percent of the total land area in Jefferson County.  |             |  |                                     |                                 |  |   |    |
|                       | Flood depth and velocity are recorded via United States Geological Survey stream gages throughout the region. While a gage does not exist for each participating jurisdiction, there is one at or near many areas. The greatest peak discharge recorded for the county was on Coles Creek near Fayette. Water reached a discharge of 75,000 cubic feet per second (recorded on April 12, 1974). The highest stream gage height was on North Fork Coles Creek near Church Hill with a height that was recorded at 39.62 feet (recorded on March 2, 2001). Additional peak discharge readings, historic crest heights, and the corresponding flood categories (where available) are in the table below. |             |  |                                     |                                 |  |   |    |
|                       | <b>Location/<br/>Jurisdiction</b>   | <b>Date</b> | <b>Maximum<br/>Historic<br/>Crest (ft)</b> | <b>Peak<br/>Discharge<br/>(cfs)</b> | <b>Flood Categories</b>         |  |   |    |
|                       |   |             |  | <b>Action<br/>Stage<br/>(ft)</b>    | <b>Flood<br/>Stage<br/>(ft)</b> | <b>Moderate<br/>Flood<br/>Stage (ft)</b> | <b>Major<br/>Flood<br/>Stage<br/>(ft)</b> |    |
|                       | <b>Jefferson County</b>   |             |  |                                     |                                 |  |   |    |
|                       | Little Creek near Fayette   | 4/13/1974   | 15.45                                      | 1,800                               | NA                              | NA                                       | NA  | NA |
|                       | North Fork Coles Creek near Church Hill   | 3/2/2001    | 39.62                                      | 15,700                              | NA                              | NA                                       | NA  | NA |
|                       | South Fork Coles Creek near Church Hill   | 3/2/2001    | 29.05                                      | 22,500                              | NA                              | NA                                       | NA  | NA |
|                       | Coles Creek near Fayette  | 4/12/1974   | 31.96                                      | 75,000                              | NA                              | NA                                       | NA  | NA |
|                       | NA= Data not available for this particular gage   |             |  |                                     |                                 |  |   |    |
|                       | *Occurred on a different date than Maximum Historic Crest   |             |  |                                     |                                 |  |   |    |

| <b>Fire-related Hazards</b>    |  |
|--------------------------------|--|
| Drought                        | Drought extent is defined by the U.S. Drought Monitor Classifications which include Abnormally Dry, Moderate Drought, Severe Drought, Extreme Drought, and Exceptional Drought. According to the U.S. Drought Monitor Classifications, the most severe drought condition is Exceptional. Jefferson County has received this ranking once over the 17-year reporting period.  |
| Lightning                      | According to the Vaisala’s flash density map, Jefferson County is located in an area that experiences 12 to 20 lightning flashes per square mile per year. It should be noted that future lightning occurrences may exceed these figures.  |
| Wildfire                       | Wildfire data was provided by the Mississippi Forestry Commission and is reported annually by county from 2007-2016. The greatest number of fires to occur in Jefferson County in any year was 19 in 2008. The greatest number of acres to burn in the county in a single year occurred in 2014 when 365 acres were burned. Although this data lists the extent that has occurred, larger and more frequent wildfires are possible throughout the county.          |
| <b>Geologic Hazards</b>        |  |
| Earthquake                     | Earthquake extent can be measured by the Richter Scale or the Modified Mercalli Intensity (MMI) scale. According to data provided by the National Centers for Environmental Information, no earthquakes were reported in Jefferson County.   |
| <b>Wind-related Hazards</b>    |  |
| Extreme Heat                   | The extent of extreme heat can be measured by the record high temperature recorded. Official long term temperature records are not kept for any areas in Jefferson County. However, the highest recorded temperature in the region was 106°F in 2007 with heat index values recorded above 115°F.  |
| Hailstorm                      | Hail extent can be defined by the size of the hail stone. The largest hail stone reported in Jefferson County was 2.75 inches (last reported on April 11, 2008). It should be noted that future events may exceed this.  |
| Hurricane and Tropical Storm   | Hurricane extent is defined by the Saffir-Simpson Scale which classifies hurricanes into Category 1 through Category 5. The greatest classification of hurricane to impact the MEMA District 7 Region was a Category 3 storm. This occurred in 1969 with Hurricane Camille and in 2005 with Hurricane Katrina. The storm track of both storms passed just to the east of the region, but due to the size of these storms, their impact was felt across the region. |
| Severe Thunderstorm/ High Wind | Thunderstorm extent is defined by the number of thunder events and wind speeds reported. According to a 67-year history from the National Climatic Data Center, the strongest recorded wind event in Jefferson County was last reported on May 3, 2009 at 70 knots (approximately 81 mph). It should be noted that future events may exceed these historical occurrences.  |
| Tornado                        | Tornado hazard extent is measured by tornado occurrences in the US provided by FEMA as well as the Fujita/Enhanced Fujita Scale. The greatest magnitude reported in Jefferson County was an F4 (reported on January 23, 1969).   |
| Winter Storm and Freeze        | The extent of winter storms can be measured by the amount of snowfall received (in inches). Official long term snow records are not kept for any areas in Jefferson County. However, reports from NCDC of the greatest snowfall in the county has been 6 inches (reported on February 11, 2010).   |
| <b>Human-caused Hazards</b>    |  |
| Radiological Event             | Although there is no history of a nuclear accident at either the Grand Gulf Nuclear Station or River Bend Nuclear Station, other events across the globe and in the United States in particular indicate that an event is possible. Since several national and international events were Level 7 events on the INES, the potential for a Level 7 event at these stations is possible.  |

### PRIORITY RISK INDEX RESULTS

In order to draw some meaningful planning conclusions on hazard risk for Jefferson County, the results of the hazard profiling process were used to generate countywide hazard classifications according to a “Priority Risk Index” (PRI). More information on the PRI and how it was calculated can be found in Section 5.17.2.

**Table D.31** summarizes the degree of risk assigned to each category for all initially identified hazards based on the application of the PRI. Assigned risk levels were based on the detailed hazard profiles developed for this subsection, as well as input from the Regional Hazard Mitigation Council. The results were then used in calculating PRI values and making final determinations for the risk assessment.

**TABLE D.31: SUMMARY OF PRI RESULTS FOR JEFFERSON COUNTY**

| Hazard                        | Category/Degree of Risk |              |                |                    |                    | PRI Score  |
|-------------------------------|-------------------------|--------------|----------------|--------------------|--------------------|------------|
|                               | Probability             | Impact       | Spatial Extent | Warning Time       | Duration           |            |
| <b>Flood-related Hazards</b>  |                         |              |                |                    |                    |            |
| Dam Failure and Levee Failure | Unlikely                | Critical     | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>2.3</b> |
| Erosion                       | Likely                  | Minor        | Small          | More than 24 hours | More than 1 week   | <b>2.1</b> |
| Flood                         | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 24 hours | <b>3.2</b> |
| <b>Fire-related Hazards</b>   |                         |              |                |                    |                    |            |
| Drought                       | Possible                | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.5</b> |
| Lightning                     | Highly Likely           | Limited      | Small          | 6 to 12 hours      | Less than 6 hours  | <b>2.6</b> |
| Wildfire                      | Possible                | Limited      | Small          | Less than 6 hours  | Less than 1 week   | <b>2.3</b> |
| <b>Geologic Hazards</b>       |                         |              |                |                    |                    |            |
| Earthquake                    | Unlikely                | Minor        | Small          | Less than 6 hours  | Less than 6 hours  | <b>1.5</b> |
| <b>Wind-related Hazards</b>   |                         |              |                |                    |                    |            |
| Extreme Heat                  | Likely                  | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.8</b> |
| Hailstorm                     | Highly Likely           | Limited      | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>2.8</b> |
| Hurricane and Tropical Storm  | Likely                  | Catastrophic | Large          | More than 24 hours | Less than 1 week   | <b>3.3</b> |
| Severe Thunderstorm/High Wind | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>3.1</b> |
| Tornado                       | Likely                  | Catastrophic | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>3.2</b> |
| Winter Storm and Freeze       | Likely                  | Minor        | Moderate       | More than 24 hours | Less than 1 week   | <b>2.2</b> |
| <b>Human-caused Hazards</b>   |                         |              |                |                    |                    |            |
| Radiological Event            | Unlikely                | Critical     | Moderate       | More than 24 hours | Less than 1 week   | <b>2.2</b> |

### D.2.16 Final Determinations on Hazard Risk

The conclusions drawn from the hazard profiling process for Jefferson County, including the PRI results and input from the Regional Hazard Mitigation Council, resulted in the classification of risk for each identified hazard according to three categories: High Risk, Moderate Risk, and Low Risk (**Table D.32**). For

purposes of these classifications, risk is expressed in relative terms according to the estimated impact that a hazard will have on human life and property throughout all of Jefferson County. A more quantitative analysis to estimate potential dollar losses for each hazard has been performed separately, and is described in Section 6: *Vulnerability Assessment* and below in Section D.3. It should be noted that although some hazards are classified below as posing low risk, their occurrence of varying or unprecedented magnitudes is still possible in some cases and their assigned classification will continue to be evaluated during future plan updates. In most cases, the hazards of greatest concern did not change much since the last plan update, indicating that the priorities remained relatively stable and there were few changes in priorities.

**TABLE D.32: CONCLUSIONS ON HAZARD RISK FOR JEFFERSON COUNTY**

|                      |  |
|----------------------|--|
| <b>HIGH RISK</b>     | Hurricane and Tropical Storm<br>Tornado<br>Flood<br>Severe Thunderstorm/High Wind      |
| <b>MODERATE RISK</b> | Extreme Heat<br>Hailstorm<br>Lightning<br>Drought<br>Dam and Levee Failure<br>Wildfire |
| <b>LOW RISK</b>      | Winter Storm and Freeze<br>Radiological Event<br>Erosion<br>Earthquake                 |

### D.3 JEFFERSON COUNTY VULNERABILITY ASSESSMENT

This subsection identifies and quantifies the vulnerability of Jefferson County to the significant hazards previously identified. This includes identifying and characterizing an inventory of assets in the county and assessing the potential impact and expected amount of damages caused to these assets by each identified hazard event. More information on the methodology and data sources used to conduct this assessment can be found in Section 6: *Vulnerability Assessment*.

#### D.3.1 Asset Inventory

**Table D.33** lists the estimated number of improved properties and the total value of improvements for Jefferson County and its participating jurisdictions (study area of vulnerability assessment). Because digital parcel data was not available for most communities, data obtained from Hazus-MH 4.0 inventory was utilized to complete the analysis.

**TABLE D.33: IMPROVED PROPERTY IN JEFFERSON COUNTY**

| Location                      | Counts of Improved Property | Total Value of Improvements |
|-------------------------------|-----------------------------|-----------------------------|
| Fayette                       | 1,052                       | \$181,948                   |
| Unincorporated Area           | 2,634                       | \$697,235,052               |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>3,686</b>                | <b>\$697,417,000</b>        |

Source: Hazus-MH 4.0

**Table D.34** lists the fire stations, police stations, medical care facilities, emergency operation centers, schools, government/public buildings, transportation infrastructure, and private facilities located in Jefferson County according to previous plan data and Hazus-MH 4.0 data that was reviewed and updated by local officials.

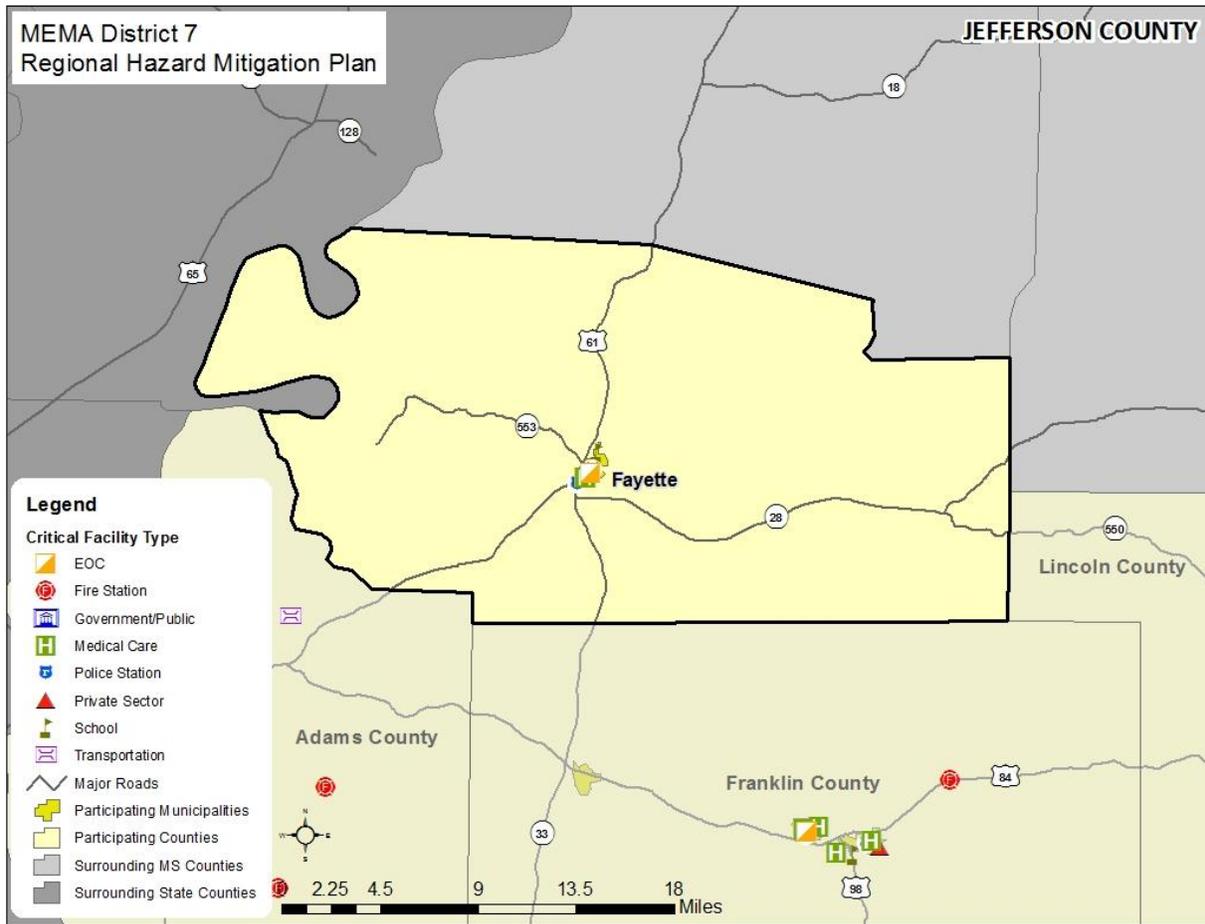
In addition, **Figure D.16** shows the locations of critical facilities in Jefferson County. **Table D.45**, at the end of this subsection, shows a complete list of the critical facilities by name, as well as the hazards that affect each facility. As noted previously, this list is not all-inclusive and only includes information provided through Hazus which was updated, as best as possible, with local knowledge.

**TABLE D.34: CRITICAL FACILITY INVENTORY IN JEFFERSON COUNTY**

| Location                      | Fire Stations | Police Stations | Medical Care | EOC      | Schools  | Gov't/<br>Public | Trans    | Private Sector |
|-------------------------------|---------------|-----------------|--------------|----------|----------|------------------|----------|----------------|
| Fayette                       | 1             | 2               | 2            | 1        | 1        | 0                | 0        | 0              |
| Unincorporated Area           | 0             | 0               | 0            | 0        | 0        | 0                | 0        | 0              |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>1</b>      | <b>2</b>        | <b>2</b>     | <b>1</b> | <b>1</b> | <b>0</b>         | <b>0</b> | <b>0</b>       |

Source: Hazus-MH 4.0; Local Officials

**FIGURE D.16: CRITICAL FACILITY LOCATIONS IN JEFFERSON COUNTY**



Source: Hazus-MH 4.0; Local Officials

### D.3.2 Social Vulnerability

In addition to identifying those assets potentially at risk to identified hazards, it is important to identify and assess those particular segments of the resident population in Jefferson County that are potentially at risk to these hazards.

**Table D.35** lists the population by jurisdiction according to U.S. Census, American Community Survey 2015 population estimates. The total population in Jefferson County according to Census data was 7,586 persons. Additional population estimates are presented above in Section D.1.

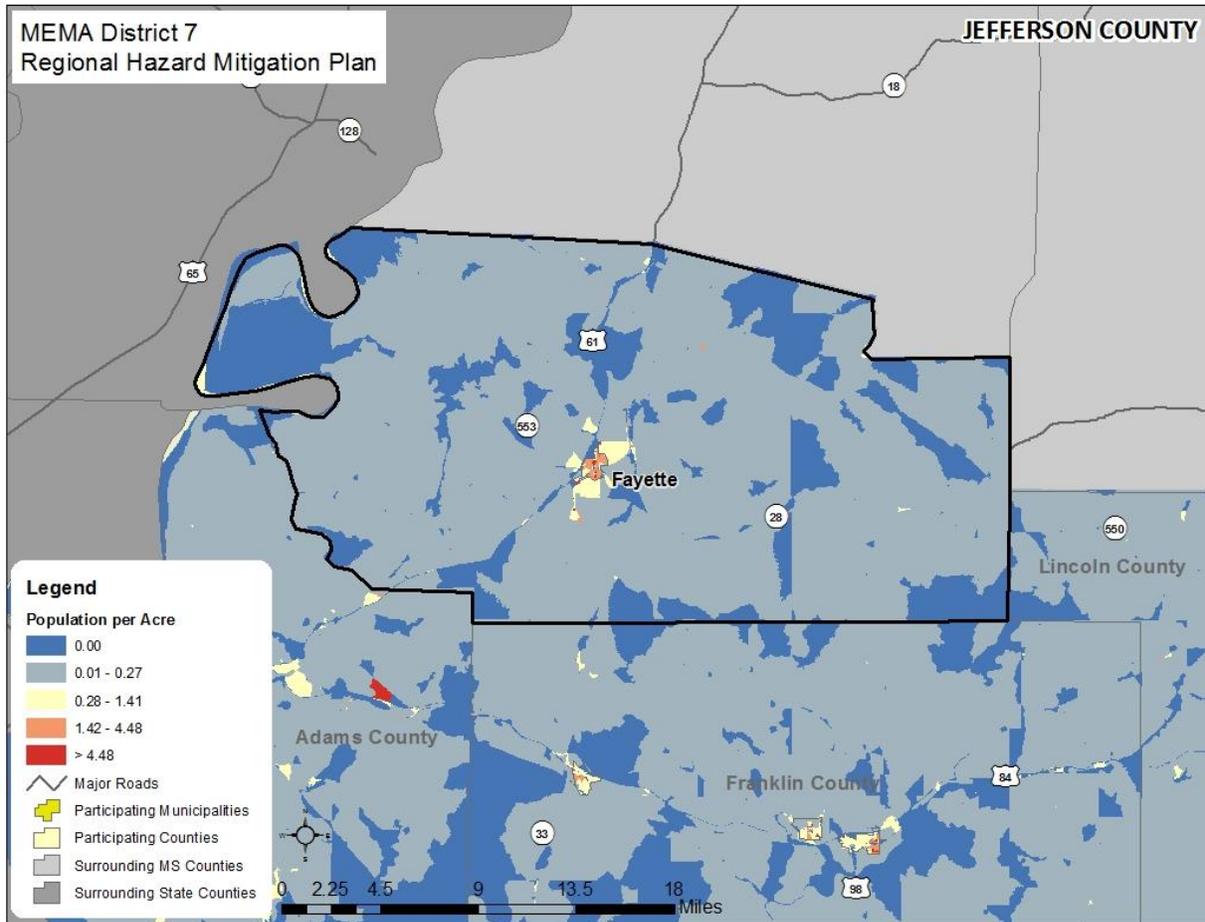
**TABLE D.35: TOTAL POPULATION IN JEFFERSON COUNTY**

| Location                      | Total 2015 Population |
|-------------------------------|-----------------------|
| Fayette                       | 1,563                 |
| Unincorporated Area           | 6,023                 |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>7,586</b>          |

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

In addition, **Figure D.17** illustrates the population density per acre by census block as it was reported by the U.S. Census Bureau in 2010. As can be seen in the figure, the population is spread out with concentrations in municipal areas such as Fayette.

**FIGURE D.17: POPULATION DENSITY IN JEFFERSON COUNTY**



Source: United States Census Bureau, 2010 Census

### D.3.3 Development Trends and Changes in Vulnerability

Since the previous hazard mitigation plan was approved, Jefferson County has experienced limited growth and development. **Table D.36** shows the number of building units constructed since 2010 according to the U.S. Census American Community Survey.

**TABLE D.36: BUILDING COUNTS FOR JEFFERSON COUNTY**

| Location                      | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|-------------------------------|----------------------------|---------------------------|----------------------------------|
| Fayette                       | 668                        | 0                         | 0.00%                            |
| Unincorporated Area           | 3,009                      | 57                        | 1.89%                            |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>3,677</b>               | <b>57</b>                 | <b>1.55%</b>                     |

| Location | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|----------|----------------------------|---------------------------|----------------------------------|
|----------|----------------------------|---------------------------|----------------------------------|

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

Table D.37 shows population growth estimates for the county from 2010 to 2015 based on the U.S. Census American Community Survey.

**TABLE D.37: POPULATION GROWTH FOR JEFFERSON COUNTY**

| Location                      | Population Estimates |              |              |              |              |              | % Change 2010-2015 |
|-------------------------------|----------------------|--------------|--------------|--------------|--------------|--------------|--------------------|
|                               | 2010                 | 2011         | 2012         | 2013         | 2014         | 2015         |                    |
| Fayette                       | 1,500                | 1,781        | 2,243        | 2,218        | 1,799        | 1,563        | 4.20%              |
| Unincorporated Area           | 6,470                | 6,064        | 5,500        | 5,472        | 5,835        | 6,023        | -6.91%             |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>7,970</b>         | <b>7,845</b> | <b>7,743</b> | <b>7,690</b> | <b>7,634</b> | <b>7,586</b> | <b>-4.82%</b>      |

Source: United States Census Bureau, 2006-2010, 2007-2011, 2008-2012, 2009-2013, and 2010-2014, and 2011-2015 American Community Survey 5-Year Estimates

Based on the data above, there has been a low rate of residential development and population growth in the county since 2010, and the county has actually experienced a population decline. However, it is notable that the unincorporated area has experienced a slightly higher rate of development compared to the rest of the county, resulting in an increased number of structures that are vulnerable to the potential impacts of the identified hazards. Therefore, development has impacted the county’s vulnerability since the previous local hazard mitigation plan was approved and there has been a slight increase in the overall vulnerability as well as a larger increase in certain areas and communities.

It is also important to note that as development increases in the future, greater populations and more structures and infrastructure will be exposed to potential hazards if development occurs in the floodplains or other high risk areas.

### D.3.4 Vulnerability Assessment Results

As noted in Section 6: *Vulnerability Assessment*, only hazards with a specific geographic boundary, available modeling tool, or sufficient historical data allow for further analysis. Those results, specific to Jefferson County, are presented here. All other hazards are assumed to impact the entire planning region (drought, extreme heat, hailstorm, lightning, severe thunderstorm/high wind, tornado, and winter storm) or, due to lack of data, analysis would not lead to credible results (erosion). The total county exposure, and thus risk to these hazards, was presented in **Table D.33**.

The hazards to be further analyzed in this subsection include: dam/levee failure, flood, wildfire, earthquake, hurricane and tropical storm winds, and radiological event.

The annualized loss estimate for all hazards is presented near the end of this subsection in **Table D.44**.

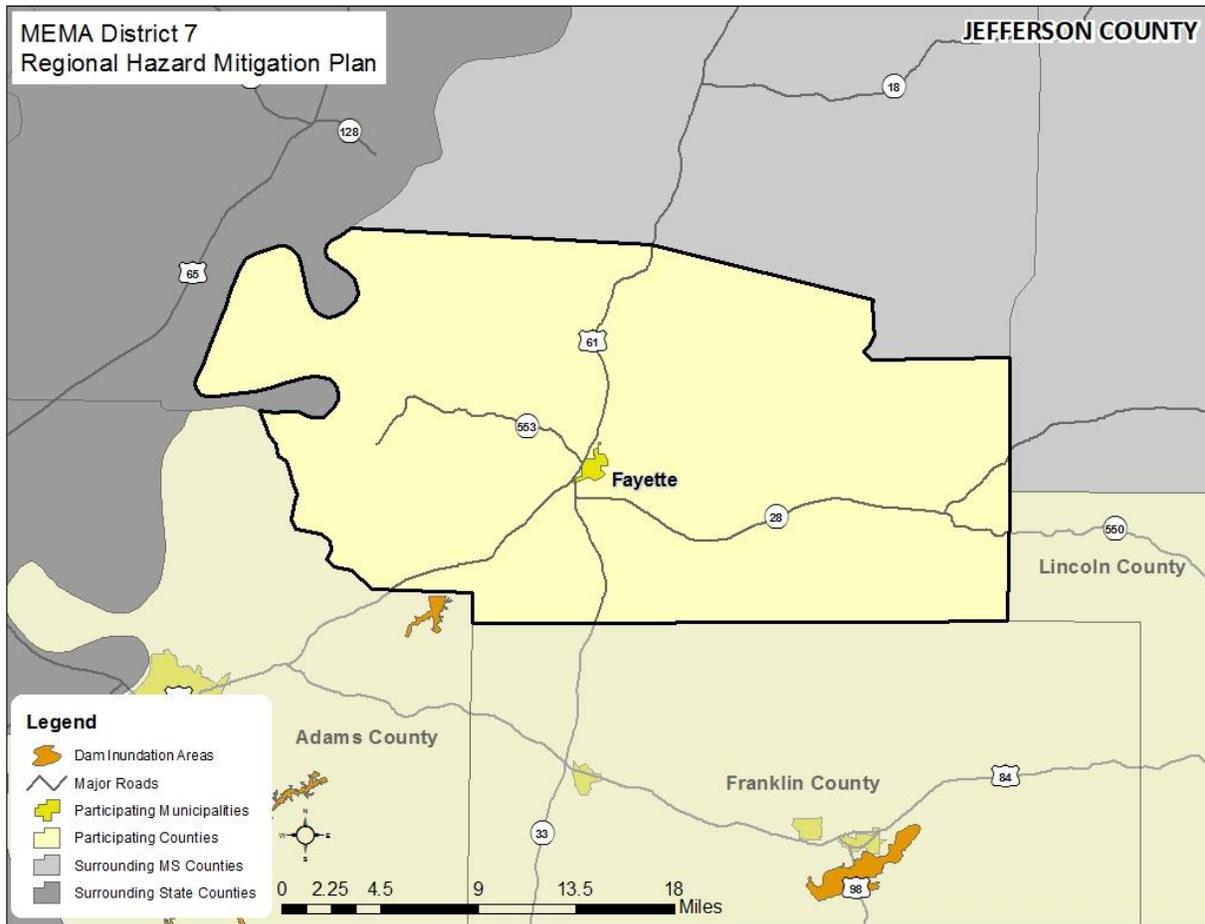
### **DAM/LEVEE FAILURE**

In order to assess risk to a dam or levee failure, a GIS-based analysis was used to estimate exposure to one of the areas delineated by the Mississippi Department of Environmental Quality as a potential inundation area in the event of a failure. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified inundation area. As mentioned previously, this type of inundation mapping has not been completed for every dam/levee in the region, so the results of this analysis likely underestimate the overall vulnerability to a dam or levee failure. However, the analysis is still useful as a sort of baseline minimum of property that is potentially at-risk. The identified inundation areas can be found in **Figure D.18**.

In general, building footprint and parcel data were used in this analysis. However, in some communities, due to a lack of digital parcel data, it was determined that analysis using the inventory from Hazus-MH 4.0 would be used to supplement the building/parcel data. It should be noted that this data will merely be an estimation and may not reflect actual counts or values located in dam inundation areas. Indeed, in almost all cases, this data likely overestimates the amount of property in the identified risk zones.

**Table D.38** presents the potential at-risk property. Both the number of buildings and the approximate improved value are presented.

**FIGURE D.18: DAM INUNDATION AREAS IN JEFFERSON COUNTY**



Source: Mississippi Department of Environmental Quality

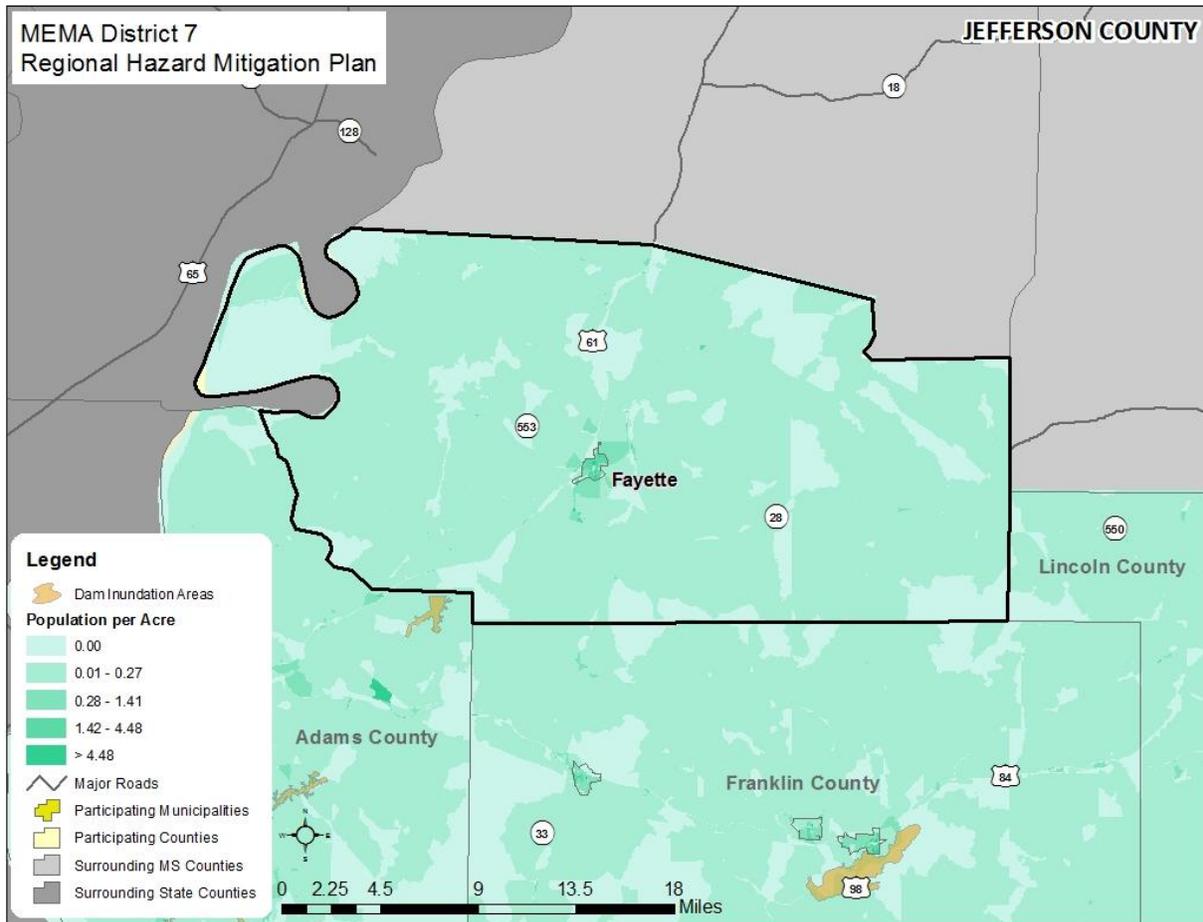
**TABLE D.38: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE DAM/LEEVE FAILURE HAZARD**

| Location                      | Dam Inundation Area            |                        |
|-------------------------------|--------------------------------|------------------------|
|                               | Approx. Number of Improvements | Approx. Improved Value |
| Fayette                       | 0                              | \$0                    |
| Unincorporated Area           | 0                              | \$0                    |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>0</b>                       | <b>\$0</b>             |

Source: Mississippi Department of Environmental Quality; Hazus 4.0

**Social Vulnerability**

Figure D.19 is presented to gain a better understanding of at-risk population by evaluating census block level population data against dam inundation areas. Although there are no areas of concern located within the county, this does not indicate that there is no risk to a dam/levee failure, especially considering not all dams have delineated inundation areas.

**FIGURE D.19: POPULATION DENSITY NEAR DAM INUNDATION AREAS IN JEFFERSON COUNTY**

Source: Mississippi Department of Environmental Quality; United States Census Bureau, 2010 Census

### Critical Facilities

There are no critical facilities located within the identified dam inundation areas. Although there are no facilities located in the identified areas, this does not indicate that there is no risk to a dam/levee failure, especially considering not all dams have delineated inundation areas. A list of specific critical facilities and their associated risk can be found in **Table D.45** at the end of this section.

In conclusion, a dam/levee failure has the potential to impact existing and future buildings, facilities, and populations in Jefferson County, though structures located near or in the dam inundation areas are at highest risk. Specific vulnerabilities for Jefferson County assets will be greatly dependent on their individual design and the mitigation measures in place where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates if data becomes available.

### FLOOD

Historical evidence indicates that Jefferson County is susceptible to flood events. A total of 17 flood events have been reported by the National Climatic Data Center resulting in \$4.5 million (2017 dollars) in property damage. On an annualized level, these damages amounted to \$229,109 for Jefferson County.

In order to assess flood risk, a GIS-based analysis was used to estimate exposure to flood events using Digital Flood Insurance Rate Map (DFIRM) data in combination with improved property records for the county. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified floodplain. Due to a lack of digital parcel data in most counties, it was determined that an analysis using the inventory from Hazus-MH 4.0 would be used, though it should be noted that the data will merely be an estimation and may not reflect actual counts or values located in the floodplain. Indeed, in almost all cases, this analysis likely overestimates the amount of property at risk. **Table D.39** presents the potential at-risk property. Both the number of parcels and the approximate value are presented.

**TABLE D.39: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE FLOOD HAZARD<sup>25</sup>**

| Location                      | 1.0-percent ACF                |                                | 0.2-percent ACF                |                                |
|-------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|                               | Approx. Number of Improvements |
| Fayette                       | 125                            | \$27,894,000                   | 0                              | \$0                            |
| Unincorporated Area           | 873                            | \$118,868,000                  | 0                              | \$0                            |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>998</b>                     | <b>\$146,762,000</b>           | <b>0</b>                       | <b>\$0</b>                     |

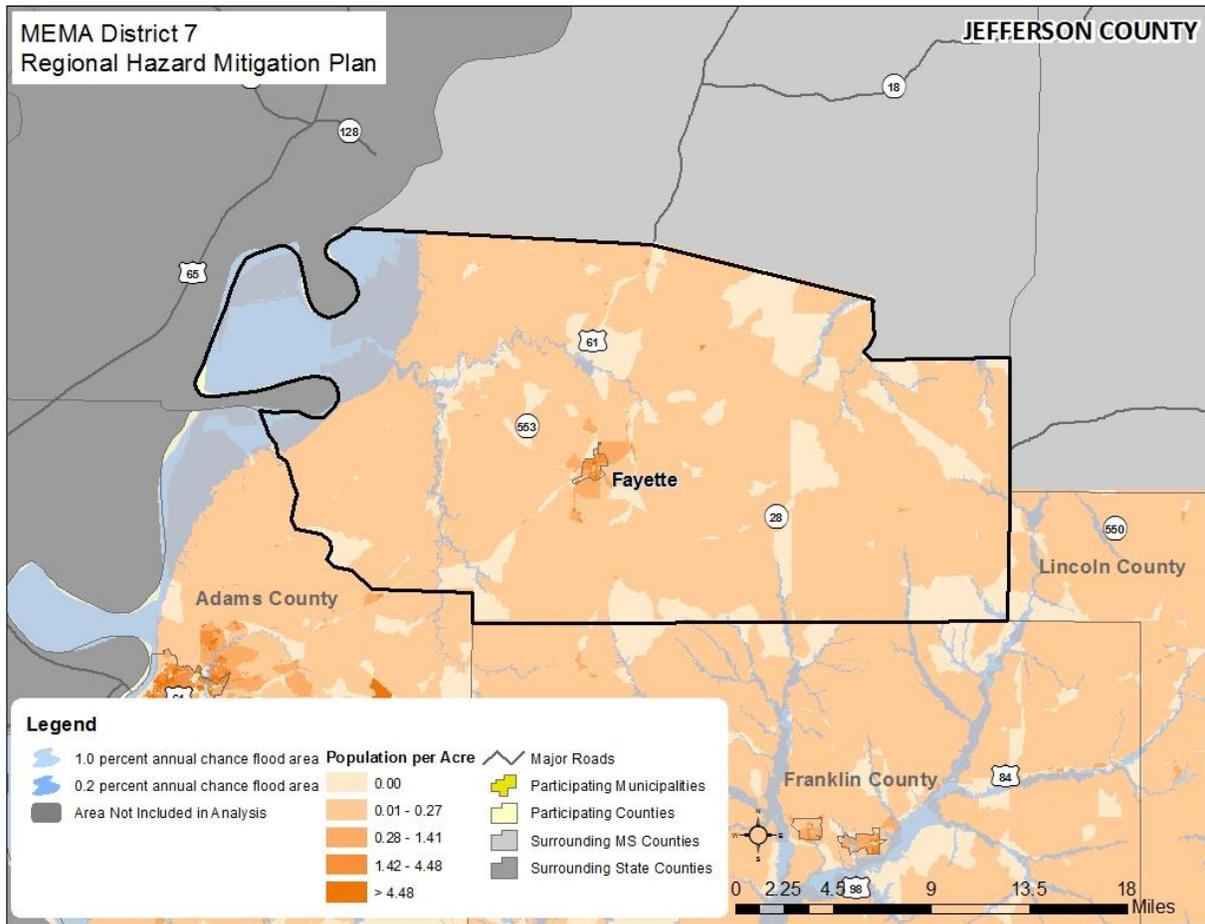
Source: Federal Emergency Management Agency DFIRM; Hazus MH 4.0

**Social Vulnerability**

**Figure D.20** is presented to gain a better understanding of at-risk population by evaluating census block level population data against mapped floodplains. There are areas of concern in several of the population centers. Therefore, further investigation in these areas may be warranted.

<sup>25</sup> As noted in Section 6.4, no building-specific data, such as building footprints, was available to determine buildings at risk. As a result of this data limitation, at-risk census block building counts and values of the structures were used.

**FIGURE D.20 : POPULATION DENSITY NEAR FLOODPLAINS IN JEFFERSON COUNTY**



Source: Federal Emergency Management Agency DFIRM; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are no critical facilities located in the floodplain. (Please note, as previously indicated, this analysis does not consider building elevation, which may negate risk.) A list of specific critical facilities and their associated risk can be found in **Table D.45** at the end of this subsection.

In conclusion, a flood has the potential to impact many existing and future buildings, facilities, and populations in Jefferson County, though some areas are at a higher risk than others. All types of structures in a floodplain are at-risk, though elevated structures will have a reduced risk. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. Furthermore, areas subject to repetitive flooding should be analyzed for potential mitigation actions.

**WILDFIRE**

Although historical evidence indicates that Jefferson County is susceptible to wildfire events, there are few reports which include information on historic dollar losses. Therefore, it is difficult to calculate a

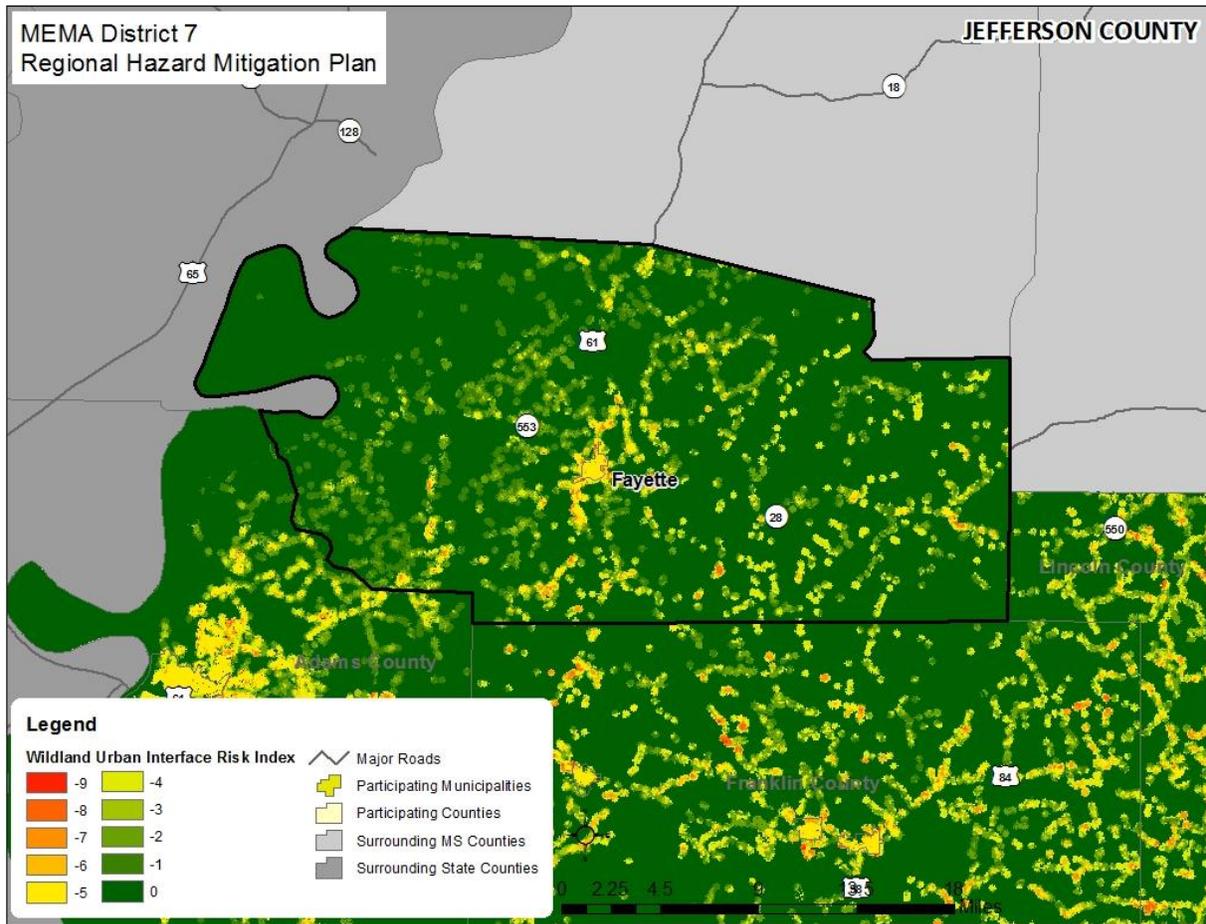
reliable annualized loss figure. Annualized loss is considered negligible though it should be noted that a single event could result in significant damages throughout the county.

To estimate exposure to wildfire, building data was obtained from Hazus-MH 4.0 which includes information that has been aggregated at the census block level and which has been deemed useful for analyzing wildfire vulnerability. However, it should be noted that the accuracy of Hazus data is somewhat lower than that of parcel data. For the critical facility analysis, areas of concern were intersected with critical facility locations.

**Figure D.21** shows the Wildland Urban Interface Risk Index (WUIRI) data, which is a data layer that shows a rating of the potential impact of a wildfire on people and their homes. The key input, Wildland Urban Interface (WUI), reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the WUI and rural areas is key information for defining potential wildfire impacts to people and homes. Initially provided as raster data, it was converted to a polygon to allow for analysis. The Wildland Urban Interface Risk Index data ranges from 0 to -9 with lower values being most severe (as noted previously, this is only a measure of relative risk). **Figure D.22** shows the areas of analysis where any grid cell is less than -4. Areas with a value below -4 were chosen to be displayed as areas of risk because this showed the upper echelon of the scale and the areas at highest risk.

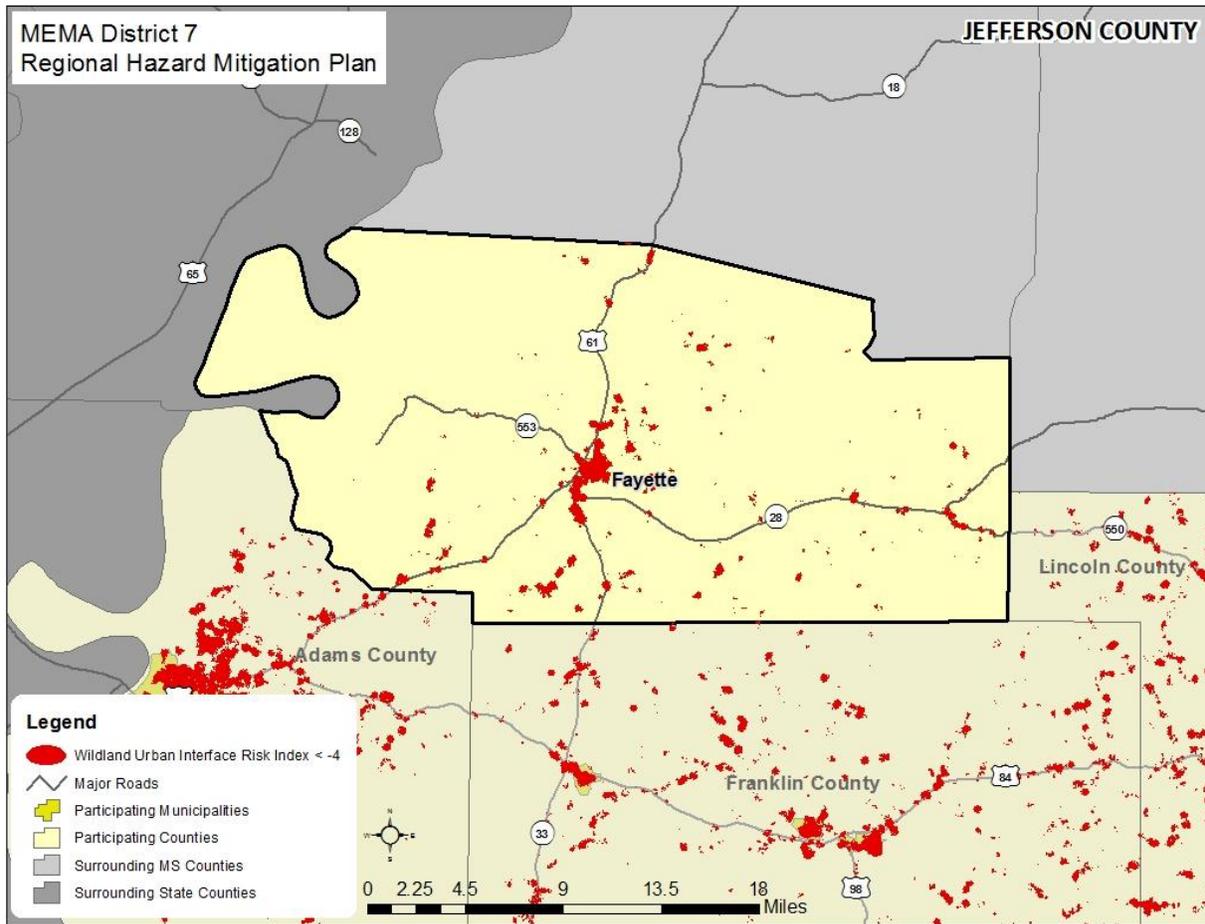
**Table D.40** shows the results of the analysis.

FIGURE D.21: WUI RISK INDEX AREAS IN JEFFERSON COUNTY



Source: Southern Wildfire Risk Assessment Data

**FIGURE D.22: WILDFIRE RISK AREAS IN JEFFERSON COUNTY**



Source: Southern Wildfire Risk Assessment Data

**TABLE D.40: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO WILDFIRE RISK AREAS<sup>26</sup>**

| Location                      | Wildfire Risk Area             |                        |
|-------------------------------|--------------------------------|------------------------|
|                               | Approx. Number of Improvements | Approx. Improved Value |
| Fayette                       | 1,052                          | \$181,948,000          |
| Unincorporated Area           | 2,095                          | \$235,459,000          |
| <b>JEFFERSON COUNTY TOTAL</b> | <b>3,147</b>                   | <b>\$417,407,000</b>   |

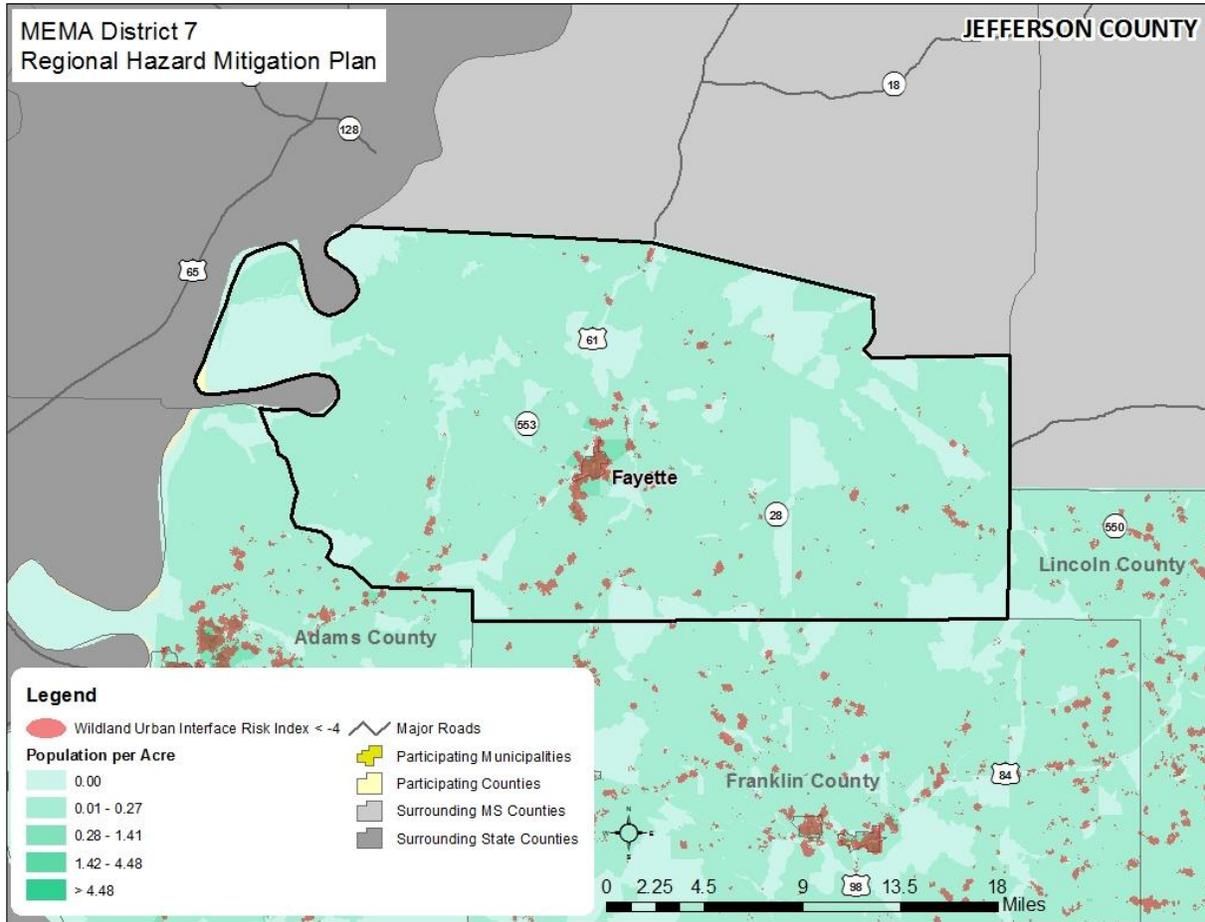
Source: Southern Wildfire Risk Assessment; Hazus-MH 4.0

**Social Vulnerability**

Given some level of susceptibility across the entire county, it is assumed that the total population is at risk to the wildfire hazard. **Figure D.23** shows an overlay of the wildfire risk areas identified above with the population density by census block. This shows that many of the areas of higher population concentration are susceptible to wildfire because of their proximity to the wildland urban interface.

<sup>26</sup> Parcel/Building Footprint data was not available for Jefferson County. Therefore, building counts and values were pulled from Hazus-MH at the census block level and approximate improved value was calculated.

**FIGURE D.23: WILDFIRE RISK AREAS IN JEFFERSON COUNTY**



Source: Southern Wildfire Risk Assessment Data; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are 6 critical facilities located in wildfire areas of concern, including 1 EOC, 1 fire station, 2 medical care facilities, 1 police station, and 1 school. It should be noted, that several factors could impact the spread of a wildfire putting all facilities at risk. A list of specific critical facilities and their associated risk can be found in **Table D.45** at the end of this subsection.

In conclusion, a wildfire event has the potential to impact many existing and future buildings, critical facilities, and populations in Jefferson County.

**EARTHQUAKE**

As the Hazus-MH model suggests below, and historical occurrences confirm, any significant earthquake activity in the area is likely to inflict minor damage to the county. Hazus-MH 4.0 estimates a total annualized loss of \$7,000 which includes structural and non-structural damage to buildings, contents, and inventory throughout the county.

For the earthquake hazard vulnerability assessment, a probabilistic scenario was created to estimate the average annualized loss<sup>27</sup> for the county. The results of the analysis are generated at the census tract level within Hazus-MH and then aggregated to the county level. Since the scenario is annualized, no building counts are provided. Losses reported included losses due to structure failure, building loss, contents damage, and inventory loss. They do not include losses to business interruption, lost income, or relocation. **Table D.41** summarizes the findings with results rounded to the nearest thousand.

**TABLE D.41: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR EARTHQUAKE HAZARD**

| Location         | Structural Damage | Non-Structural Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|------------------|-------------------|-----------------------|-----------------|----------------|-----------------------|
| Jefferson County | \$2,000           | \$4,000               | \$1,000         | \$0            | \$7,000               |

Source: Hazus-MH 4.0

**Social Vulnerability**

It can be assumed that all existing and future populations are at risk to the earthquake hazard.

**Critical Facilities**

The Hazus-MH probabilistic analysis did not indicate that any critical facilities would sustain measurable damage in an earthquake event. However, all critical facilities should be considered at-risk to minor to moderate damage should an event occur. A list of specific critical facilities and their associated risk can be found in **Table D.45** at the end of this subsection.

In conclusion, an earthquake has the potential to impact all existing and future buildings, facilities, and populations in Jefferson County. Specific vulnerabilities for these assets will be greatly dependent on their individual design and the mitigation measures in place. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. The Hazus-MH scenario indicates that minimal to moderate damage is expected from an earthquake occurrence. While Jefferson County may not experience a catastrophic earthquake, localized damage is possible with a moderate to larger scale occurrence.

**HURRICANE AND TROPICAL STORM**

Historical evidence indicates that Jefferson County has significant risk to the hurricane and tropical storm hazard. There have been five disaster declarations due to hurricanes as noted in pervious sections. Several tracks have come near or traversed through the county, as shown and discussed in Section D.2.10. Hazus-MH 4.0 estimates a total annualized loss of \$52,000 which includes buildings, contents, and inventory throughout the county.

Hurricanes and tropical storms can cause damage through numerous additional hazards such as flooding, erosion, tornadoes, and high winds, thus it is difficult to estimate total potential losses from these cumulative effects. The current Hazus-MH hurricane model only analyzes hurricane winds and is not capable of modeling and estimating cumulative losses from all hazards associated with hurricanes; therefore, only hurricane winds are analyzed in this section. It can be assumed that all existing and future buildings and populations are at risk to the hurricane and tropical storm hazard. Hazus-MH 4.0 was used

<sup>27</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

to determine average annualized losses<sup>28</sup> for the county as shown below in **Table D.42**. Only losses to buildings, inventory, and contents are included in the results.

**TABLE D.42: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR HURRICANE WIND HAZARD**

| Location         | Building Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|------------------|-----------------|-----------------|----------------|-----------------------|
| Jefferson County | \$39,000        | \$13,000        | \$0            | \$52,000              |

Source: Hazus-MH 4.0

**Social Vulnerability**

Given some equal susceptibility across the entire county, it is assumed that the total population, both current and future, is at risk to the hurricane and tropical storm hazard.

**Critical Facilities**

Given equal vulnerability across Jefferson County, all critical facilities are considered to be at risk. Some buildings may perform better than others in the face of such an event due to construction and age, among other factors. Determining individual building response is beyond the scope of this plan. However, this plan will consider mitigation action for especially vulnerable structures and/or critical facilities to mitigate against the effects of the hurricane hazard. A list of specific critical facilities can be found in **Table D.45** at the end of this subsection.

In conclusion, a hurricane event has the potential to impact many existing and future buildings, critical facilities, and populations in Jefferson County.

**RADIOLOGICAL EVENT**

The location of Grand Gulf and River Bend Nuclear Stations north and south of the region, respectively, demonstrate that the county is at some risk to the effects of a nuclear accident. Although there have not been any major events at these plants in the past, there have been major events at other nuclear stations around the country. Additionally, smaller scale incidents at both these nuclear stations have occurred.

In order to assess nuclear risk, a GIS-based analysis was used to estimate exposure during a nuclear event within each of the risk zones described in Section D.2.14. The determination of assessed value at-risk (exposure) was calculated using GIS analysis by summing the total values for those properties that were confirmed to be located within one of the risk zones. **Table D.43** presents potential at-risk properties in the 50-mile buffer zone (no property was located in the 10-mile buffer zone). The number of buildings, parcels, and the approximate value are presented.

**TABLE D.43: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO A NUCLEAR ACCIDENT**

| Location            | 50-mile Nuclear Buffer Area    |                        |
|---------------------|--------------------------------|------------------------|
|                     | Approx. Number of Improvements | Approx. Improved Value |
| Fayette             | 1,052                          | \$181,948,000          |
| Unincorporated Area | 2,634                          | \$515,469,000          |

<sup>28</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

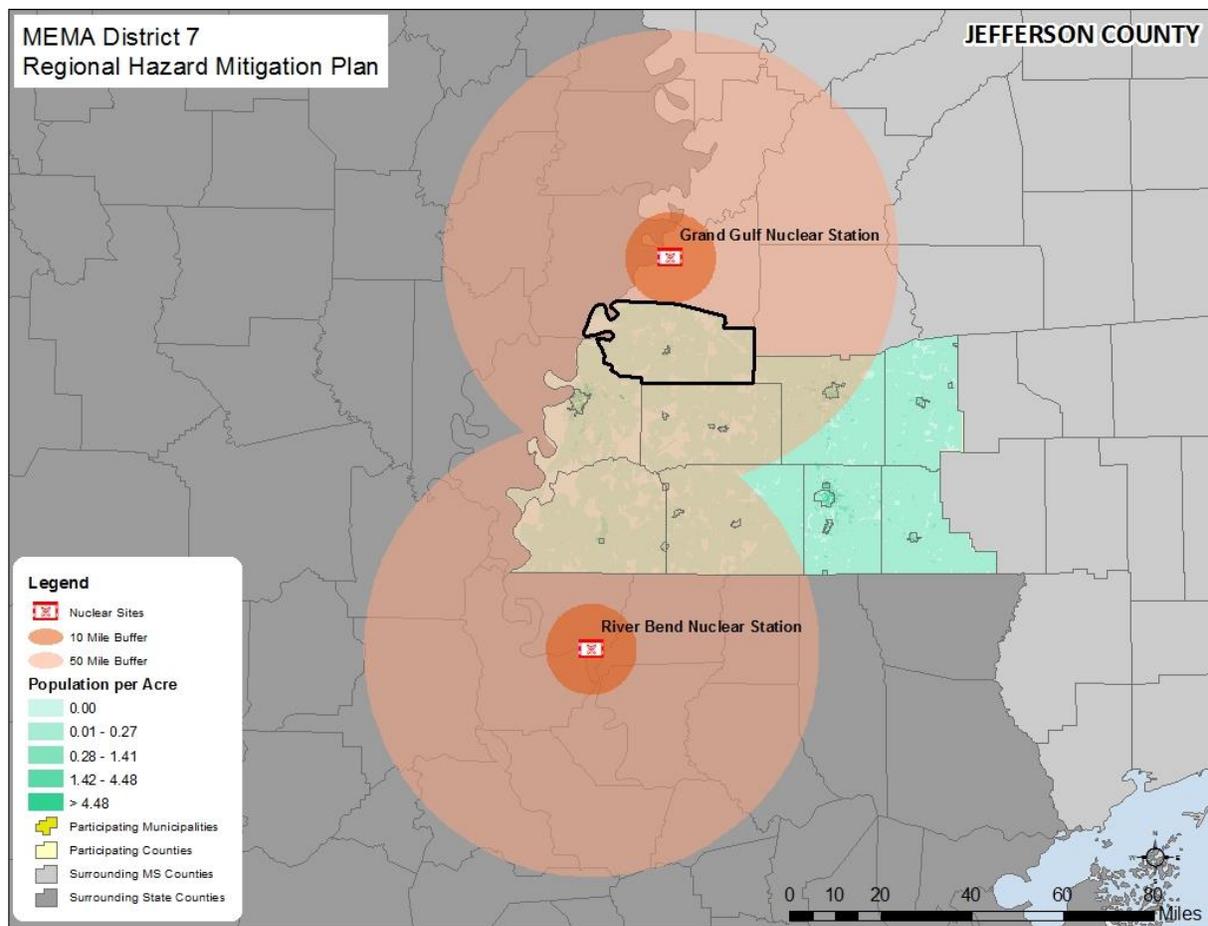
| Location               | 50-mile Nuclear Buffer Area    |                        |
|------------------------|--------------------------------|------------------------|
|                        | Approx. Number of Improvements | Approx. Improved Value |
| JEFFERSON COUNTY TOTAL | 3,686                          | \$697,417,000          |

Source: International Atomic Energy Agency; Hazus-MH 4.0

**Social Vulnerability**

Since the entire county is within the 50-mile buffer area, the entire population is considered to be at high risk to a radiological event. This risk can be seen in **Figure D.24**.

**FIGURE D.24: POPULATION DENSITY NEAR NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN JEFFERSON COUNTY**



Source: International Atomic Energy Agency; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that all 7 critical facilities in the county are located in the 50-mile nuclear buffer area, including 1 EOC, 1 fire station, 2 medical care facilities, 2 police stations, and 1 school. No critical facilities are located in the 10-mile buffer area. A list of specific critical facilities and their associated risk can be found in **Table D.45** at the end of this section.

In conclusion, a nuclear accident has the potential to impact many existing and future buildings, facilities, and populations in Jefferson County.

**CONCLUSIONS ON HAZARD VULNERABILITY**

**Table D.44** presents a summary of annualized loss for each hazard in Jefferson County. Due to the reporting of hazard damages primarily at the county level, it was difficult to determine an accurate annualized loss estimate for each municipality. Therefore, an annualized loss was determined through the damage reported through historical occurrences at the county level. These values should be used as an additional planning tool or measure risk for determining hazard mitigation strategies throughout the county.

**TABLE D.44: ANNUALIZED LOSS FOR JEFFERSON COUNTY**

| Event                         | Jefferson County |
|-------------------------------|------------------|
| <b>Flood-related Hazards</b>  |                  |
| Dam and Levee Failure         | Negligible       |
| Erosion                       | Negligible       |
| Flood                         | \$229,109        |
| <b>Fire-related Hazards</b>   |                  |
| Drought                       | \$4,269          |
| Lightning                     | \$5,124          |
| Wildfire                      | Negligible       |
| <b>Geologic Hazards</b>       |                  |
| Earthquake*                   | \$2,000          |
| <b>Wind-related Hazards</b>   |                  |
| Extreme Heat                  | Negligible       |
| Hailstorm                     | \$4,381          |
| Hurricane & Tropical Storm    | \$2,115,937      |
| Severe Thunderstorm/High Wind | \$70,547         |
| Tornado                       | \$116,771        |
| Winter Storm & Freeze         | \$45,117         |
| <b>Human-caused Hazards</b>   |                  |
| Radiological Event            | Negligible       |

\*No historic losses for earthquake were recorded, so Hazus estimates for annualized loss were used.  
 Note: In this table, the term “Negligible” is used to indicate that no records of dollar losses for the particular hazard were recorded. This could be the case either because there were no events that caused dollar damage or because documentation of that particular type of event is not well kept.

As noted previously, all existing and future buildings and populations (including critical facilities) are vulnerable to atmospheric hazards including drought, lightning, extreme heat, hailstorm, hurricane and tropical storm, severe thunderstorm/high wind, tornado, and winter storm and freeze. Some buildings may be more vulnerable to these hazards based on other factors such as construction and building type. **Table D.45** shows the critical facilities vulnerable to the hazards analyzed in this section. The table lists those assets that are determined to be exposed to each of the identified hazards (marked with an “X”).

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**TABLE D.45: AT-RISK CRITICAL FACILITIES IN JEFFERSON COUNTY**

| FACILITY NAME                 | FACILITY TYPE  | FLOOD-RELATED         |         |                | FIRE-RELATED   |         |           | GEO      | WIND-RELATED |              |           |                              |                                    | HUM     |                         |                                 |
|-------------------------------|----------------|-----------------------|---------|----------------|----------------|---------|-----------|----------|--------------|--------------|-----------|------------------------------|------------------------------------|---------|-------------------------|---------------------------------|
|                               |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought | Lightning | Wildfire | Earthquake   | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Light Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area |
| <b>Jefferson County</b>       |                |                       |         |                |                |         |           |          |              |              |           |                              |                                    |         |                         |                                 |
| Jefferson County EOC          | EOC            |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Fayette Fire Department       | Fire Station   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Jefferson County Hospital     | Medical Care   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Jefferson County Nursing Home | Medical Care   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Fayette Police Dept           | Police Station |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Jefferson County Sheriff      | Police Station |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         | X                               |
| Jefferson County High School  | School         |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         | X                               |

## D.4 JEFFERSON COUNTY CAPABILITY ASSESSMENT

This subsection discusses the capability of Jefferson County to implement hazard mitigation activities. More information on the purpose and methodology used to conduct the assessment can be found in Section 7: *Capability Assessment*.

### D.4.1 Planning and Regulatory Capability

**Table D.46** provides a summary of the relevant local plans, ordinances, and programs already in place or under development for Jefferson County. A checkmark (✓) indicates that the given item is currently in place and being implemented. An asterisk (\*) indicates that the given item is currently being developed for future implementation. A dagger (†) indicates that the given item is administered for that municipality by the county. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the MEMA District 7 Regional Hazard Mitigation Plan.

**TABLE D.46: RELEVANT PLANS, ORDINANCES, AND PROGRAMS**

| Planning Tool/Regulatory Tool |                        |  |                             |  |  |                                      |                                  |                     |                           |   |                               |                 |                        |                           |                           |                            |                                   |                  |                       |                               |   |               |           |   |  |
|-------------------------------|------------------------|--|-----------------------------|--|--|--------------------------------------|----------------------------------|---------------------|---------------------------|---|-------------------------------|-----------------|------------------------|---------------------------|---------------------------|----------------------------|-----------------------------------|------------------|-----------------------|-------------------------------|---|---------------|-----------|---|--|
|                               | Hazard Mitigation Plan | Threat and Hazard Identification and Risk Assessment (THIRA) | Comprehensive Land Use Plan | Floodplain Management Plan/Flood Mitigation Plan | Open Space Management Plan (Parks & Rec/Greenway Plan) | Stormwater Management Plan/Ordinance | Natural Resource Protection Plan | Flood Response Plan | Emergency Operations Plan | Emergency Management Accreditation Program (EMAP Accreditation) | Continuity of Operations Plan | Evacuation Plan | Disaster Recovery Plan | Capital Improvements Plan | Economic Development Plan | Historic Preservation Plan | Flood Damage Prevention Ordinance | Zoning Ordinance | Subdivision Ordinance | Unified Development Ordinance | Post-Disaster Redevelopment/ Reconstruction Plan/ Ordinance | Building Code | Fire Code | National Flood Insurance Program (NFIP) | NFIP Community Rating System (CRS Program) |
| JEFFERSON COUNTY              | ✓                      |  | ✓                           |  |  |                                      |                                  | ✓                   |                           |   |                               |                 |                        |                           | ✓                         |                            | ✓                                 |                  |                       |                               |   |               |           | ✓                                       |  |
| Fayette                       | †                      |  | †                           |  |  |                                      |                                  | †                   |                           |   |                               |                 |                        | †                         |                           | ✓                          |                                   |                  |                       |                               |   |               |           | ✓                                       |  |

A more detailed discussion on the county’s planning and regulatory capabilities follows.

### EMERGENCY MANAGEMENT

#### Hazard Mitigation Plan

Jefferson County has previously adopted a hazard mitigation plan. The City of Fayette was also included in this plan.

#### Emergency Operations Plan

Jefferson County maintains an emergency operations plan through its Emergency Management Agency. The City of Fayette is also covered by this plan.

## GENERAL PLANNING

### Comprehensive Land Use Plan

Jefferson County has adopted a county comprehensive plan. This plan also includes the City of Fayette.

## FLOODPLAIN MANAGEMENT

**Table D.47** provides NFIP policy and claim information for each participating jurisdiction in Jefferson County.

**TABLE D.47: NFIP POLICY AND CLAIM INFORMATION**

| Jurisdiction      | Date Joined NFIP | Current Effective Map Date | NFIP Policies in Force | Insurance in Force | Closed Claims | Total Payments to Date |
|-------------------|------------------|----------------------------|------------------------|--------------------|---------------|------------------------|
| JEFFERSON COUNTY† | 07/03/90         | 09/29/10                   | 6                      | \$1,750,000        | 84            | \$917,584              |
| Fayette           | 09/29/10         | 09/29/10                   | 0                      | \$0                | 0             | \$0                    |

†Includes unincorporated areas of county only

Source: NFIP Community Status information as of 8/17/2017; NFIP claims and policy information as of 4/30/2017

All jurisdictions listed above that are participants in the NFIP will continue to comply with all required provisions of the program and will work to adequately comply in the future utilizing a number of strategies. For example, the jurisdictions will coordinate with MEMA and FEMA to develop maps and regulations related to special flood hazard areas within their jurisdictional boundaries and, through a consistent monitoring process, will design and improve their floodplain management program in a way that reduces the risk of flooding to people and property.

### Flood Damage Prevention Ordinance

All communities participating in the NFIP are required to adopt a local flood damage prevention ordinance. Jefferson County and the City of Fayette both participate in the NFIP and have adopted flood damage prevention regulations.

## D.4.2 Administrative and Technical Capability

**Table D.48** provides a summary of the capability assessment results for Jefferson County with regard to relevant staff and personnel resources. A checkmark (✓) indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill. A dagger (†) indicates a county-level staff member(s) provides the specified knowledge or skill to that municipality.

**TABLE D.48: RELEVANT STAFF/PERSONNEL RESOURCES**

| Staff/Personnel Resource | Planners with knowledge of land development/land management practices | Engineers or professionals trained in construction practices related to buildings and/or infrastructure | Planners or engineers with an understanding of natural and/or human-caused hazards | Emergency Manager | Floodplain Manager | Land Surveyors | Scientists familiar with the hazards of the community | Staff with education or expertise to assess the community's vulnerability to hazards | Personnel skilled in GIS and/or Hazus | Resource development staff or grant writers |
|--------------------------|---|---|--|-------------------|--------------------|----------------|---|--|---------------------------------------|---|
| JEFFERSON COUNTY         |   |   |  | ✓                 | ✓                  |                | ✓   | ✓  |                                       |   |
| Fayette                  |   |   |  | †                 | ✓                  |                | †   | †  |                                       |   |

Credit for having a floodplain manager was given to those jurisdictions that have a flood damage prevention ordinance, and therefore an appointed floodplain administrator, regardless of whether the appointee was dedicated solely to floodplain management. Credit was given for having a scientist familiar with the hazards of the community if a jurisdiction has a Cooperative Extension Service or Soil and Water Conservation Department. Credit was also given for having staff with education or expertise to assess the community's vulnerability to hazards if a staff member from the jurisdiction was a participant on the existing hazard mitigation plan's planning committee.

### D.4.3 Fiscal Capability

**Table D.49** provides a summary of the results for Jefferson County with regard to relevant fiscal resources. A checkmark (✓) indicates that the given fiscal resource has previously been used to implement hazard mitigation actions. A dagger (†) indicates that the given fiscal resource is locally available for hazard mitigation purposes (including match funds for state and federal mitigation grant funds).

**TABLE D.49: RELEVANT FISCAL RESOURCES**

| Fiscal Tool/Resource | Capital Improvement Programming | Community Development Block Grants (CDBG) | Special Purpose Taxes (or taxing districts) | Gas/Electric Utility Fees | Water/Sewer Fees | Stormwater Utility Fees | Development Impact Fees | General Obligation, Revenue, and/or Special Tax Bonds | Partnering Arrangements or Intergovernmental Agreements | Other: HMGP, PDM, HMA, NFIP, SBA, Homeland Security Grants, and other Federal sources, etc. |
|----------------------|---------------------------------|---|---|---------------------------|------------------|-------------------------|-------------------------|---|---|---|
| JEFFERSON COUNTY     |                                 | +   |   |                           |                  |                         |                         |   |   | +   |
| Fayette              |                                 | +   |   |                           |                  |                         |                         |   |   | +   |

### D.4.4 Political Capability

During the months immediately following a disaster, local public opinion in Jefferson County is more likely to shift in support of hazard mitigation efforts.

Table D.50 provides a summary of the results for Jefferson County with regard to political capability. A checkmark (✓) indicates the expected degree of political support by local elected officials in terms of adopting/funding information.

**TABLE D.50: LOCAL POLITICAL SUPPORT**

| Political Support | Limited | Moderate | High |
|-------------------|---------|----------|------|
| JEFFERSON COUNTY  |         | ✓        |      |
| Fayette           |         | ✓        |      |

### D.4.5 Conclusions on Local Capability

Table D.51 shows the results of the capability assessment using the designed scoring methodology described in Section 7: *Capability Assessment*. The capability score is based solely on the information found in existing hazard mitigation plans and readily available on the jurisdictions’ government websites. This information was reviewed by all jurisdictions and each jurisdiction provided feedback on the information included in the capability assessment. Local government input was vital to identifying capabilities. According to the assessment, the average local capability score for the county and its jurisdictions is 21.0, which falls into the limited capability ranking.

**TABLE D.51: CAPABILITY ASSESSMENT RESULTS**

| Jurisdiction     | Overall Capability Score | Overall Capability Rating |
|------------------|--------------------------|---------------------------|
| JEFFERSON COUNTY | 24                       | Limited                   |
| Fayette          | 18                       | Limited                   |

## D.5 JEFFERSON COUNTY MITIGATION STRATEGY

This subsection provides the blueprint for Jefferson County to follow in order to become less vulnerable to its identified hazards. It is based on general consensus of the Regional Hazard Mitigation Council and the findings and conclusions of the capability assessment and risk assessment. Additional Information can be found in Section 8: *Mitigation Strategy* and Section 9: *Mitigation Action Plan*.

### D.5.1 Mitigation Goals

Jefferson County developed six mitigation goals in coordination with the other participating MEMA District 7 Region jurisdictions. The regional mitigation goals are presented in **Table D.52**.

**TABLE D.52: MEMA DISTRICT 7 REGIONAL MITIGATION GOALS**

|         | Goal   |
|---------|--|
| Goal #1 | Increase the overall public awareness of natural hazards that face the region.   |
| Goal #2 | Retrofit of critical facilities and/or critical infrastructure to lower the risk of damage from natural hazards.   |
| Goal #3 | General improvement of regional or local mitigation planning and capability.   |
| Goal #4 | Support State Identified Mitigation Initiatives such as saferooms and storm shelters, severe weather warning systems for universities and colleges, and severe weather notification systems for local communities. |
| Goal #5 | Reduce loss of life, damage and loss of property and infrastructure, economic costs, including response, recovery and disruption of economic activity.   |
| Goal #6 | Foster cooperation among all levels of governments and the private sector with respect to improving, updating, and implementing the hazard mitigation plan.  |

### D.5.2 Mitigation Action Plan

The mitigation actions proposed by Jefferson County and the City of Fayette are listed in the following individual Mitigation Action Plans.

## Jefferson County Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------------|-------------------|---|---|-------------------------|---|
| <b>Prevention</b> |  |                           |                   |   |   |                         |   |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning</b> – The Jefferson County Board of Supervisors/City of Fayette should have a Comprehensive Plan developed to guide long term recovery and development.  | Hurricane or other hazard | High              | Jefferson County Board of Supervisors/ City of Fayette        | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Completed               | The Jefferson County Board of Supervisors/City of Fayette recognize that comprehensive land use planning yields many benefits for both the county and city. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. The county and city developed a Comprehensive Plan in 2016. |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction. | Flood                     | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2018-2019               | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

**ANNEX D: JEFFERSON COUNTY**

| Action #                           | Description   | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|------------------------------------|---|---|-------------------|--|---|-------------------------|---|
| <b>Property Protection</b>         |   |   |                   |  |   |                         |   |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Jefferson County Board of Supervisors/City of Fayette Board of Alderman and Mayor should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Jefferson County Board of Supervisors/ City of Fayette Board of Alderman and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2018-2019               | The Jefferson County Board of Supervisors/City of Fayette Board of Alderman and Mayor recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/city government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |
| PP-2                               | <b>Floodplain Buyout</b> – The Jefferson County Board of Supervisors wishes to buy out the three remaining families in the Rodney Community and end the flooding problems in this area.   | Flood   | High              | Jefferson County Board of Supervisors  | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Completed               | The Rodney Community in Northwest Jefferson County is located in the Mississippi River floodplain and has been flooded many times. The last three remaining families in the community have been bought out.   |
| <b>Natural Resource Protection</b> |   |   |                   |  |   |                         |   |
| NRP-1                              |   |   |                   |  |   |                         |   |

| Action #                   | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Structural Projects</b> |  |                         |                   |   |                           |                         |   |
| SP-1                       |  |                         |                   |   |                           |                         |   |
| <b>Emergency Services</b>  |  |                         |                   |   |                           |                         |   |
| ES-1                       | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. Jefferson County is in the process of filing the necessary paperwork to become “storm ready,” so this action will remain in the plan. This action was combined with ES-9 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                      | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Jefferson County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2018-2019</p>        | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Since 2005 the county has purchased three mobile generators for the purpose of rural water associations and the courthouse. They have a plan in place to purchase an additional three generators and will be applying for such funds in the near future, so this action will remain in the plan.</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department               | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---------------------------------------|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Jefferson County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Jefferson County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

**ANNEX D: JEFFERSON COUNTY**

| Action # | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department               | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|--|-------------------|---------------------------------------|---|-------------------------|---|
| ES-4     | <b>Construct New Emergency Shelter</b> – The county should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions. | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Jefferson County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Jefferson County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/city residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. Since a new emergency shelter has not been constructed in Jefferson County, this action will remain in the plan. |
| ES-5     | <b>Renovate Emergency Operations Center</b> – The EOC should secure and renovate another building or construct a new one of sufficient size to house all EOC staff and equipment.  | Hurricane or other hazard requiring action from the EOC                    | High              | Jefferson County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Jefferson County Emergency Operations Center (EOC) is currently housed in inadequate space requiring staff and equipment to be quartered at several locations in the county. This severely hampers the EOC’s ability to perform its functions during times of emergency. Staff and equipment should be housed at one location to maximize efficiency and minimize response time. This action will remain in the plan to improve the EOC’s functions.  |

**ANNEX D: JEFFERSON COUNTY**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department               | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|---------------------------------------|--|-------------------------|--|
| ES-6     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system. | Tornado             | High              | Jefferson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/City General Fund          | 2018                    | Many citizens in Jefferson County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. The county has installed 1 new siren since 2005. Additional sirens should be installed, so this action will remain in the plan.   |
| ES-7     | <b>Improve Emergency Evacuation Routes</b> – Jefferson County sees the need to improve the condition of the evacuation routes including upgrading bridges where needed.   | Radiological        | High              | Jefferson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation grants, individual county general and special funds | 2018                    | Grand Gulf Nuclear Power Station is located in western Claiborne County. Part of the ten-mile Plume Emergency Planning Zone is in Jefferson County. The county is completely within the 50 mile Ingestion Emergency Planning Zone. Adequate warning systems and timely evacuation are the citizens only defense in the event of a release of contaminants from the facility. Also, if a release of radiological pollutants were to occur at Grand Gulf, many evacuees would come to or through Jefferson County. Therefore, this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department               | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---------------------------------------|--|-------------------------|--|
| ES-8     | <b>Upgrade Emergency Treatment Facilities</b> – Upgrade facilities, equipment, and training so that the hospital will be better able to respond to and treat patients suffering from radiological related illnesses. | Radiological        | High              | Jefferson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation grants, individual county general and special funds | 2018                    | Grand Gulf Nuclear Power Station is located in western Claiborne County. Part of the ten-mile Plume Emergency Planning Zone is in Jefferson County. The county is completely within the 50 mile Ingestion Emergency Planning Zone. In the event of a release of radiological contaminants from Grand Gulf, many persons evacuating to or through Jefferson County as well as many county residents may need emergency medical treatment for radiological related illnesses. The Jefferson County Hospital has no facilities, equipment, or trained personnel to handle this type of emergency. Therefore, this action will remain in the plan. |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---|---------------------------|-------------------------|--|
| ES-9                                  | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA                | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |
| <b>Public Education and Awareness</b> |   |                     |                   |   |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Jefferson County Board of Supervisors   | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |

**ANNEX D: JEFFERSON COUNTY**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|---|
| PEA-2    | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.                       |
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | Deleted                 | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, however, this action is the responsibility of MDEQ so it will be removed from the plan. |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.  | Dam Failure         | Moderate          | MDEQ, Dam Safety Division | N/A                       | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Jefferson County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.                     |

**ANNEX D: JEFFERSON COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others</b> – Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.                  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                      | 2018-2019               | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan.  |

**ANNEX D: JEFFERSON COUNTY**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan. |

### City of Fayette Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds        | 2018                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as cities develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | 2018                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**ANNEX D: JEFFERSON COUNTY**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as cities develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | MEMA, FEMA                | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. The city is in the process of filing the necessary paperwork to become “storm ready,” so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                            | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>City of Fayette Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds</p> | <p>2018-2019</p>        | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Since 2005 the county has purchased three mobile generators for the purpose of rural water associations and the courthouse. They have a plan in place to purchase an additional three generators and will be applying for such funds in the near future, so this action will remain in the plan.</p> |

**ANNEX D: JEFFERSON COUNTY**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|--|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | City of Fayette Board of Aldermen and Mayor            | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | Deleted                 | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Jefferson County continues to improve emergency communications throughout the county and will purchase a satellite phone system when funding allows, however, this action is the responsibility of the county so it will be removed from the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the city to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the city where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the city-wide system. | Tornado   | High              | City of Fayette/ Jefferson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/City General Fund   | Completed               | In the event of inclement weather, it is essential that residents of the City of Fayette receive timely warnings. The county has installed 1 new siren since 2005.  |

**ANNEX D: JEFFERSON COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|--|--|-------------------------|--|
| ES-5     | <b>Improve Emergency Evacuation Routes</b> – The City of Fayette/ Jefferson County sees the need to improve the condition of the evacuation routes including upgrading bridges where needed. | Radiological        | High              | City of Fayette/ Jefferson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation grants, individual county general and special funds | 2018                    | Grand Gulf Nuclear Power Station is located in western Claiborne County. Part of the ten-mile Plume Emergency Planning Zone is in Jefferson County. The county is completely within the 50 mile Ingestion Emergency Planning Zone. Adequate warning systems and timely evacuation are the citizens only defense in the event of a release of contaminants from the facility. Also, if a release of radiological pollutants were to occur at Grand Gulf, many evacuees would come to or through Jefferson County. Therefore, this action will remain in the plan. |

**ANNEX D: JEFFERSON COUNTY**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-6     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency     | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-7     | <b>Safe Rooms and Community Shelters</b> – The city should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | City of Fayette Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|-------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                         |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | City of Fayette         | N/A                       | Deleted                 | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, however, this action is the responsibility of the county so it will be removed from the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau  | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.  |

ANNEX D: JEFFERSON COUNTY

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.   | Dam Failure         | High              | MDEQ, Dam Safety Division                                     | N/A                             | Deleted                 | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, however, this action is the responsibility of MDEQ so it will be removed from the plan.  |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The City of Fayette will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**ANNEX D: JEFFERSON COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

# ANNEX E

## LAWRENCE COUNTY

This annex includes jurisdiction-specific information for Lawrence County and its participating municipalities. It consists of the following five subsections:

- E.1 Lawrence County Community Profile
  - E.2 Lawrence County Risk Assessment
  - E.3 Lawrence County Vulnerability Assessment
  - E.4 Lawrence County Capability Assessment
  - E.5 Lawrence County Mitigation Strategy
- 

### E.1 LAWRENCE COUNTY COMMUNITY PROFILE

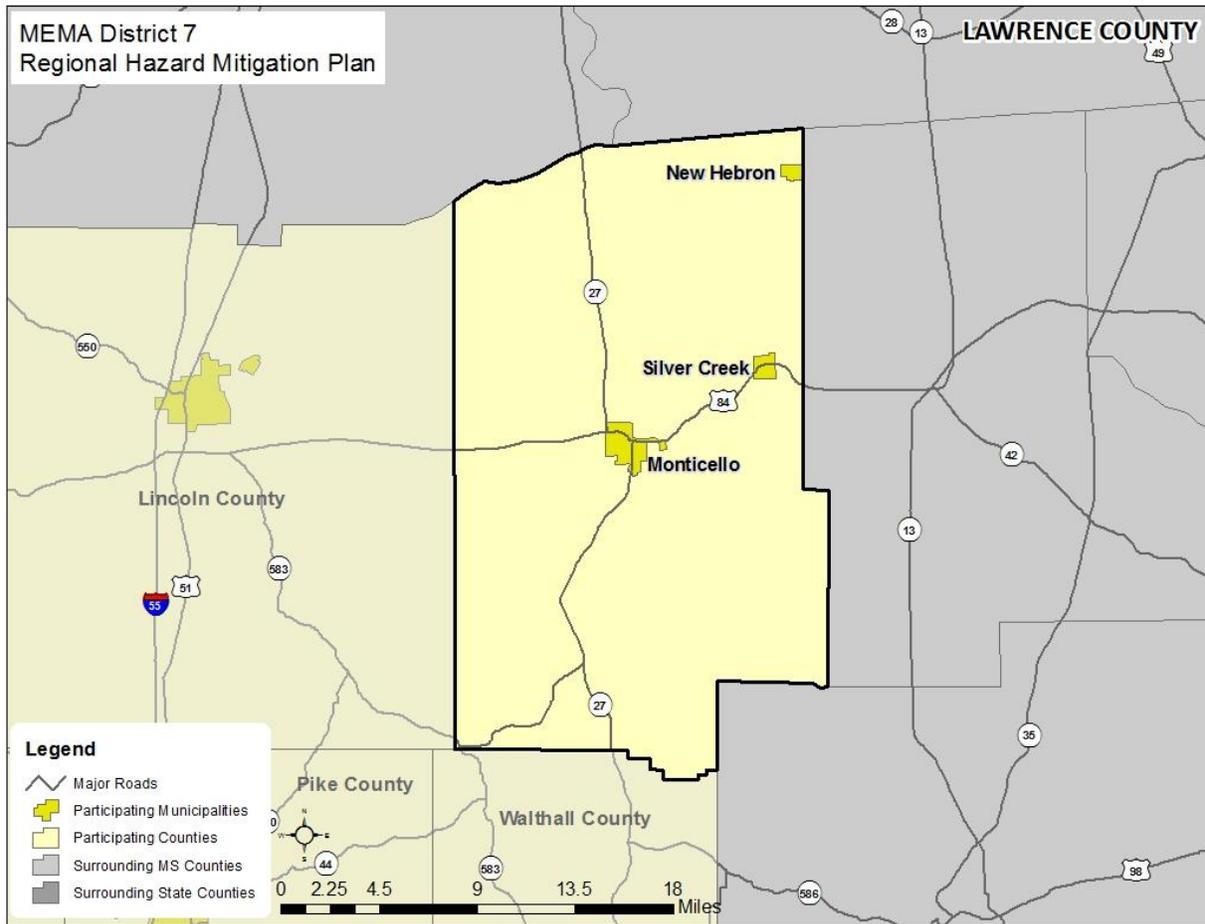
#### E.1.1 Geography and the Environment

Lawrence County is located in southwestern Mississippi. It comprises three towns, Town of Monticello, Town of New Hebron, and Town of Silver Creek, as well as many small unincorporated communities. An orientation map is provided as **Figure E.1**.

The county is located to the east of the Mississippi River suppling diverse recreational activities. The total area of the county is 436 square miles, 5 square miles of which is water area.

Lawrence County enjoys four distinct seasons but the climate in the region is generally hot and humid compared to the rest of the United States given its latitude and relative proximity to the Gulf Coast. Precipitation is generally highest in winter months when the temperatures are moderately lower, but the likelihood of precipitation remains relatively constant throughout the year. Summers in the region can become fairly hot with average highs in the nineties and lows in the seventies. The region is also often susceptible to turbulent weather when warm, wet air from the Gulf of Mexico is pushed up into the region to mix with cooler air coming down from across the continent which can result in severe weather conditions. This is particularly true in the spring when seasons are changing and diverse weather patterns interact.

**FIGURE E.1: LAWRENCE COUNTY ORIENTATION MAP**



### E.1.2 Population and Demographics

According to the 2015 American Community Survey, Lawrence County has a population of 12,586 people. The county has seen a decrease in population between 2000 and 2015, and the population density is 29 people per square mile. Population counts from the U.S. Census Bureau for 2000 and 2010 and from the American Community Survey for 2015 for the county and participating jurisdictions are presented in **Table E.1**.

**TABLE E.1: POPULATION COUNTS FOR LAWRENCE COUNTY**

| Jurisdiction           | 2000 Census Population | 2010 Census Population | 2015 American Community Survey Estimate | % Change 2000-2015 |
|------------------------|------------------------|------------------------|---|--------------------|
| <b>Lawrence County</b> | <b>13,258</b>          | <b>12,929</b>          | <b>12,586</b>                           | <b>-5.1%</b>       |
| Monticello             | 1,726                  | 1,571                  | 1,559                                   | -9.7%              |
| New Hebron             | 447                    | 447                    | 526                                     | 17.7%              |
| Silver Creek           | 209                    | 210                    | 206                                     | -1.4%              |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

Based on the 2010 Census, the median age of residents of Lawrence County is 38.9 years. The racial characteristics of the county are presented in **Table E.2**. Whites make up the majority of the population in the county, accounting for over 66 percent of the population.

**TABLE E.2: DEMOGRAPHICS OF LAWRENCE COUNTY**

| Jurisdiction           | White, Percent | Black or African American, Percent | American Indian or Alaska Native, Percent | Asian, Percent | Native Hawaiian or Other Pacific Islander, Percent | Other Race, Percent | Two or More Races, percent | Persons of Hispanic Origin, Percent* |
|------------------------|----------------|------------------------------------|---|----------------|--|---------------------|----------------------------|--------------------------------------|
| <b>Lawrence County</b> | <b>66.3%</b>   | <b>32.3%</b>                       | <b>0.1%</b>                               | <b>0.1%</b>    | <b>0.0%</b>  | <b>0.2%</b>         | <b>1.0%</b>                | <b>0.6%</b>                          |
| Monticello             | 59.7%          | 39.4%                              | 0.0%                                      | 0.0%           | 0.0%   | 0.0%                | 0.8%                       | 0.0%                                 |
| New Hebron             | 88.2%          | 11.4%                              | 0.0%                                      | 0.0%           | 0.0%   | 0.0%                | 0.4%                       | 1.9%                                 |
| Silver Creek           | 61.2%          | 38.8%                              | 0.0%                                      | 0.0%           | 0.0%   | 0.0%                | 0.0%                       | 0.0%                                 |

\*Hispanics may be of any race, so also are included in applicable race categories

Source: 2011-2015 American Community Survey 5-Year Estimates

### E.1.3 Housing

According to the 2010 U.S. Census, there are 6,019 housing units in Lawrence County, the majority of which are single family homes or mobile homes. Housing information for the county and three municipalities is presented in **Table E.3**. As shown in the table, the incorporated towns have a slightly lower percentage of seasonal housing units compared to the unincorporated county.

**TABLE E.3: HOUSING CHARACTERISTICS OF LAWRENCE COUNTY**

| Jurisdiction           | Housing Units (2000) | Housing Units (2010) | Seasonal Units, Percent (2010) | Median Home Value (2011-2015) |
|------------------------|----------------------|----------------------|--------------------------------|-------------------------------|
| <b>Lawrence County</b> | <b>5,688</b>         | <b>6,019</b>         | <b>4.4%</b>                    | <b>\$86,800</b>               |
| Monticello             | 754                  | 742                  | 2.3%                           | \$92,100                      |
| New Hebron             | 205                  | 207                  | 1.4%                           | \$88,000                      |
| Silver Creek           | 96                   | 104                  | 1.9%                           | \$57,500                      |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

### E.1.4 Infrastructure

#### TRANSPORTATION

In Lawrence County, U.S. Highway 84 provides access to the east and west and Mississippi Highway 27 provides access to the north and south.

Clay Airport is a general aviation airport centrally located in Lawrence County.

A major freight rail line operates within Lawrence County. Canadian National Railway is a Class I railway that operates and runs east to west and north to south in the county. Business and industries rely on this line along with various other major highway routes as distribution of merchandises.

## **UTILITIES**

Electrical power in Lawrence County is provided by Entergy Mississippi Inc., Magnolia Electric Power Association, Pearl River Valley Electric Power Association, South Mississippi Electric Power Association, and Southern Pine Electric Power Association.

Water and sewer service is provided by participating jurisdictions and/or community based associations, but unincorporated areas often rely on septic systems and wells in Lawrence County.

## **COMMUNITY FACILITIES**

There are a number of buildings and community facilities located throughout Lawrence County. According to the data collected for the vulnerability assessment (Section 6.4.1), there are 12 fire stations, 3 police stations, and 6 schools located within the county.

There are also 9 hospitals and medical care facilities located in Lawrence County.

The Mississippi River, which runs to the east of the county, has played an integral part in the history of the county. The river acted as a major conduit for trade in the 19<sup>th</sup> century as plantations produced large quantities of cotton that could be easily shipped down to ports such as New Orleans. Today, the river is still an important part of the local economy as products are shipped worldwide out of the Natchez port. Apart from the Mississippi River there are multiple water based refuges, activities, and recreational features focused on local water bodies in the region. There are also numerous other small lakes, creeks, and other water bodies throughout the region that offer the outstanding outdoor recreational opportunities for which the region is known.

### **E.1.5 Land Use**

Lawrence County has a blend of old and new development that contributes to physical, cultural, and economic attributes throughout the region. There are three incorporated municipalities located in the county. These areas are where the county's population is generally concentrated. The incorporated areas are also where many of the businesses, commercial uses, and institutional uses are located. Land uses in the balance of the county generally consist of rural residential development, agricultural uses, and recreational areas. There are multiple county- and regional-based agencies that serve to coordinate growth and promote economic development. Local land use and associated regulations are further discussed in *Section 7: Capability Assessment*.

### **E.1.6 Employment and Industry**

According to the U.S. Census Bureau's American Community Survey (ACS), in 2015, Lawrence County had an average annual employment of 9,826 workers and an average unemployment rate of 10.8 percent (compared to 10.3 percent for the state). In 2015, the Educational services, health care and social assistance industry employed 25.2 percent of the workforce followed by Manufacturing (15.2%) and Agriculture, forestry, fishing and hunting, and mining (11.6%). The average annual median household in 2015 for Lawrence County was \$35,634 compared to \$39,665 in the state of Mississippi.

## **E.2 LAWRENCE COUNTY RISK ASSESSMENT**

This subsection includes hazard profiles for each of the significant hazards identified in Section 4: *Hazard Identification* as they pertain to Lawrence County. Each hazard profile includes a description of the hazard's location and extent, notable historical occurrences, and the probability of future occurrences. Additional information can be found in Section 5: *Hazard Profiles*.

### ***FLOOD-RELATED HAZARDS***

#### **E.2.1 Dam and Levee Failure**

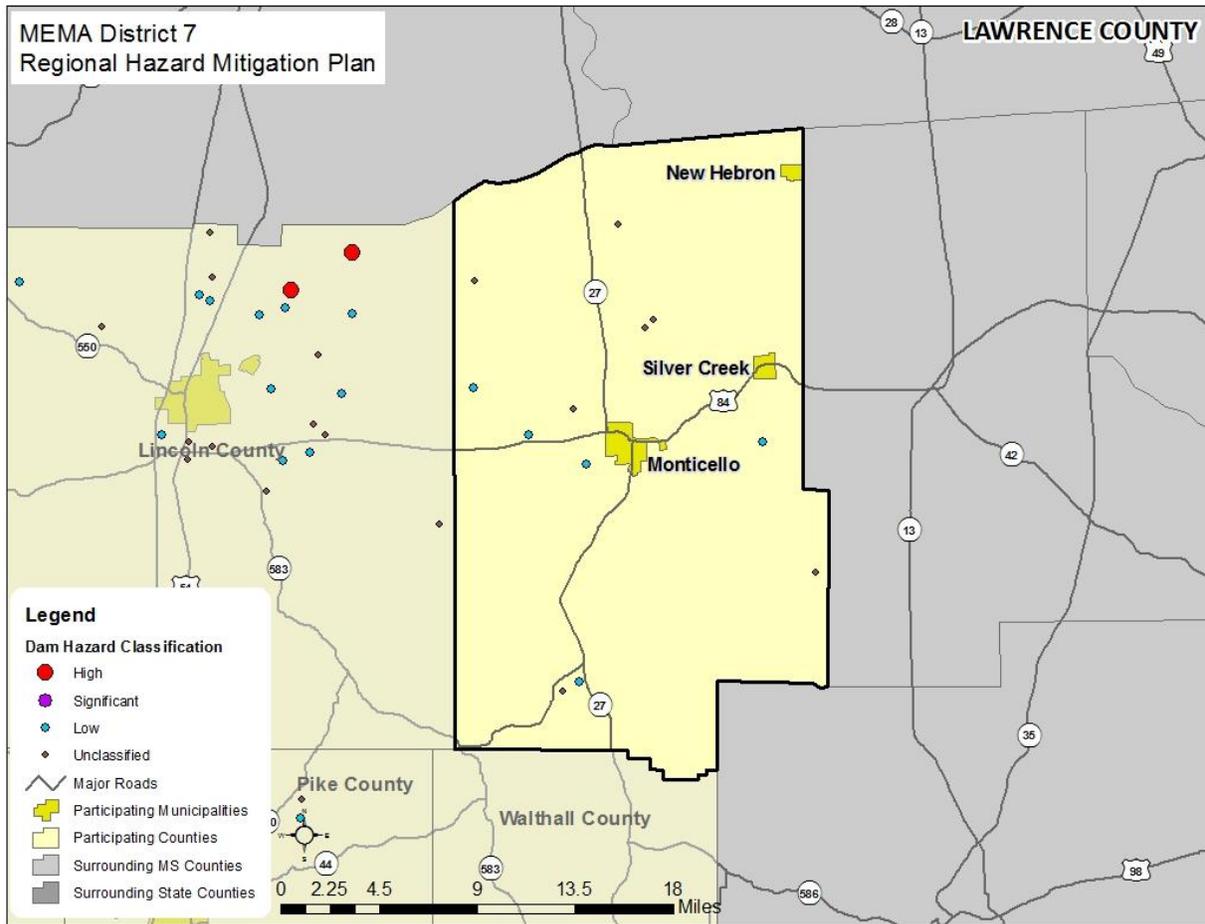
##### ***LOCATION AND SPATIAL EXTENT***

According to the Mississippi Department of Environmental Quality, there are no high hazard dams in Lawrence County (**Table E.4**).<sup>1</sup> **Figure E.2** and **Figure E.3** show the location of high hazard dams as well as mapped inundation areas located nearby.

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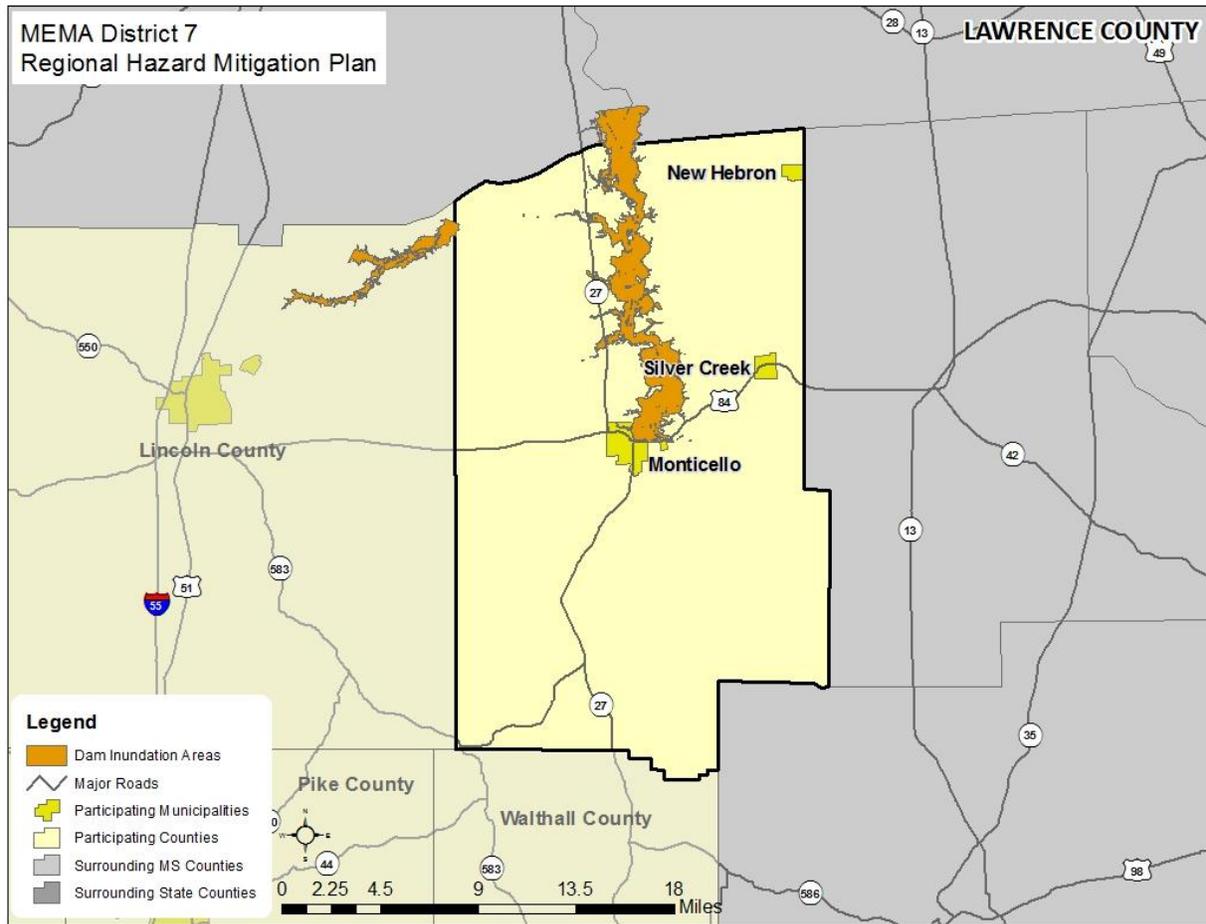
<sup>1</sup> The list of high hazard dams obtained from the Mississippi Department of Environmental Quality was reviewed and amended by local officials to the best of their knowledge.

FIGURE E.2: LAWRENCE COUNTY HIGH HAZARD DAM LOCATIONS



Source: Mississippi Department of Environmental Quality

**FIGURE E.3: LAWRENCE COUNTY DAM INUNDATION AREAS**



Source: Mississippi Department of Environmental Quality

**TABLE E.4: LAWRENCE COUNTY HIGH HAZARD DAMS**

| Dam Name                    | Hazard Potential | Max Storage (ac/ft) | Dam Height (ft) |
|-----------------------------|------------------|---------------------|-----------------|
| <b>Lawrence County</b>      |                  |                     |                 |
| ROSS BARNETT RESERVOIR DAM* | High             | 540,000             | 64.0            |

\*Although not located within the region, inundation mapping indicates that a failure of this dam would potentially have impacts within Lawrence County.

Source: Mississippi Department of Environmental Quality

**HISTORICAL OCCURRENCES**

According to the Mississippi State Hazard Mitigation Plan, there have been no dam failures reported in Lawrence County (Table E.5). However, several breach scenarios in the region could be catastrophic.

**TABLE E.5: LAWRENCE COUNTY DAM FAILURES (1982-2012)**

| Date          | County   | Structure Name | Cause of Failure |
|---------------|----------|----------------|------------------|
| None reported | Lawrence | --             | --               |

Source: Mississippi Department of Environmental Quality

### **PROBABILITY OF FUTURE OCCURRENCES**

Given the current dam inventory and historic data, a dam breach is possible (between 1 and 10 percent annual probability) in the future. As has been demonstrated in the past, regular monitoring is necessary to prevent these events.

## **E.2.2 Erosion**

### **LOCATION AND SPATIAL EXTENT**

Erosion in Lawrence County is typically caused by flash flooding events. Unlike coastal areas, areas of concern for erosion in Lawrence County are primarily rivers/streams and reservoirs. Generally, vegetation also helps to prevent erosion in the area, but in recent years, erosion has become a growing threat to many of the participating counties and jurisdictions.

At this time, there is no regional or state-level data available on localized areas of erosion so it is a challenge to identify particularly prone areas on a wider geographic scale. However, a few areas of concern were reported by members of the hazard mitigation council and other local sources. Locations along the Mississippi River are known to be especially at-risk, but there are locations in many areas within the region where erosion is prominent.

### **HISTORICAL OCCURRENCES**

Several sources were vetted to identify areas of erosion in Lawrence County. This includes searching local newspapers, interviewing local officials, and reviewing previous hazard mitigation plans. The locations identified above are representative of areas where erosion has taken place in the past.

These incidents have caused major problems as bridges have become damaged in many instances and made unsafe for emergency services vehicles to cross during and after storm events. This delays response times and critical life-safety support. In addition, the shutdown of roads has hurt local communities economically as trade and commerce are temporarily shut down as bridges are repaired. It has also caused disruption to daily activities for local school boards who must re-route buses around affected areas, causing additional fuel resources to be expended and increasing drive times for students.

### **PROBABILITY OF FUTURE OCCURRENCES**

Erosion remains a natural, dynamic, and continuous process for Lawrence County, and it will continue to occur. The annual probability level assigned for erosion is possible (between 1 and 10 percent annually).

## **E.2.3 Flood**

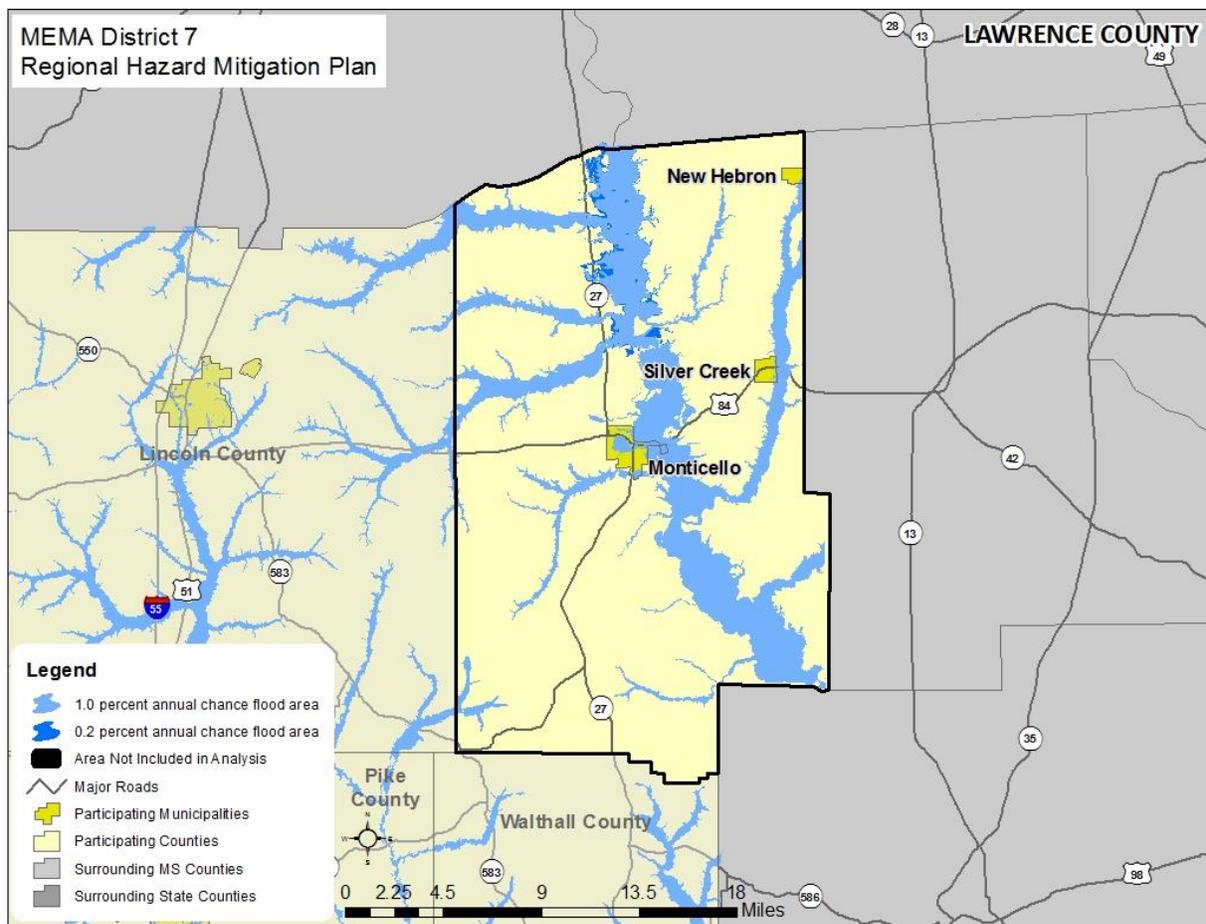
### **LOCATION AND SPATIAL EXTENT**

There are areas in Lawrence County that are susceptible to flood events. Special flood hazard areas in the county were mapped using Geographic Information System (GIS) and FEMA Digital Flood Insurance Rate

Maps (DFIRM).<sup>2</sup> This includes Zone A (1-percent annual chance floodplain), Zone AE (1-percent annual chance floodplain with elevations), and Zone X-500 (0.2-percent annual chance floodplain). According to GIS analysis, of the 442 square miles that make up Lawrence County, there are 89.92 square miles of land in zones A and AE (1-percent annual chance floodplain/100-year floodplain) and 2.72 square miles of land in zone X-500 (0.2 percent annual change floodplain/500-year floodplain).

These flood zone values account for 21.0 percent of the total land area in Lawrence County. It is important to note that while FEMA digital flood data is recognized as best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Flooding and flood-related losses often do occur outside of delineated special flood hazard areas. **Figure E.4** illustrates the location and extent of currently mapped special flood hazard areas for Lawrence County based on best available FEMA Digital Flood Insurance Rate Map (DFIRM) data.

**FIGURE E.4: SPECIAL FLOOD HAZARD AREAS IN LAWRENCE COUNTY**



Source: Federal Emergency Management Agency

<sup>2</sup> The county-level DFIRM data used for Lawrence County were updated in 2010.

**HISTORICAL OCCURRENCES**

Floods were at least partially responsible for nine disaster declarations in Lawrence County in 1972, 1973, 1974, 1979, 1983, 1990, 2003, 2009, and 2016.<sup>3</sup> Information from the National Climatic Data Center was used to ascertain additional historical flood events. The National Climatic Data Center reported a total of 26 events in Lawrence County since 1997.<sup>4</sup> A summary of these events is presented in **Table E.6**. These events accounted for over \$1.4 million (2017 dollars) in property damage.<sup>5</sup> Specific information on flood events, including date, type of flooding, and deaths and injuries, can be found in **Table E.7**.

**TABLE E.6: SUMMARY OF FLOOD OCCURRENCES IN LAWRENCE COUNTY**

| Location                     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Monticello                   | 10                    | 0/0             | \$83,791               | \$4,190                    |
| New Hebron                   | 1                     | 0/0             | \$51,233               | \$25,617                   |
| Silver Creek                 | 1                     | 0/0             | \$51,233               | \$25,617                   |
| Unincorporated Area          | 14                    | 0/0             | \$1,263,329            | \$70,185                   |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>26</b>             | <b>0/0</b>      | <b>\$1,449,586</b>     | <b>\$125,607</b>           |

Source: National Climatic Data Center

**TABLE E.7: HISTORICAL FLOOD EVENTS IN LAWRENCE COUNTY**

| Location                   | Date       | Type        | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-------------|-----------------|------------------|
| <b>Monticello</b>          |            |             |                 |                  |
| MONTICELLO                 | 6/10/1997  | Flash Flood | 0/0             | \$0              |
| MONTICELLO                 | 3/2/2001   | Flash Flood | 0/0             | \$0              |
| MONTICELLO                 | 6/30/2003  | Flash Flood | 0/0             | \$2,662          |
| MONTICELLO                 | 6/28/2004  | Flash Flood | 0/0             | \$12,890         |
| MONTICELLO                 | 10/27/2006 | Flash Flood | 0/0             | \$30,293         |
| MONTICELLO                 | 3/28/2009  | Flash Flood | 0/0             | \$11,496         |
| MONTICELLO                 | 9/23/2009  | Flash Flood | 0/0             | \$2,264          |
| MONTICELLO                 | 7/16/2010  | Flash Flood | 0/0             | \$5,608          |
| MONTICELLO                 | 3/8/2011   | Flash Flood | 0/0             | \$16,413         |
| MONTICELLO                 | 7/12/2011  | Flash Flood | 0/0             | \$2,165          |
| <b>New Hebron</b>          |            |             |                 |                  |
| NEW HEBRON                 | 6/9/2015   | Flash Flood | 0/0             | \$51,233         |
| <b>Silver Creek</b>        |            |             |                 |                  |
| SILVER CREEK               | 6/9/2015   | Flash Flood | 0/0             | \$51,233         |
| <b>Unincorporated Area</b> |            |             |                 |                  |
| COUNTYWIDE                 | 1/22/1999  | Flash Flood | 0/0             | \$0              |

<sup>3</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>4</sup> These flood events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported. As additional local data becomes available, this hazard profile will be amended.

<sup>5</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| Location       | Date      | Type        | Deaths/Injuries | Property Damage* |
|----------------|-----------|-------------|-----------------|------------------|
| COUNTYWIDE     | 8/12/2001 | Flash Flood | 0/0             | \$206,640        |
| COUNTYWIDE     | 9/3/2001  | Flash Flood | 0/0             | \$6,857          |
| SONTAG         | 2/21/2003 | Flash Flood | 0/0             | \$1,335          |
| TILTON         | 2/21/2003 | Flash Flood | 0/0             | \$1,335          |
| COUNTYWIDE     | 2/5/2004  | Flash Flood | 0/0             | \$393,970        |
| TILTON         | 2/23/2004 | Flash Flood | 0/0             | \$6,566          |
| CAMPBELL       | 4/12/2009 | Flash Flood | 0/0             | \$573,354        |
| SONTAG         | 3/9/2011  | Flash Flood | 0/0             | \$13,131         |
| ARM            | 8/29/2012 | Flash Flood | 0/0             | \$5,307          |
| BRISTERS STORE | 2/20/2014 | Flash Flood | 0/0             | \$26,037         |
| SONTAG         | 2/2/2016  | Flash Flood | 0/0             | \$10,313         |
| ARM            | 3/11/2016 | Flash Flood | 0/0             | \$10,268         |
| GRANGE         | 3/11/2016 | Flash Flood | 0/0             | \$8,215          |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

### **HISTORICAL SUMMARY OF INSURED FLOOD LOSSES**

According to FEMA flood insurance policy records as of March 31, 2017, there have been 26 flood losses reported in Lawrence County through the National Flood Insurance Program (NFIP) since 1978, totaling almost \$465,000 in claims payments. A summary of these figures for the county is provided in **Table E.8**. It should be emphasized that these numbers include only those losses to structures that were insured through the NFIP policies, and for losses in which claims were sought and received. It is likely that many additional instances of flood loss in Lawrence County were either uninsured, denied claims payment, or not reported.

**TABLE E.8: SUMMARY OF INSURED FLOOD LOSSES IN LAWRENCE COUNTY**

| Location                     | Number of Policies | Flood Losses | Claims Payments     |
|------------------------------|--------------------|--------------|---------------------|
| Monticello                   | 17                 | 10           | \$136,890.98        |
| New Hebron                   | 0                  | 1            | \$250.00            |
| Silver Creek                 | 0                  | 0            | \$0.00              |
| Unincorporated Area          | 49                 | 15           | \$327,839.27        |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>66</b>          | <b>26</b>    | <b>\$464,980.25</b> |

Source: National Flood Insurance Program

### **REPETITIVE LOSS PROPERTIES**

According to the Mississippi Emergency Management Agency, there are 4 non-mitigated repetitive loss properties located in Lawrence County, which accounted for 19 losses and almost \$379,000 in claims payments under the NFIP. The average claim amount for these properties is \$19,934. All four properties are single family. Without mitigation, these properties will likely continue to experience flood losses. **Table E.9** presents detailed information on repetitive loss properties and NFIP claims and policies for Lawrence County.

**TABLE E.9: REPETITIVE LOSS PROPERTIES IN LAWRENCE COUNTY**

| Location                     | Number of Properties | Types of Properties | Number of Losses | Building Payments   | Content Payments   | Total Payments      | Average Payment    |
|------------------------------|----------------------|---------------------|------------------|---------------------|--------------------|---------------------|--------------------|
| Monticello                   | 0                    | --                  | 0                | \$0.00              | \$0.00             | \$0.00              | \$0.00             |
| New Hebron                   | 0                    | --                  | 0                | \$0.00              | \$0.00             | \$0.00              | \$0.00             |
| Silver Creek                 | 0                    | --                  | 0                | \$0.00              | \$0.00             | \$0.00              | \$0.00             |
| Unincorporated Area          | 4                    | 4 single family     | 19               | \$281,282.44        | \$97,468.64        | \$378,751.10        | \$19,934.27        |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>4</b>             |                     | <b>19</b>        | <b>\$281,282.44</b> | <b>\$97,468.64</b> | <b>\$378,751.10</b> | <b>\$19,934.27</b> |

Source: National Flood Insurance Program

### ***PROBABILITY OF FUTURE OCCURRENCES***

Flood events will remain a threat in Lawrence County, and the probability of future occurrences will remain highly likely (100 percent annual probability). The probability of future flood events based on magnitude and according to best available data is illustrated in the figure above, which indicates those areas susceptible to the 1-percent annual chance flood (100-year floodplain).

It can be inferred from the floodplain location maps, previous occurrences, and repetitive loss properties that risk varies throughout the county. For example, Monticello has more floodplain and thus a higher risk of flood than New Hebron and Silver Creek. Flood is not the greatest hazard of concern but will continue to occur and cause damage. Therefore, mitigation actions may be warranted, particularly for repetitive loss properties.

## ***FIRE-RELATED HAZARDS***

### **E.2.4 Drought**

#### ***LOCATION AND SPATIAL EXTENT***

Drought typically covers a large area and cannot be confined to any geographic or political boundaries. Furthermore, it is assumed that Lawrence County would be uniformly exposed to drought, making the spatial extent potentially widespread. It is also notable that drought conditions typically do not cause significant damage to the built environment but may exacerbate wildfire conditions.

#### ***HISTORICAL OCCURRENCES***

According to the U.S. Drought Monitor, Lawrence County had drought levels of Severe or worse in 7 of the last 17 years (January 2000-December 2016). **Table E.10** shows the most severe drought classification for each year, according to U.S. Drought Monitor classifications. It should be noted that the U.S. Drought Monitor also estimates what percentage of the county is in each classification of drought severity. For example, the most severe classification reported may be exceptional but a majority of the county may actually be in a less severe condition.

**TABLE E.10: HISTORICAL DROUGHT OCCURRENCES IN LAWRENCE COUNTY**

Abnormally Dry (D0) Moderate Drought (D1) Severe Drought (D2) Extreme Drought (D3) Exceptional Drought (D4)



| Year | Lawrence County |
|------|-----------------|
| 2000 | EXCEPTIONAL     |
| 2001 | MODERATE        |
| 2002 | MODERATE        |
| 2003 | ABNORMAL        |
| 2004 | ABNORMAL        |
| 2005 | ABNORMAL        |
| 2006 | SEVERE          |
| 2007 | EXTREME         |
| 2008 | MODERATE        |
| 2009 | MODERATE        |
| 2010 | SEVERE          |
| 2011 | EXTREME         |
| 2012 | ABNORMAL        |
| 2013 | ABNORMAL        |
| 2014 | MODERATE        |
| 2015 | EXTREME         |
| 2016 | SEVERE          |

Source: United States Drought Monitor

Some additional anecdotal information was provided from the National Climatic Data Center on droughts in Lawrence County.

**Summer to Fall 2006** – During a four and a half month period, from June to the middle of October, abnormally dry conditions prevailed across most of the Jackson, MS County Warning Area (CWA). Widespread drought conditions were reported across the area during this time period. The U.S. Drought Monitor classified the drought as extreme (D3) over Southeast Mississippi. Drought conditions in the region peaked in intensity during early August over this area.

**Summer 2007** – During the month of June, the drought peaked across the region. It held firm across the same areas since May with no expansion. What did expand was the severity as by the end of June, most of Central and East-Central Mississippi was now in extreme drought (D3) with some locations across Northeast Mississippi now experiencing exceptional drought (D4). The month of June did not offer much rain as most of the forecast area saw less than 40% of the normal rainfall.

**Summer to Fall 2010** – Very dry conditions continued across central Mississippi during most of October. There were some rains that came late in the month which provided some temporary relief. Rainfall amounts ranged from a half to two inches with locally higher amounts. Most locations were 1 to 3 inches below normal for the month. The dry stretch resulted in severe (D2) drought conditions to expand during the month with even the portions of extreme (D3) drought conditions expanding as well. Crops were put under stress under the warm and dry conditions.

**Fall 2015** – The very dry conditions continued across Central Mississippi in October. The extended dry stretch resulted in an area of Severe (D2) drought developing across the area by October 6th. The drought intensified and Extreme (D3) drought conditions developed by October 13th. Approximately 25 to 50 percent of normal rainfall occurred across this area from August into mid-October. Crops were put under more stress from the dry and hot conditions.

**Fall to Winter 2016** – Dry conditions continued into November, which created continued stress on crops. The drought continued to get worse across the state through the month before some relief came in the form of showers and thunderstorms near the end of November.

**PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that Lawrence County has a probability level of possible (between 1 and 10 percent annual probability) for future drought events. However, the extent (or magnitude) of drought and the amount of geographic area covered by drought, varies with each year. Historic information indicates that there is a much lower probability for extreme, long-lasting drought conditions.

**E.2.5 Lightning**

**LOCATION AND SPATIAL EXTENT**

Lightning occurs randomly, therefore it is impossible to predict where and with what frequency it will strike. It is assumed that all of Lawrence County is uniformly exposed to lightning.

**HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, there have been three recorded lightning events in Lawrence County since 2006.<sup>6</sup> These events resulted in over \$185,000 (2017 dollars) in damages, as listed in summary **Table E.11**.<sup>7</sup> Detailed information on historical lightning events can be found in **Table E.12**.

It is certain that more than three events have impacted the county. Many of the reported events are those that cause damage, and it should be expected that damages are likely much higher for this hazard than what is reported.

**TABLE E.11: SUMMARY OF LIGHTNING OCCURRENCES IN LAWRENCE COUNTY**

| Location   | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------|-----------------------|-----------------|------------------------|----------------------------|
| Monticello | 1                     | 0/0             | \$20,606               | \$10,303                   |
| New Hebron | 0                     | 0/0             | \$0                    | \$0                        |

<sup>6</sup> These lightning events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is certain that additional lightning events have occurred in Lawrence County. As additional local data becomes available, this hazard profile will be amended.

<sup>7</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| Location                     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Silver Creek                 | 0                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area          | 2                     | 0/0             | \$164,404              | \$14,946                   |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>3</b>              | <b>0/0</b>      | <b>\$185,010</b>       | <b>\$25,249</b>            |

Source: National Climatic Data Center

**TABLE E.12: HISTORICAL LIGHTNING OCCURRENCES IN LAWRENCE COUNTY**

| Location                   | Date       | Deaths/Injuries | Property Damage* | Details   |
|----------------------------|------------|-----------------|------------------|---|
| <b>Monticello</b>          |            |                 |                  |   |
| MONTICELLO                 | 11/18/2015 | 0/0             | \$20,606         | A house was struck by lightning on Carmel-New Hope Road.          |
| <b>New Hebron</b>          |            |                 |                  |   |
| None reported              | --         | --              | --               | --  |
| <b>Silver Creek</b>        |            |                 |                  |   |
| None reported              | --         | --              | --               | --  |
| <b>Unincorporated Area</b> |            |                 |                  |   |
| TOPEKA                     | 7/19/2006  | 0/0             | \$156,207        | A home was struck by lightning and burned down.                   |
| JAYESS                     | 7/5/2015   | 0/0             | \$8,197          | Lightning struck a pasture and killed several horses near Jayess. |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

**PROBABILITY OF FUTURE OCCURRENCES**

Although there was not a high number of historical lightning events reported in Lawrence County via NCDC data, it is a regular occurrence accompanied by thunderstorms. In fact, lightning events will assuredly happen on an annual basis, though not all events will cause damage. According to Vaisala’s U.S. National Lightning Detection Network (NLDN), Lawrence County is located in an area of the country that experienced an average of 12 to 20 lightning flashes per square mile per year between 2007 and 2016. Therefore, the probability of future events is highly likely (100 percent annual probability). It can be expected that future lightning events will continue to threaten life and cause minor property damages throughout the county.

**E.2.6 Wildfire**

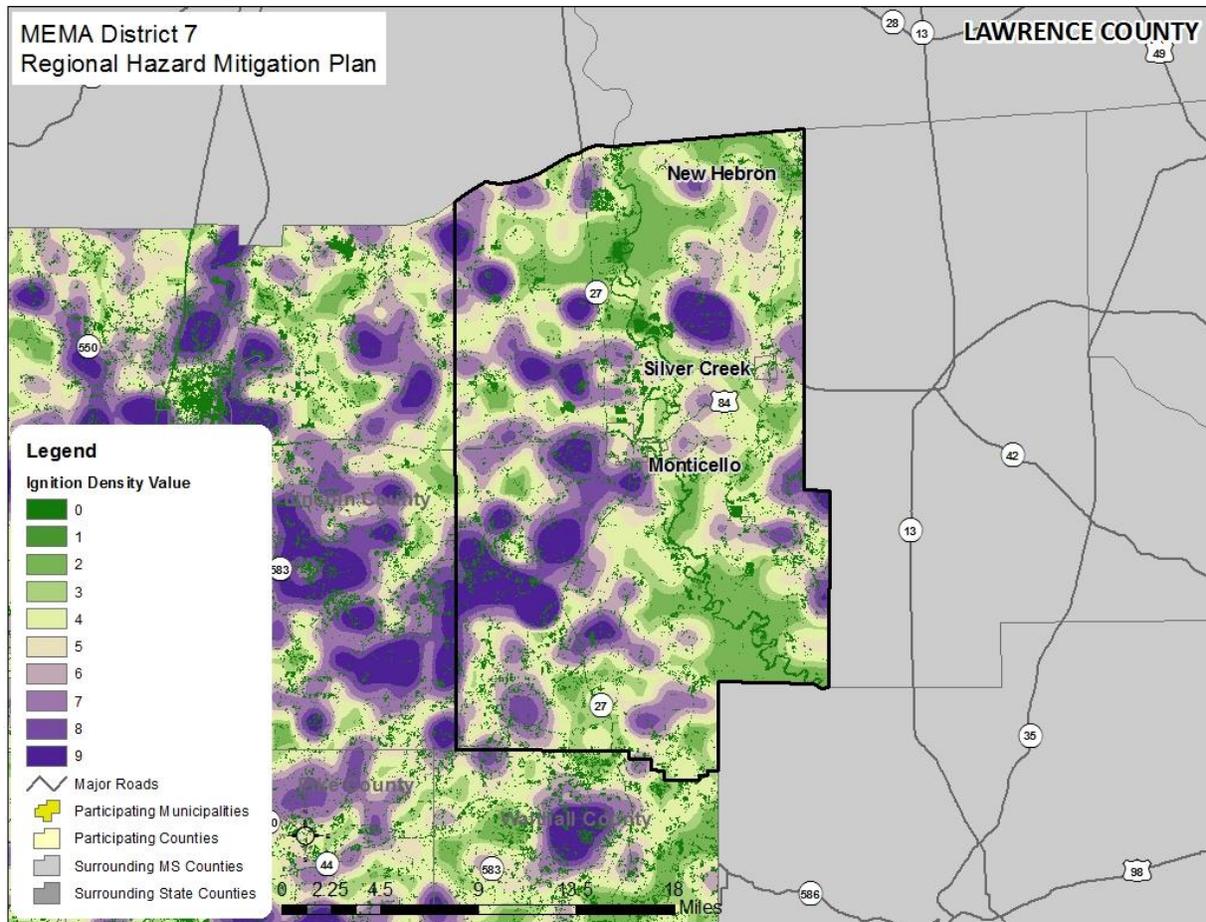
**LOCATION AND SPATIAL EXTENT**

The entire county is at risk to a wildfire occurrence. However, several factors such as drought conditions or high levels of fuel on the forest floor, may make a wildfire more likely. Furthermore, areas in the urban-wildland interface are particularly susceptible to fire hazard as populations abut formerly undeveloped areas. The Wildfire Ignition Density data shown in the figure below give an indication of historic location.

**HISTORICAL OCCURRENCES**

Figure E.5 shows the Wildfire Ignition Density in Lawrence County based on data from the Southern Wildfire Risk Assessment. This data is based on historical fire ignitions and the likelihood of a wildfire igniting in an area. Occurrence is derived by modeling historic wildfire ignition locations to create an average ignition rate map. This is measured in the number of fires per year per 1,000 acres.<sup>8</sup>

**FIGURE E.5: WILDFIRE IGNITION DENSITY IN LAWRENCE COUNTY**



Source: Southern Wildfire Risk Assessment

Based on data from the Mississippi Forestry Commission from 2007 to 2016, Lawrence County experienced an average of 26.9 wildfires annually which burned a combined 310.8 acres per year. The data indicate that most of these fires were small to moderate in size, averaging about 11.6 acres per fire. **Table E.13** provides a summary of wildfire occurrences in Lawrence County and **Table E.14** lists the number of reported wildfire occurrences in the county between the years 2007 and 2016.

<sup>8</sup> Southern Wildfire Risk Assessment, 2014.

**TABLE E.13: SUMMARY TABLE OF ANNUAL WILDFIRE OCCURRENCES (2007-2016)\***

|   | Lawrence County |
|---|-----------------|
| Average Number of Fires per year        | 26.9            |
| Average Number of Acres Burned per year | 310.8           |
| Average Number of Acres Burned per fire | 11.6            |

\*These values reflect averages over a 10-year period.

Source: Mississippi Forestry Commission

**TABLE E.14: HISTORICAL WILDFIRE OCCURRENCES IN LAWRENCE COUNTY**

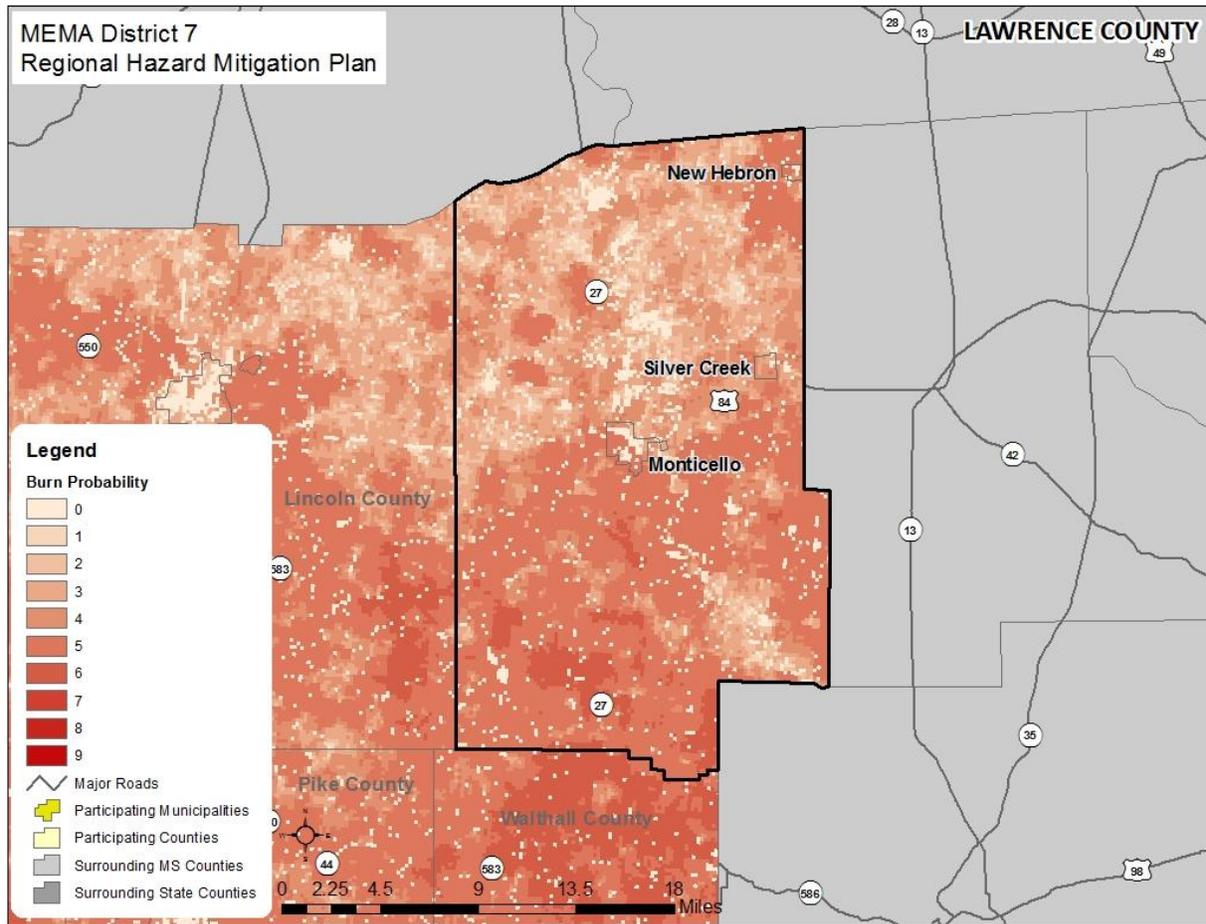
| Year                   | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|------------------------|------|------|------|------|------|------|------|------|------|------|
| <b>Lawrence County</b> |      |      |      |      |      |      |      |      |      |      |
| Number of Fires        | 55   | 48   | 22   | 10   | 42   | 20   | 11   | 24   | 11   | 26   |
| Number of Acres Burned | 562  | 421  | 224  | 110  | 555  | 219  | 129  | 483  | 261  | 144  |

Source: Mississippi Forestry Commission

### **PROBABILITY OF FUTURE OCCURRENCES**

Wildfire events will be an ongoing occurrence in Lawrence County. **Figure E.6** shows that there is some probability a wildfire will occur throughout the county. However, the likelihood of wildfires increases during drought cycles and abnormally dry conditions. Fires are likely to stay small in size but could increase due to local climate and ground conditions. Dry, windy conditions with an accumulation of forest floor fuel (potentially due to ice storms or lack of fire) could create conditions for a large fire that spreads quickly. It should also be noted that some areas do vary somewhat in risk. For example, highly developed areas are less susceptible unless they are located near the urban-wildland boundary. The risk will also vary due to assets. Areas in the urban-wildland interface will have much more property at risk, resulting in increased vulnerability and need to mitigate compared to rural, mainly forested areas. The probability assigned to Lawrence County for future wildfire events is highly likely (100 percent annual probability).

**FIGURE E.6: BURN PROBABILITY IN LAWRENCE COUNTY**



Source: Southern Wildfire Risk Assessment

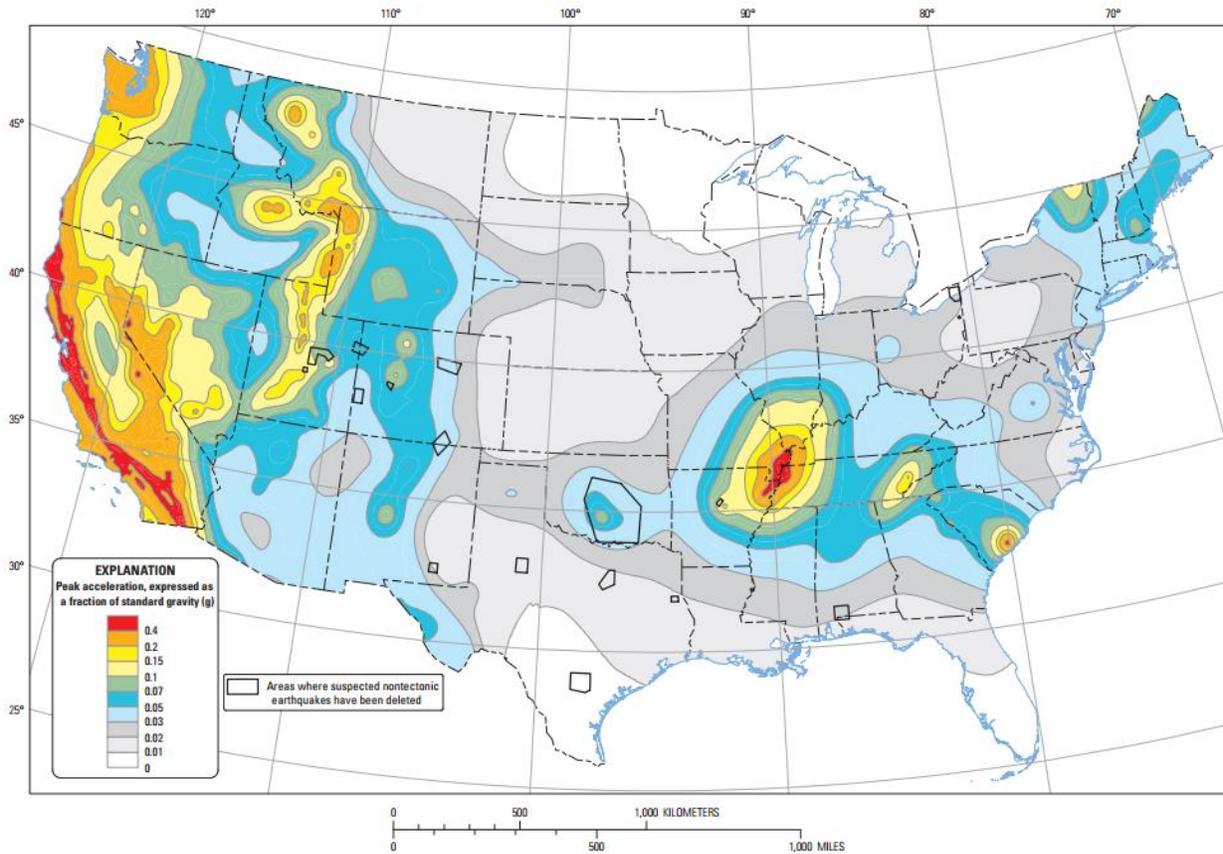
## **GEOLOGIC HAZARDS**

### **E.2.7 Earthquake**

#### **LOCATION AND SPATIAL EXTENT**

Figure E.7 shows the intensity level associated with Lawrence County, based on the national USGS map of peak acceleration with 10 percent probability of exceedance in 50 years. It is the probability that ground motion will reach a certain level during an earthquake. The data show peak horizontal ground acceleration (the fastest measured change in speed, for a particle at ground level that is moving horizontally due to an earthquake) with a 10 percent probability of exceedance in 50 years. The map was compiled by the U.S. Geological Survey (USGS) Geologic Hazards Team, which conducts global investigations of earthquake, geomagnetic, and landslide hazards. According to this map, Lawrence County lies within an approximate zone of level “0.02” to “0.03” ground acceleration. This indicates that the county exists within an area of low seismic risk.

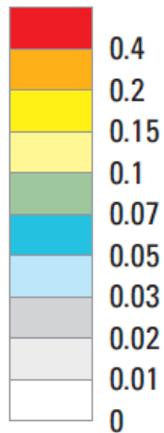
**FIGURE E.7: PEAK ACCELERATION WITH 10 PERCENT PROBABILITY OF EXCEEDANCE IN 50 YEARS**



**Ten-percent probability of exceedance in 50 years map of peak ground acceleration**

**EXPLANATION**

Peak acceleration, expressed as a fraction of standard gravity (g)



 Areas where suspected nontectonic earthquakes have been deleted

Source: United States Geological Survey, 2014

The primary source of potential damage to Lawrence County from an earthquake is the New Madrid Seismic Zone (NMSZ). Historically, a series of earthquakes in 1811 and 1812 demonstrated that this fault zone can produce high magnitude seismic events, sometimes on the scale of a 7.5-8.0 on the Richter scale. The biggest challenge with earthquakes that occur in this area of seismic activity is predicting the recurrence of earthquakes emanating from this zone. Although the magnitude of earthquakes from the NMSZ can be large, they occur very irregularly and fairly infrequently. This makes it extremely difficult to project when they will occur.

It should also be noted that the State of Mississippi Hazard Mitigation Plan identifies certain areas of concern for liquefaction and lists the counties and corresponding zones within those counties that have the highest liquefaction potential. Lawrence County does not have any identified liquefaction potential risk.

**HISTORICAL OCCURRENCES**

No earthquakes are known to have affected Lawrence County since 1638. **Table E.15** provides a summary of earthquake events reported by the National Centers for Environmental Information (formerly National Geophysical Data Center) between 1638 and 1985, and **Figure E.8** presents a map showing earthquakes whose epicenters have occurred near the county between 1985 and 2015 (no earthquakes occurred within the county’s boundaries during this period). **Table E.16** presents a detailed occurrence of each event including the date, distance for the epicenter, magnitude and Modified Mercalli Intensity (if known).<sup>9</sup>

**TABLE E.15: SUMMARY OF SEISMIC ACTIVITY IN LAWRENCE COUNTY**

| Location                     | Number of Occurrences | Greatest MMI Reported | Greatest Richter Scale Reported |
|------------------------------|-----------------------|-----------------------|---------------------------------|
| Monticello                   | 0                     | --                    | --                              |
| New Hebron                   | 0                     | --                    | --                              |
| Silver Creek                 | 0                     | --                    | --                              |
| Unincorporated Area          | 0                     | --                    | --                              |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>0</b>              | <b>--</b>             | <b>--</b>                       |

Source: National Centers for Environmental Information

**TABLE E.16: SIGNIFICANT SEISMIC EVENTS IN LAWRENCE COUNTY (1638 -1985)**

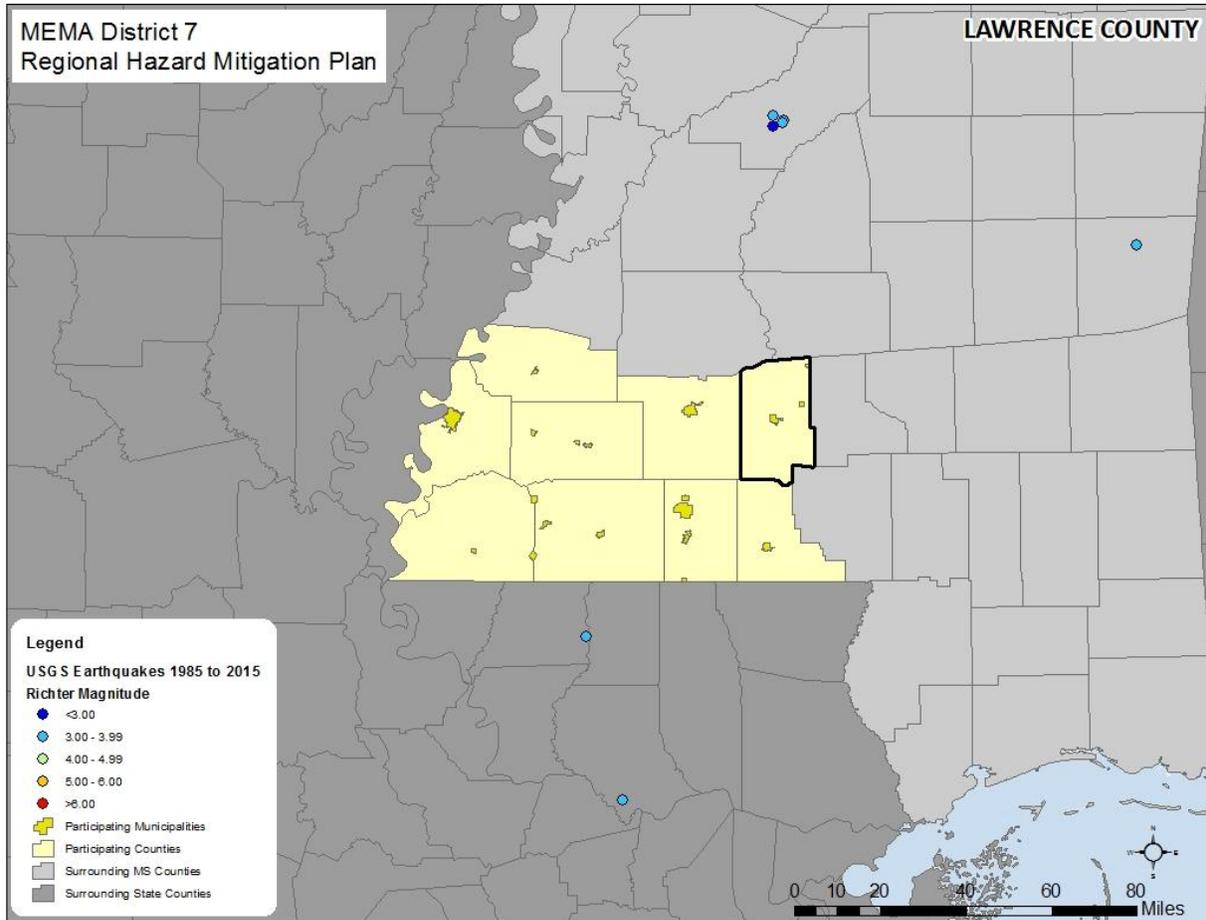
| Location                   | Date | Epicentral Distance | Magnitude | MMI |
|----------------------------|------|---------------------|-----------|-----|
| <b>Monticello</b>          |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |
| <b>New Hebron</b>          |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |
| <b>Silver Creek</b>        |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |
| <b>Unincorporated Area</b> |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |

<sup>9</sup> Due to reporting mechanisms, not all earthquakes events were recorded during this time. Furthermore, some are missing data, such as the epicenter location, due to a lack of widely used technology. In these instances, a value of “unknown” is reported.

| Location | Date | Epicentral Distance | Magnitude | MMI |
|----------|------|---------------------|-----------|-----|
|----------|------|---------------------|-----------|-----|

Source: National Centers for Environmental Information

**FIGURE E.8: HISTORIC EARTHQUAKES WITH EPICENTERS NEAR LAWRENCE COUNTY (1985-2015)**



Source: United States Geological Survey

**PROBABILITY OF FUTURE OCCURRENCES**

The probability of significant, damaging earthquake events affecting Lawrence County is unlikely. However, it is certainly possible that future earthquakes resulting in light or moderate perceived shaking and damages will affect the county much more frequently. The annual probability level for the county is estimated to be less than 1 percent (unlikely).

## ***WIND-RELATED HAZARDS***

### **E.2.8 Extreme Heat**

#### ***LOCATION AND SPATIAL EXTENT***

Heat waves typically impact a large area and cannot be confined to any geographic or political boundaries. Therefore, the entire county is considered to be equally susceptible to extreme heat.

#### ***HISTORICAL OCCURRENCES***

The National Climatic Data Center was used to determine historical heat wave occurrences in the county.

**August 2005** – A "HOT" stretch of weather occurred during the middle to later part of August 2005. This "Heat Wave" covered a large portion of the south and lasted for a period of about 10 days. Each of these days had high temperatures consistently between 95 and 100 degrees, with 1 or 2 of these days actually reaching 100 degrees or more. Additionally, overnight lows remained warm with lower and middle 70s recorded. This is the first time since August 2000 where 100 degree temperatures were reached in this area as well as having such an extended period of "HOT" weather.

**July 2006** – A small "heat wave" gripped the region during the middle of July with high temperature ranging from the upper 90s to around 100 degrees for five days with overnight lows only reaching the middle 70s. The hottest temperatures during this period occurred from the Mississippi Delta, across northern Mississippi and then down to the Jackson Metro and toward Meridian. This area peaked between 100 and 102 degrees for at least two days during the hot five day stretch.

**August 2007** – During the first half of August, a heat wave took hold of the region and brought some of the warmest temperatures since the summer of 2000. This heat wave began around August 5th and lasted until the 16th. Between August 10th and 15th, the entire area reached 100 degrees or higher. Twenty-three record highs were also set during this time. As the temperature soared each day, high relative humidities resulted in heat index values between 105 and 112 degrees.

**August 2010** – A four day stretch of extreme temperatures occurred across the region to start off the month of August. High pressure was firmly entrenched across the southeast and allowed temperatures to soar into the triple digits across much of the region. Across the NWS Jackson, MS forecast area, 19 record highs were set between August 1st and 4th. On August 2nd, the 2nd warmest average temperature was recorded. The low was 78 and the high 105, this resulted in an average temperature of 91.5 degrees. Additionally, relatively high humidity levels made conditions even more oppressive, with heat index readings surpassing 110 degrees in many areas. This extreme heat resulted in 3 fatalities across the forecast area.

#### ***PROBABILITY OF FUTURE OCCURRENCES***

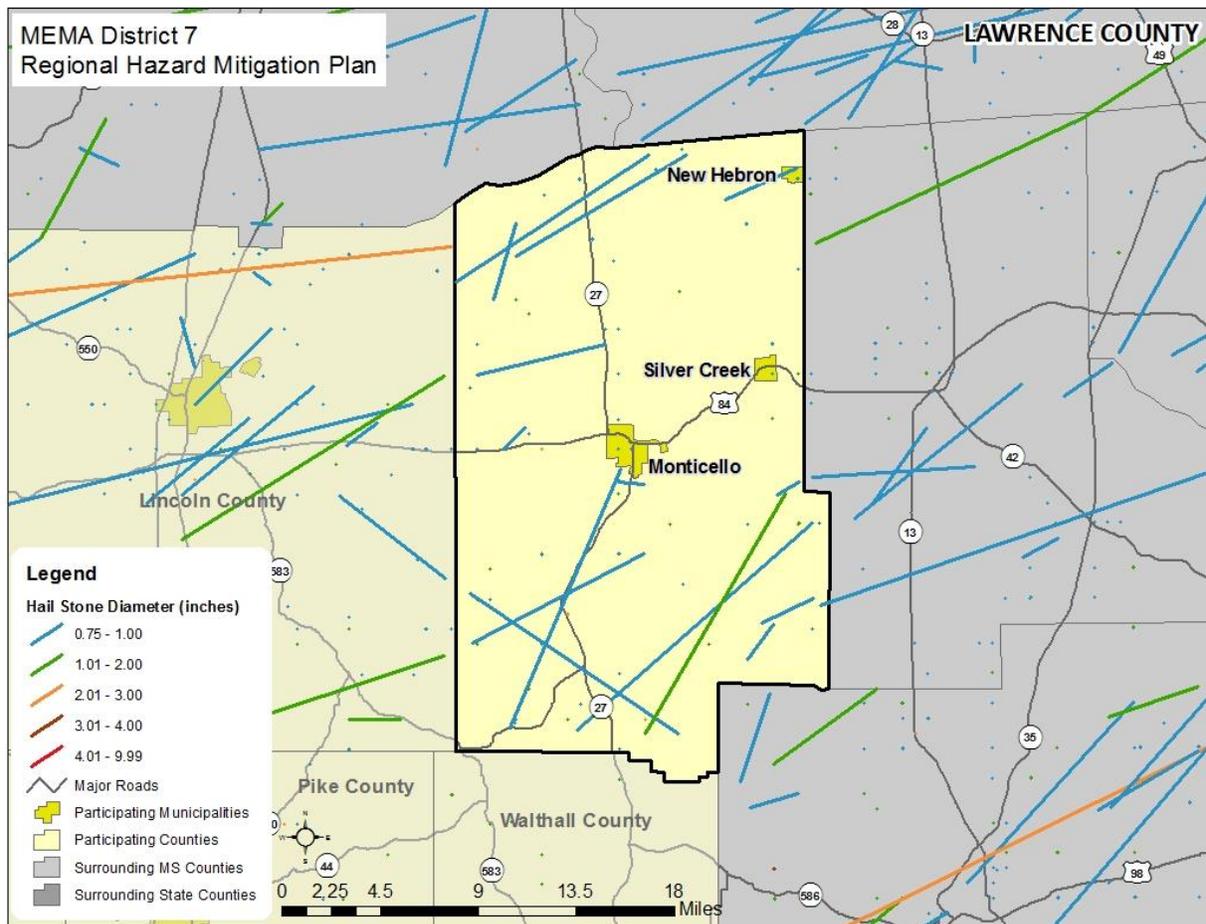
Based on historical occurrence information, it is assumed that all of Lawrence County has a probability level of likely (between 10 and 100 percent annual probability) for future heat wave events.

## E.2.9 Hailstorm

### LOCATION AND SPATIAL EXTENT

Hailstorms frequently accompany thunderstorms, so their locations and spatial extents coincide. It is assumed that Lawrence County is uniformly exposed to severe thunderstorms; therefore, all areas of the county are equally exposed to hail which may be produced by such storms. With that in mind, **Figure E.9** shows the location of hail events that have impacted the county between 1955 and 2015.

**FIGURE E.9: HAILSTORM TRACKS IN LAWRENCE COUNTY**



Source: National Weather Service Storm Prediction Center

### HISTORICAL OCCURRENCES

According to the National Climatic Data Center, 96 recorded hailstorm events have affected Lawrence County since 1968.<sup>10</sup> **Table E.17** is a summary of the hail events in Lawrence County. **Table E.18** provides detailed information about each event that occurred in the county. In all, hail occurrences resulted in

<sup>10</sup> These hail events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017. It is likely that additional hail events have affected Lawrence County. As additional local data becomes available, this hazard profile will be amended.

approximately \$445,000 (2017 dollars) in property damages.<sup>11</sup> Hail ranged in diameter from 0.75 inches to 2.75 inches. It should be noted that hail is notorious for causing substantial damage to cars, roofs, and other areas of the built environment that may not be reported to the National Climatic Data Center. Therefore, it is likely that damages are greater than the reported value.

**TABLE E.17: SUMMARY OF HAIL OCCURRENCES IN LAWRENCE COUNTY**

| Location                     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Monticello                   | 22                    | 0/0             | \$149,838              | \$6,811                    |
| New Hebron                   | 4                     | 0/0             | \$0                    | \$0                        |
| Silver Creek                 | 4                     | 0/0             | \$6,201                | \$564                      |
| Unincorporated Area          | 66                    | 0/0             | \$289,261              | \$5,903                    |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>96</b>             | <b>0/0</b>      | <b>\$445,300</b>       | <b>\$13,278</b>            |

Source: National Climatic Data Center

**TABLE E.18: HISTORICAL HAIL OCCURRENCES IN LAWRENCE COUNTY**

| Location          | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|-------------------|------------|-----------|-----------------|------------------|
| <b>Monticello</b> |            |           |                 |                  |
| Monticello        | 3/15/1995  | 1.25 in.  | 0/0             | \$0              |
| Monticello        | 10/27/1995 | 2.75 in.  | 0/0             | \$15,909         |
| MONTICELLO        | 4/6/1996   | 0.75 in.  | 0/0             | \$0              |
| MONTICELLO        | 4/14/1996  | 0.75 in.  | 0/0             | \$0              |
| MONTICELLO        | 4/22/1997  | 0.75 in.  | 0/0             | \$0              |
| MONTICELLO        | 8/11/1998  | 0.88 in.  | 0/0             | \$0              |
| MONTICELLO        | 3/8/1999   | 1.00 in.  | 0/0             | \$0              |
| MONTICELLO        | 3/10/2000  | 0.88 in.  | 0/0             | \$0              |
| MONTICELLO        | 3/10/2000  | 1.25 in.  | 0/0             | \$0              |
| MONTICELLO        | 3/1/2001   | 1.00 in.  | 0/0             | \$6,939          |
| MONTICELLO        | 3/15/2002  | 0.88 in.  | 0/0             | \$0              |
| MONTICELLO        | 7/7/2002   | 0.75 in.  | 0/0             | \$0              |
| MONTICELLO        | 2/21/2003  | 0.75 in.  | 0/0             | \$1,335          |
| MONTICELLO        | 3/22/2005  | 0.88 in.  | 0/0             | \$0              |
| MONTICELLO        | 3/22/2005  | 0.75 in.  | 0/0             | \$0              |
| MONTICELLO        | 4/6/2005   | 1.75 in.  | 0/0             | \$125,655        |
| MONTICELLO        | 12/4/2005  | 0.75 in.  | 0/0             | \$0              |
| MONTICELLO        | 6/10/2008  | 0.88 in.  | 0/0             | \$0              |
| MONTICELLO        | 6/20/2008  | 0.75 in.  | 0/0             | \$0              |
| MONTICELLO        | 6/6/2013   | 1.00 in.  | 0/0             | \$0              |
| MONTICELLO        | 4/29/2014  | 1.00 in.  | 0/0             | \$0              |
| MONTICELLO        | 4/15/2015  | 1.00 in.  | 0/0             | \$0              |

<sup>11</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**ANNEX E: LAWRENCE COUNTY**

| Location                   | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-----------|-----------------|------------------|
| <b>New Hebron</b>          |            |           |                 |                  |
| New Hebron                 | 7/25/1994  | 1.75 in.  | 0/0             | \$0              |
| NEW HEBRON                 | 3/30/1996  | 1.75 in.  | 0/0             | \$0              |
| NEW HEBRON                 | 5/9/2006   | 0.75 in.  | 0/0             | \$0              |
| NEW HEBRON                 | 9/23/2006  | 0.75 in.  | 0/0             | \$0              |
| <b>Silver Creek</b>        |            |           |                 |                  |
| SILVER CREEK               | 3/20/2006  | 0.88 in.  | 0/0             | \$0              |
| SILVER CREEK               | 4/29/2014  | 1.00 in.  | 0/0             | \$0              |
| SILVER CREEK               | 7/22/2014  | 1.00 in.  | 0/0             | \$0              |
| SILVER CREEK               | 4/15/2015  | 1.75 in.  | 0/0             | \$6,201          |
| <b>Unincorporated Area</b> |            |           |                 |                  |
| LAWRENCE CO.               | 4/23/1968  | 1.75 in.  | 0/0             | \$0              |
| LAWRENCE CO.               | 6/29/1972  | 1.50 in.  | 0/0             | \$0              |
| LAWRENCE CO.               | 5/14/1976  | 1.75 in.  | 0/0             | \$0              |
| LAWRENCE CO.               | 5/14/1976  | 0.75 in.  | 0/0             | \$0              |
| LAWRENCE CO.               | 5/2/1984   | 1.75 in.  | 0/0             | \$0              |
| LAWRENCE CO.               | 5/3/1984   | 1.75 in.  | 0/0             | \$0              |
| LAWRENCE CO.               | 5/3/1984   | 1.75 in.  | 0/0             | \$0              |
| LAWRENCE CO.               | 4/5/1985   | 1.75 in.  | 0/0             | \$0              |
| LAWRENCE CO.               | 4/12/1986  | 1.75 in.  | 0/0             | \$0              |
| LAWRENCE CO.               | 4/12/1986  | 0.75 in.  | 0/0             | \$0              |
| LAWRENCE CO.               | 4/18/1988  | 0.75 in.  | 0/0             | \$0              |
| LAWRENCE CO.               | 7/2/1990   | 0.75 in.  | 0/0             | \$0              |
| LAWRENCE CO.               | 3/19/1992  | 1.75 in.  | 0/0             | \$0              |
| Puckett                    | 7/28/1995  | 0.88 in.  | 0/0             | \$0              |
| Forest                     | 10/27/1995 | 0.75 in.  | 0/0             | \$0              |
| JAYESS                     | 8/19/1996  | 0.88 in.  | 0/0             | \$0              |
| JAYESS                     | 1/22/1999  | 1.00 in.  | 0/0             | \$0              |
| TOPEKA                     | 3/18/2000  | 0.75 in.  | 0/0             | \$0              |
| TILTON                     | 4/25/2003  | 1.75 in.  | 0/0             | \$6,652          |
| TOPEKA                     | 4/25/2003  | 1.00 in.  | 0/0             | \$1,330          |
| WANILLA                    | 7/17/2003  | 0.88 in.  | 0/0             | \$1,330          |
| TOPEKA                     | 5/1/2004   | 1.00 in.  | 0/0             | \$0              |
| TOPEKA                     | 3/31/2005  | 1.75 in.  | 0/0             | \$12,650         |
| JAYESS                     | 4/6/2005   | 2.75 in.  | 0/0             | \$18,848         |
| TOPEKA                     | 4/6/2005   | 0.75 in.  | 0/0             | \$0              |
| OMA                        | 4/6/2005   | 1.00 in.  | 0/0             | \$0              |
| SONTAG                     | 4/6/2005   | 1.00 in.  | 0/0             | \$0              |
| OMA                        | 5/8/2006   | 1.50 in.  | 0/0             | \$0              |
| OMA                        | 5/8/2006   | 2.50 in.  | 0/0             | \$120,753        |
| TOPEKA                     | 5/10/2006  | 0.88 in.  | 0/0             | \$0              |
| SONTAG                     | 2/24/2007  | 0.75 in.  | 0/0             | \$0              |
| DIVIDE                     | 7/10/2007  | 1.00 in.  | 0/0             | \$0              |
| JAYESS                     | 1/10/2008  | 0.88 in.  | 0/0             | \$0              |
| TILTON                     | 1/10/2008  | 0.88 in.  | 0/0             | \$0              |
| JAYESS                     | 3/6/2008   | 0.75 in.  | 0/0             | \$0              |

| Location       | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|----------------|------------|-----------|-----------------|------------------|
| JAYESS         | 4/22/2008  | 1.50 in.  | 0/0             | \$22,765         |
| OMA            | 4/26/2008  | 0.75 in.  | 0/0             | \$0              |
| BOURNHAM       | 6/17/2008  | 0.75 in.  | 0/0             | \$0              |
| SONTAG         | 12/9/2008  | 0.75 in.  | 0/0             | \$0              |
| TILTON         | 3/27/2009  | 0.88 in.  | 0/0             | \$0              |
| JAYESS         | 3/27/2009  | 0.75 in.  | 0/0             | \$0              |
| SONTAG         | 3/27/2009  | 0.75 in.  | 0/0             | \$0              |
| BRISTERS STORE | 4/2/2009   | 1.00 in.  | 0/0             | \$0              |
| GRANGE         | 4/13/2009  | 0.88 in.  | 0/0             | \$0              |
| ARM            | 5/5/2009   | 0.75 in.  | 0/0             | \$0              |
| LAMBERTS STORE | 5/12/2009  | 0.75 in.  | 0/0             | \$0              |
| NOLA           | 5/12/2009  | 0.75 in.  | 0/0             | \$0              |
| TRYUS          | 5/16/2009  | 0.88 in.  | 0/0             | \$0              |
| LAMBERTS STORE | 10/15/2009 | 0.75 in.  | 0/0             | \$0              |
| WANILLA        | 4/24/2010  | 1.00 in.  | 0/0             | \$0              |
| HOOKER         | 5/20/2010  | 1.25 in.  | 0/0             | \$0              |
| DIVIDE         | 3/29/2011  | 1.75 in.  | 0/0             | \$0              |
| TRYUS          | 4/21/2011  | 1.00 in.  | 0/0             | \$0              |
| ARM            | 2/10/2013  | 1.00 in.  | 0/0             | \$0              |
| DIVIDE         | 3/18/2013  | 2.75 in.  | 0/0             | \$52,524         |
| OMA            | 6/6/2013   | 1.00 in.  | 0/0             | \$0              |
| SONTAG         | 4/6/2014   | 1.25 in.  | 0/0             | \$0              |
| CAMPBELL       | 7/22/2014  | 1.00 in.  | 0/0             | \$0              |
| ROBINWOOD      | 12/23/2014 | 0.75 in.  | 0/0             | \$0              |
| SONTAG         | 12/23/2014 | 1.00 in.  | 0/0             | \$0              |
| JAYESS         | 4/15/2015  | 1.50 in.  | 0/0             | \$6,201          |
| JAYESS         | 3/17/2016  | 1.50 in.  | 0/0             | \$5,134          |
| OMA            | 3/17/2016  | 1.00 in.  | 0/0             | \$0              |
| ROSELLA        | 3/17/2016  | 1.75 in.  | 0/0             | \$30,805         |
| HOOKER         | 3/17/2016  | 1.75 in.  | 0/0             | \$10,268         |
| TOPEKA         | 4/14/2016  | 1.00 in.  | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

### **PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that the probability of future hail occurrences is highly likely (100 percent annual probability). Since hail is an atmospheric hazard, it is assumed that Lawrence County has equal exposure to this hazard. It can be expected that future hail events will continue to cause minor damage to property and vehicles throughout the county.

## **E.2.10 Hurricane and Tropical Storm**

### **LOCATION AND SPATIAL EXTENT**

Hurricanes and tropical storms threaten the entire Atlantic and Gulf seaboard of the United States. While coastal areas are most directly exposed to the brunt of landfalling storms, their impact is often felt

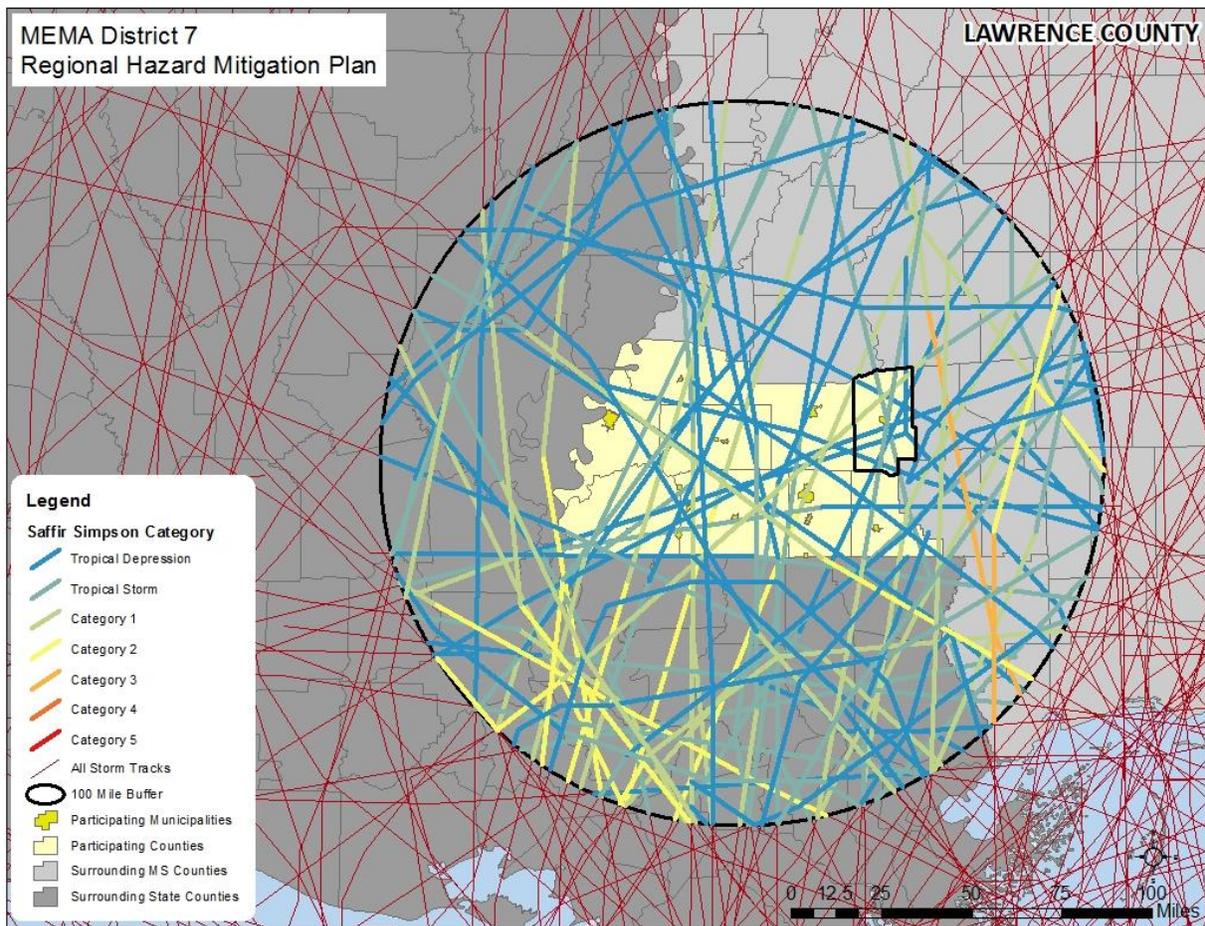
hundreds of miles inland and they can affect Lawrence County. All areas in Lawrence County are equally susceptible to hurricane and tropical storms.

**HISTORICAL OCCURRENCES**

According to the National Hurricane Center’s historical storm track records, 86 hurricane or tropical storm/depression tracks have passed within 100 miles of the MEMA District 7 Region since 1854.<sup>12</sup> This includes: 35 hurricanes, 21 tropical storms, and 30 tropical depressions.

A total of 61 tracks passed directly through the region as shown in **Figure E.10**. **Table E.19** provides the date of occurrence, name (if applicable), maximum wind speed (as recorded within 100 miles of the MEMA District 7 Region) and category of the storm based on the Saffir-Simpson Scale for each event.

**FIGURE E.10: HISTORICAL HURRICANE STORM TRACKS WITHIN 100 MILES OF THE MEMA DISTRICT 7 REGION**



Source: National Oceanic and Atmospheric Administration; National Hurricane Center

<sup>12</sup> These storm track statistics include tropical depressions, tropical storms, and hurricanes. Lesser events may still cause significant local impact in terms of rainfall and high winds.

**TABLE E.19: HISTORICAL STORM TRACKS WITHIN 100 MILES OF THE MEMA 7 DISTRICT REGION (1850–2016)**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/21/1854          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/5/1855           | NOT NAMED  | Not Available              | Tropical Depression |
| 8/11/1856          | UNNAMED    | 85.03                      | Category 2          |
| 10/2/1860          | UNNAMED    | 89.03                      | Category 2          |
| 8/18/1861          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/16/1862          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/30/1863          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/5/1869           | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/12/1872          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/18/1875          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/1/1879           | UNNAMED    | 89.03                      | Category 2          |
| 10/7/1879          | UNNAMED    | 58.6                       | Tropical Storm      |
| 10/7/1879          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/3/1881           | NOT NAMED  | Not Available              | Tropical Depression |
| 6/15/1886          | UNNAMED    | 69.67                      | Category 1          |
| 8/20/1888          | UNNAMED    | 81.90                      | Category 1          |
| 8/27/1890          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/7/1893           | UNNAMED    | 78.78                      | Category 1          |
| 8/8/1894           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/20/1898          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/29/1905          | UNNAMED    | 42.69                      | Tropical Storm      |
| 10/9/1905          | UNNAMED    | 42.69                      | Tropical Storm      |
| 8/2/1908           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/21/1909          | UNNAMED    | 92.89                      | Category 2          |
| 8/12/1911          | UNNAMED    | 50.35                      | Tropical Storm      |
| 6/13/1912          | UNNAMED    | 64.34                      | Category 1          |
| 7/17/1912          | UNNAMED    | 0.87                       | Tropical Depression |
| 9/18/1914          | UNNAMED    | 32.60                      | Tropical Depression |
| 9/29/1915          | UNNAMED    | 95.53                      | Category 2          |
| 7/6/1916           | UNNAMED    | 85.03                      | Category 2          |
| 9/22/1920          | UNNAMED    | 87.29                      | Category 2          |
| 10/16/1923         | UNNAMED    | 78.78                      | Category 1          |
| 8/26/1926          | UNNAMED    | 78.78                      | Category 1          |
| 9/21/1926          | UNNAMED    | 58.60                      | Tropical Storm      |
| 7/15/1931          | UNNAMED    | 50.35                      | Tropical Storm      |
| 9/19/1932          | UNNAMED    | 64.34                      | Category 1          |
| 10/16/1932         | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/26/1933          | UNNAMED    | 17.56                      | Tropical Depression |
| 6/16/1934          | UNNAMED    | 87.29                      | Category 2          |
| 7/27/1936          | UNNAMED    | 42.69                      | Tropical Storm      |
| 8/23/1936          | UNNAMED    | 4.99                       | Tropical Depression |
| 10/3/1937          | UNNAMED    | 32.6                       | Tropical Depression |
| 9/24/1940          | UNNAMED    | 32.6                       | Tropical Depression |
| 9/6/1945           | UNNAMED    | 17.56                      | Tropical Depression |

**ANNEX E: LAWRENCE COUNTY**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/8/1947           | UNNAMED    | 32.6                       | Tropical Depression |
| 9/19/1947          | UNNAMED    | 91.63                      | Category 2          |
| 9/4/1948           | UNNAMED    | 69.67                      | Category 1          |
| 9/4/1949           | UNNAMED    | 58.6                       | Tropical Storm      |
| 8/1/1955           | BRENDA     | 64.34                      | Category 1          |
| 8/27/1955          | UNNAMED    | 50.35                      | Tropical Storm      |
| 6/13/1956          | UNNAMED    | 58.60                      | Tropical Storm      |
| 9/18/1957          | ESTHER     | 64.34                      | Category 1          |
| 5/31/1959          | ARLENE     | 64.34                      | Category 1          |
| 10/4/1964          | HILDA      | 91.63                      | Category 2          |
| 9/10/1965          | BETSY      | 89.03                      | Category 2          |
| 8/18/1969          | CAMILLE    | 99.88                      | Category 3          |
| 8/9/1971           | UNNAMED    | 4.99                       | Tropical Depression |
| 9/1/1971           | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1971           | FERN       | 4.99                       | Tropical Depression |
| 9/16/1971          | EDITH      | 87.29                      | Category 2          |
| 7/29/1975          | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1977           | BABE       | 58.60                      | Tropical Storm      |
| 7/11/1979          | BOB        | 73.83                      | Category 1          |
| 7/20/1980          | UNNAMED    | 0.87                       | Tropical Depression |
| 8/15/1985          | DANNY      | 78.78                      | Category 1          |
| 9/2/1985           | ELENA      | 92.89                      | Category 2          |
| 10/29/1985         | JUAN       | 73.83                      | Category 1          |
| 8/11/1987          | UNNAMED    | 4.99                       | Tropical Depression |
| 8/9/1988           | BERYL      | 50.35                      | Tropical Storm      |
| 9/10/1988          | FLORENCE   | 69.67                      | Category 1          |
| 8/26/1992          | ANDREW     | 85.03                      | Category 2          |
| 9/20/1998          | HERMINE    | 32.60                      | Tropical Depression |
| 6/11/2001          | ALLISON    | 42.69                      | Tropical Storm      |
| 8/5/2002           | BERTHA     | 32.60                      | Tropical Depression |
| 9/26/2002          | ISIDORE    | 64.34                      | Category 1          |
| 10/3/2002          | LILI       | 69.67                      | Category 1          |
| 6/30/2003          | BILL       | 58.60                      | Tropical Storm      |
| 10/10/2004         | MATTHEW    | 17.56                      | Tropical Depression |
| 8/29/2005          | KATRINA    | 94.63                      | Category 3          |
| 9/13/2007          | HUMBERTO   | 32.60                      | Tropical Depression |
| 8/24/2008          | FAY        | 17.56                      | Tropical Depression |
| 9/1/2008           | GUSTAV     | 87.29                      | Category 2          |
| 7/25/2010          | BONNIE     | 0.87                       | Tropical Depression |
| 8/17/2010          | FIVE       | 4.99                       | Tropical Depression |
| 9/4/2011           | LEE        | 32.60                      | Tropical Depression |
| 8/29/2012          | ISAAC      | 69.67                      | Category 1          |

Source: National Hurricane Center

Federal records indicate that five disaster declarations were made in 1969 (Hurricane Camille), 2004 (Hurricane Ivan), 2005 (Hurricane Katrina), 2008 (Hurricane Gustav), and 2012 (Hurricane Isaac) in

Lawrence County.<sup>13</sup> Hurricane and tropical storm events can cause substantial damage in the area due to high winds and flooding.

The National Climatic Data Center also reported four hurricane or tropical storm events in Lawrence County since 2005.<sup>14</sup> These storms are listed in **Table E.20** and are generally representative of storms with the greatest impact on the county over that time period.

**TABLE E.20: HISTORICAL HURRICANE/TROPICAL STORM OCCURRENCES IN LAWRENCE COUNTY**

| Date of Occurrence | Storm Name        | Deaths/Injuries | Property Damage (2017) <sup>15</sup> |
|--------------------|-------------------|-----------------|--------------------------------------|
| 8/29/2005          | Hurricane Katrina | 0/0             | \$124,503,055                        |
| 9/24/2005          | Hurricane Rita    | 0/0             | \$12,300                             |
| 9/1/2008           | Hurricane Gustav  | 0/0             | \$447,062                            |
| 8/29/2012          | Hurricane Isaac   | 0/0             | \$212,280                            |

*Source: National Climatic Data Center*

Flooding and high winds from hurricanes and tropical storms can cause damage throughout the county. Anecdotes are available from NCDC for the major storms that have impacted the county as found below:

**Hurricane Katrina – August 29, 2005**

The damage from Hurricane Katrina was devastating and widespread. Damage occurred across all of the Jackson forecast area which includes 9 parishes in Northeast Louisiana, 2 counties in Southeast Arkansas and about 2/3 of Central and Southern Mississippi. As widespread as the damage was, the more concentrated and most significant damage occurred across Southeast and East-Central Mississippi. For other areas, especially those west of Natchez to Yazoo City to Grenada line, damage to trees and power lines was significant and scattered across the landscape. As you move toward Central Mississippi and along Interstate 55 the damage and impacts increase. This portion of the state sustained widespread damage to trees and power lines.

**Hurricane Gustav – September 1, 2008**

As the center of Gustav crossed much of southern Louisiana, tropical storm force winds extended into southern Mississippi and portions of east central Louisiana. Sustained winds were between 35 and 45 mph with higher gusts between 70 and 100 mph occurred. Tree and power line damage was extensive across these areas which resulted in widespread power outages, some of which lasted for 3 to 5 days. As Gustav slowed across central Louisiana, the outer rainbands continued to rotate across much of southern and central Mississippi. This kept those portions of Mississippi in the region which was favorable for tornadoes. Over 3 days, 26 tornadoes were confirmed, all of which were in the EF0 to EF1 range.

**Hurricane Isaac – August 29, 2012**

Isaac moved very slowly to the north and northwest over the course of August 29th, which made for prolonged impacts. Forward motion of about 5 mph lead to tremendous flooding issues for both Louisiana

<sup>13</sup> A complete listing of historical disaster declarations can be found in Section 4: Hazard Identification.

<sup>14</sup> These hurricane events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported.

<sup>15</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

and portions of Mississippi south of I-20. Around noon on August 29th, Isaac was downgraded to a Tropical Storm, but this was not much relief to the many residents who were being inundated with rain and wind. The worst of the wind was felt generally along and south of an axis from Marion County to Adams County. Numerous trees were down in Adams County, leaving many without power for several days. Eighty percent of the roads were blocked in Franklin County due to downed trees.

### **PROBABILITY OF FUTURE OCCURRENCES**

Given the inland location of the county, Lawrence County will not be susceptible to many of the sub-hazards that are often associated with hurricanes and tropical storms such as storm surge. Although the probability of experiencing major impacts is somewhat less than coastal areas because of this, hurricanes and tropical storms remain a real threat to Lawrence County due to induced events like flooding and high wind. Based on historical evidence, the probability level of future occurrence is likely (between 10 and 100 percent annual probability). Given the regional nature of the hazard, all areas in the county are equally exposed to this hazard. However, when the county is impacted, the damage could be significant, threatening lives and property throughout the planning area.

### **HURRICANE EVACUATIONS**

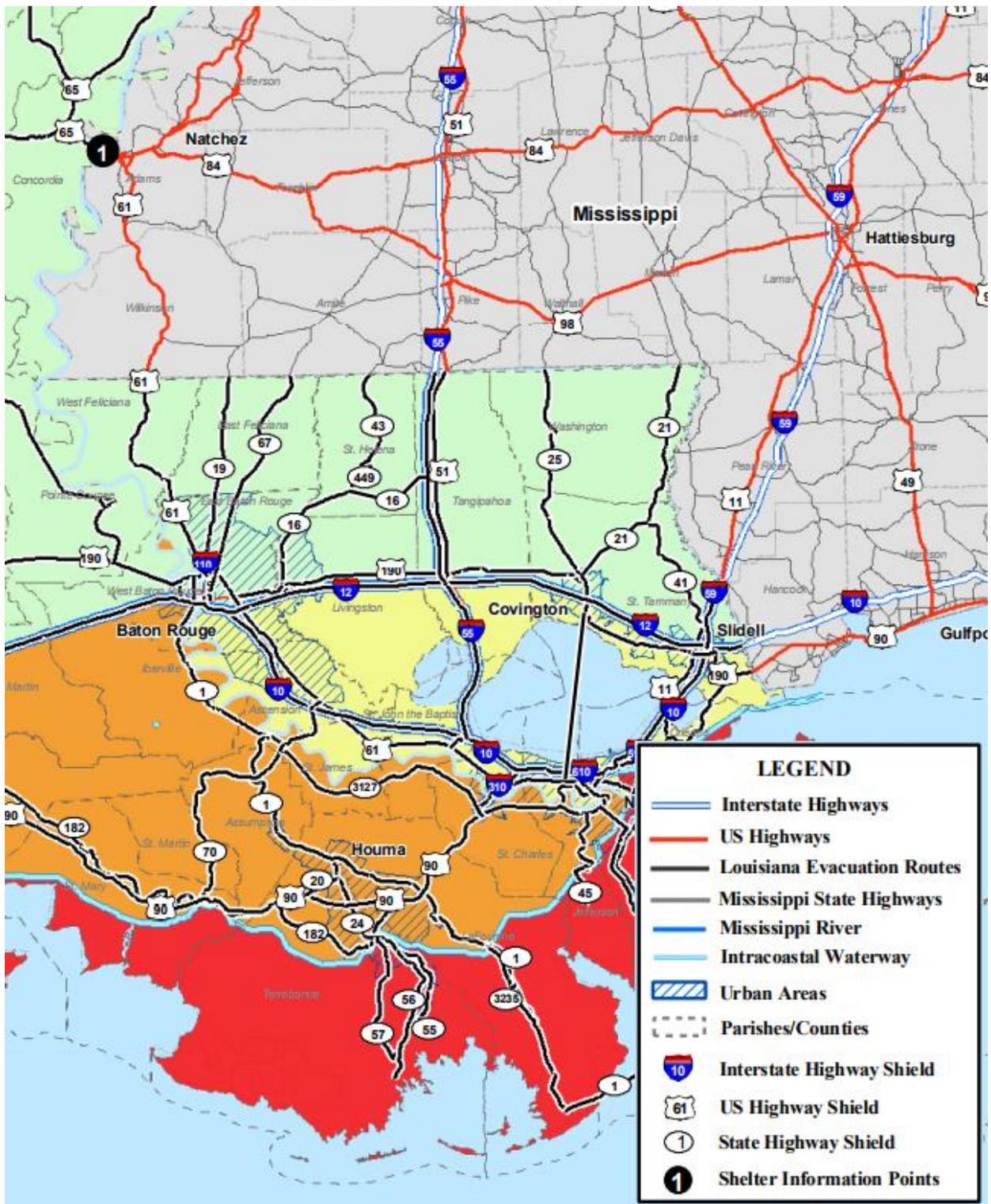
As discussed above, the MEMA District 7 Region has been directly impacted by a number of hurricane and tropical storm events historically. However, it should be noted that the region is also susceptible to indirect effects from hurricanes and tropical storms, particularly in the form of evacuations from coastal counties. The counties within MEMA District 7 are located far enough inland that they are often the primary recipients of evacuees from counties that will be (or have been) impacted by major storm events.

For example, during Hurricane Katrina in 2005, thousands of evacuees made their way to counties in southwest Mississippi to take temporary refuge from the storm. Due to the severe and devastating effects of the storm, temporary sheltering within these counties was extended much longer than originally anticipated and in some cases, the evacuees ended up staying for weeks or months. This additional population caused a major strain on resources within these relatively rural counties, as local communities with limited resources had an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people.

Caring for all of these evacuees was especially challenging for counties in the MEMA District 7 Region because most had been impacted themselves by the storm and were attempting to help their own citizens recover from the storm. Undoubtedly, recovering from a major disaster while simultaneously attempting to help evacuees from surrounding counties poses a number of difficulties for emergency management personnel and other local officials.

Based on Hurricane Katrina and other major hurricane events that have impacted the Gulf Coast in the past, it is likely that many of the MEMA District 7 counties will be receiver counties when it comes to evacuees. Many of these evacuees will likely come from locations in Louisiana, including New Orleans. Indeed, the State of Louisiana evacuation plan indicates that one of the primary evacuation routes from the City of New Orleans will direct evacuees north along Interstate 55, sending people through Pike County and Lincoln County (**Figure E.11**). Depending on the severity of the event, officials in Louisiana may even change Interstate 55 over to a contraflow traffic pattern to enable quicker evacuations.

FIGURE E.11: STATE OF LOUISIANA EVACUATION ROUTES



Source: State of Louisiana Evacuation Plan

As a result of the influx of evacuees during storm events, it is critical for local officials in MEMA District 7 to prepare for evacuations during hurricanes and other tropical storms, even if the counties themselves

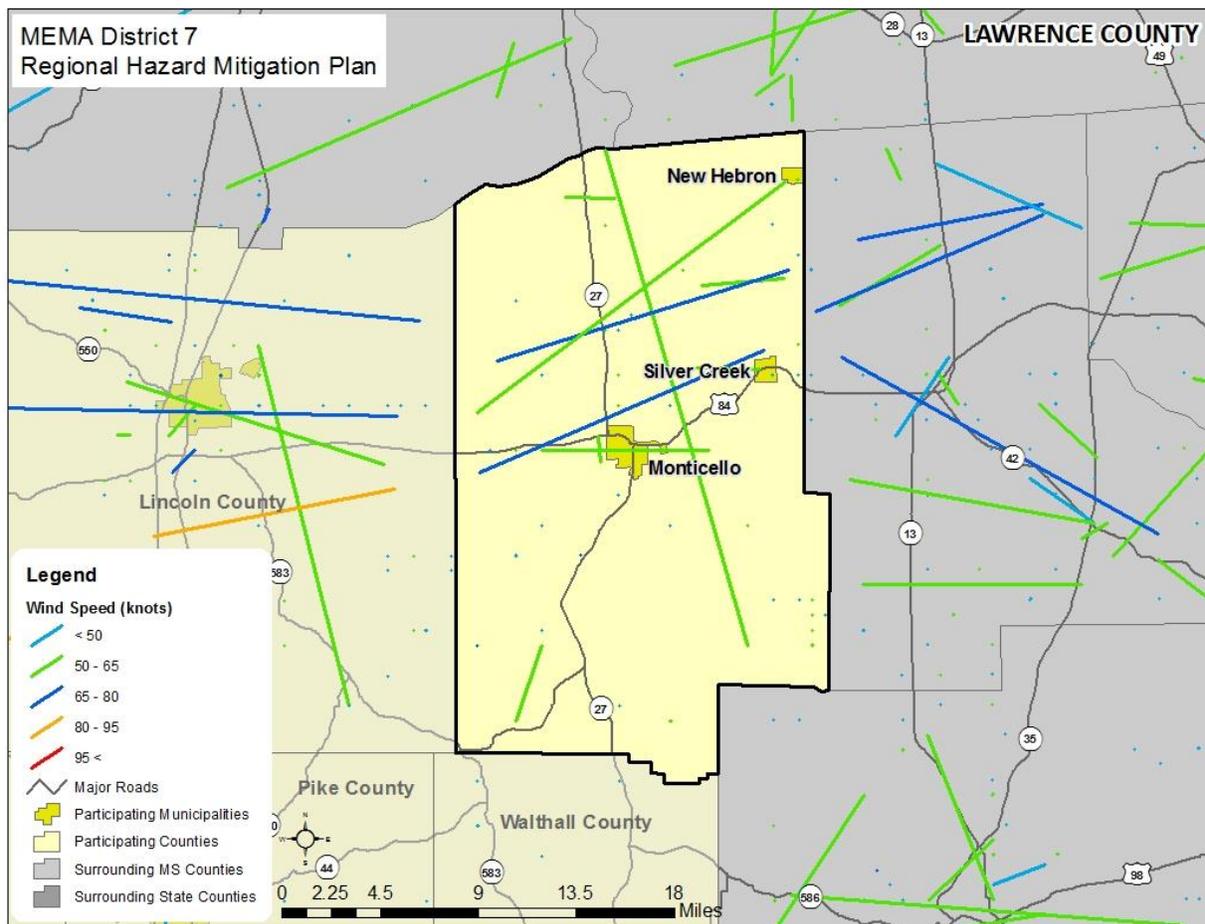
may not be directly impacted by the storm. As in past storms, it is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future storm events.

### E.2.11 Severe Thunderstorm/High Wind

#### LOCATION AND SPATIAL EXTENT

A thunderstorm event is an atmospheric hazard, and thus has no geographic boundaries. It is typically a widespread event that can occur in all regions of the United States. However, thunderstorms are most common in the central and southern states because atmospheric conditions in those regions are favorable for generating these powerful storms. It is assumed that Lawrence County has uniform exposure to an event and the spatial extent of an impact could be large. With that in mind, **Figure E.12** shows the location of wind events that have impacted the county between 1955 and 2015.

**FIGURE E.12: SEVERE THUNDERSTORM TRACKS IN LAWRENCE COUNTY**



Source: National Weather Service Storm Prediction Center

**HISTORICAL OCCURRENCES**

Severe storms were at least partially responsible for six disaster declarations in Lawrence County in 1979, 1983, 1990, 2003, 2009, and 2016.<sup>16</sup> According to NCDC, there have been 189 reported thunderstorm and high wind events since 1957 in Lawrence County.<sup>17</sup> These events caused over \$2.2 million (2017 dollars) in damages.<sup>18</sup> **Table E.21** summarizes this information. **Table E.22** presents detailed thunderstorm and high wind event reports including date, magnitude, and associated damages for each event.

**TABLE E.21: SUMMARY OF THUNDERSTORM/HIGH WIND OCCURRENCES IN LAWRENCE COUNTY**

| Location                     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Monticello                   | 46                    | 0/0             | \$780,627              | \$33,940                   |
| New Hebron                   | 20                    | 0/0             | \$144,208              | \$10,301                   |
| Silver Creek                 | 8                     | 0/0             | \$46,302               | \$3,087                    |
| Unincorporated Area          | 115                   | 0/0             | \$1,233,441            | \$20,557                   |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>189</b>            | <b>0/0</b>      | <b>\$2,204,578</b>     | <b>\$67,885</b>            |

Source: National Climatic Data Center

**TABLE E.22: HISTORICAL THUNDERSTORM/HIGH WIND OCCURRENCES IN LAWRENCE COUNTY**

| Location          | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|-------------------|------------|-------------------|------------|-----------------|------------------|
| <b>Monticello</b> |            |                   |            |                 |                  |
| Monticello        | 6/10/1994  | Thunderstorm Wind | 50 kts.    | 0/0             | \$0              |
| Monticello        | 11/27/1994 | Thunderstorm Wind | 0 kts.     | 0/0             | \$6,534          |
| Monticello        | 3/7/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$3,230          |
| Monticello        | 7/28/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$3,207          |
| Monticello        | 11/11/1995 | Thunderstorm Wind | 0 kts.     | 0/0             | \$4,776          |
| MONTICELLO        | 2/10/1998  | Thunderstorm Wind | --         | 0/0             | \$15,103         |
| MONTICELLO        | 6/5/1998   | Thunderstorm Wind | --         | 0/0             | \$3,000          |
| MONTICELLO        | 8/9/1999   | Thunderstorm Wind | --         | 0/0             | \$7,317          |
| MONTICELLO        | 6/17/2000  | Thunderstorm Wind | --         | 0/0             | \$5,673          |
| MONTICELLO        | 7/17/2000  | Thunderstorm Wind | --         | 0/0             | \$28,301         |
| MONTICELLO        | 8/31/2000  | Thunderstorm Wind | --         | 0/0             | \$2,830          |
| MONTICELLO        | 12/13/2000 | Thunderstorm Wind | --         | 0/0             | \$2,811          |
| MONTICELLO        | 1/29/2001  | Thunderstorm Wind | --         | 0/0             | \$6,982          |
| MONTICELLO        | 6/27/2001  | Thunderstorm Wind | --         | 0/0             | \$1,374          |
| MONTICELLO        | 10/13/2001 | Thunderstorm Wind | --         | 0/0             | \$1,376          |
| MONTICELLO        | 5/17/2002  | Thunderstorm Wind | --         | 0/0             | \$1,360          |

<sup>16</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>17</sup> These thunderstorm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017 and these high wind events are only inclusive of those reported by NCDC from 1996 through February 2017. It is likely that additional thunderstorm and high wind events have occurred in Lawrence County. As additional local data becomes available, this hazard profile will be amended.

<sup>18</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**ANNEX E: LAWRENCE COUNTY**

| Location          | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|-------------------|------------|-------------------|------------|-----------------|------------------|
| MONTICELLO        | 7/7/2002   | Thunderstorm Wind | 50 kts. ES | 0/0             | \$1,358          |
| MONTICELLO        | 8/25/2002  | Thunderstorm Wind | --         | 0/0             | \$1,353          |
| MONTICELLO        | 2/21/2003  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,671          |
| MONTICELLO        | 6/2/2003   | Thunderstorm Wind | 55 kts. ES | 0/0             | \$33,278         |
| MONTICELLO        | 6/21/2004  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$2,578          |
| MONTICELLO        | 6/27/2004  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| MONTICELLO        | 6/28/2004  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$2,578          |
| MONTICELLO        | 1/7/2005   | Thunderstorm Wind | 75 kts. EG | 0/0             | \$256,449        |
| MONTICELLO        | 3/26/2005  | Thunderstorm Wind | 62 kts. EG | 0/0             | \$101,200        |
| MONTICELLO        | 5/29/2005  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$31,446         |
| MONTICELLO        | 6/5/2005   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$6,286          |
| MONTICELLO        | 7/12/2007  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$5,870          |
| MONTICELLO        | 6/10/2008  | Thunderstorm Wind | 65 kts. EG | 0/0             | \$22,350         |
| MONTICELLO        | 6/15/2010  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$7,853          |
| MONTICELLO        | 3/8/2011   | Thunderstorm Wind | 52 kts. EG | 0/0             | \$0              |
| MONTICELLO        | 4/4/2011   | Thunderstorm Wind | 60 kts. EG | 0/0             | \$38,053         |
| MONTICELLO        | 3/21/2012  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$15,989         |
| MONTICELLO        | 5/31/2012  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$31,920         |
| MONTICELLO        | 6/11/2012  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,598          |
| MONTICELLO        | 7/4/2012   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$16,010         |
| MONTICELLO        | 12/20/2012 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$10,650         |
| MONTICELLO        | 6/6/2013   | Thunderstorm Wind | 52 kts. EG | 0/0             | \$10,472         |
| MONTICELLO        | 4/8/2014   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$8,251          |
| MONTICELLO        | 10/13/2014 | Thunderstorm Wind | 52 kts. EG | 0/0             | \$0              |
| MONTICELLO        | 5/27/2015  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$8,226          |
| MONTICELLO        | 8/8/2015   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$9,234          |
| MONTICELLO        | 8/10/2015  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$7,182          |
| MONTICELLO        | 11/18/2015 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,061          |
| MONTICELLO        | 3/31/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,027          |
| MONTICELLO        | 7/13/2016  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$50,810         |
| <b>New Hebron</b> |            |                   |            |                 |                  |
| NEW HEBRON        | 4/6/2003   | Thunderstorm Wind | 50 kts. ES | 0/0             | \$13,304         |
| NEW HEBRON        | 8/20/2003  | Thunderstorm Wind | 50 kts. ES | 0/0             | \$1,325          |
| NEW HEBRON        | 11/27/2003 | Thunderstorm Wind | 53 kts. EG | 0/0             | \$6,627          |
| NEW HEBRON        | 11/27/2003 | Thunderstorm Wind | 53 kts. EG | 0/0             | \$6,627          |
| NEW HEBRON        | 2/5/2004   | Thunderstorm Wind | 53 kts. EG | 0/0             | \$3,940          |
| NEW HEBRON        | 6/5/2005   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| NEW HEBRON        | 3/9/2006   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| NEW HEBRON        | 5/8/2006   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| NEW HEBRON        | 7/12/2007  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$7,043          |
| NEW HEBRON        | 2/12/2008  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$8,086          |
| NEW HEBRON        | 2/17/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$11,551         |
| NEW HEBRON        | 3/3/2008   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$22,903         |
| NEW HEBRON        | 4/26/2008  | Thunderstorm Wind | 63 kts. EG | 0/0             | \$17,074         |
| NEW HEBRON        | 12/9/2008  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| NEW HEBRON        | 8/22/2010  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |

**ANNEX E: LAWRENCE COUNTY**

| Location                   | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-------------------|------------|-----------------|------------------|
| NEW HEBRON                 | 3/14/2011  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$8,754          |
| NEW HEBRON                 | 8/21/2014  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,056          |
| NEW HEBRON                 | 8/21/2014  | Thunderstorm Wind | 58 kts. EG | 0/0             | \$17,477         |
| NEW HEBRON                 | 8/8/2015   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$10,260         |
| NEW HEBRON                 | 8/10/2015  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$7,182          |
| <b>Silver Creek</b>        |            |                   |            |                 |                  |
| SILVER CREEK               | 12/24/2002 | Thunderstorm Wind | 60 kts. EG | 0/0             | \$4,055          |
| SILVER CREEK               | 2/12/2008  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$8,086          |
| SILVER CREEK               | 8/15/2010  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| SILVER CREEK               | 6/13/2011  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,416          |
| SILVER CREEK               | 4/15/2015  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,034          |
| SILVER CREEK               | 8/8/2015   | Thunderstorm Wind | 54 kts. EG | 0/0             | \$15,391         |
| SILVER CREEK               | 8/10/2015  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,052          |
| SILVER CREEK               | 3/17/2016  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$10,268         |
| <b>Unincorporated Area</b> |            |                   |            |                 |                  |
| LAWRENCE CO.               | 11/17/1957 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 5/21/1964  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 2/24/1965  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 12/2/1967  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 4/23/1968  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 7/2/1969   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 7/4/1970   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 4/21/1972  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 4/21/1972  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 4/20/1982  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 6/4/1983   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 11/27/1983 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 10/14/1984 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 10/14/1984 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 9/18/1987  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 2/15/1990  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 3/2/1991   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 4/14/1991  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 7/3/1991   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 12/2/1991  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 4/20/1992  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 4/20/1992  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 6/29/1992  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LAWRENCE CO.               | 11/21/1992 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| Oak Vale                   | 3/7/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$3,230          |
| Oma                        | 5/8/1995   | Thunderstorm Wind | 70 kts.    | 0/0             | \$0              |
| LAWRENCE CO.               | 5/8/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$3,213          |
| TILTON                     | 4/27/1997  | Thunderstorm Wind | --         | 0/0             | \$3,053          |
| SONTAG                     | 2/26/1998  | Thunderstorm Wind | --         | 0/0             | \$3,021          |
| COUNTYWIDE                 | 6/5/1998   | Thunderstorm Wind | --         | 0/0             | \$15,001         |
| LAWRENCE (ZONE)            | 9/27/1998  | High Wind         | --         | 0/0             | \$22,420         |

**ANNEX E: LAWRENCE COUNTY**

| Location        | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|-----------------|------------|-------------------|------------|-----------------|------------------|
| COUNTYWIDE      | 4/2/2000   | Thunderstorm Wind | --         | 0/0             | \$2,855          |
| COUNTYWIDE      | 4/3/2000   | Thunderstorm Wind | --         | 0/0             | \$71,373         |
| JAYESS          | 7/20/2000  | Thunderstorm Wind | --         | 0/0             | \$4,245          |
| ARM             | 7/31/2000  | Thunderstorm Wind | --         | 0/0             | \$2,830          |
| COUNTYWIDE      | 8/10/2000  | Thunderstorm Wind | --         | 0/0             | \$4,245          |
| TOPEKA          | 8/26/2000  | Thunderstorm Wind | --         | 0/0             | \$1,415          |
| TOPEKA          | 11/9/2000  | Thunderstorm Wind | --         | 0/0             | \$1,405          |
| LAWRENCE (ZONE) | 12/16/2000 | High Wind         | --         | 0/0             | \$4,216          |
| COUNTYWIDE      | 3/12/2001  | Thunderstorm Wind | --         | 0/0             | \$16,653         |
| COUNTYWIDE      | 11/29/2001 | Thunderstorm Wind | --         | 0/0             | \$1,378          |
| COUNTYWIDE      | 4/8/2002   | Thunderstorm Wind | --         | 0/0             | \$1,360          |
| COUNTYWIDE      | 6/20/2002  | Thunderstorm Wind | --         | 0/0             | \$2,718          |
| COUNTYWIDE      | 7/21/2002  | Thunderstorm Wind | --         | 0/0             | \$2,037          |
| COUNTYWIDE      | 7/21/2002  | Thunderstorm Wind | --         | 0/0             | \$2,037          |
| TILTON          | 6/6/2004   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| COUNTYWIDE      | 6/27/2004  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$6,445          |
| TOPEKA          | 3/22/2005  | Thunderstorm Wind | 73 kts. EG | 0/0             | \$126,500        |
| WANILLA         | 3/22/2005  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$1,265          |
| OMA             | 3/26/2005  | Thunderstorm Wind | 57 kts. EG | 0/0             | \$2,530          |
| TOPEKA          | 4/6/2005   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$2,513          |
| JAYESS          | 4/6/2005   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$6,283          |
| TILTON          | 8/12/2005  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$12,450         |
| TILTON          | 8/21/2005  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$6,225          |
| OMA             | 3/20/2006  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| ARM             | 5/8/2006   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| OMA             | 5/28/2006  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$1,208          |
| OMA             | 7/18/2006  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| TOPEKA          | 7/19/2006  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| TILTON          | 8/21/2006  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| TILTON          | 1/4/2007   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| WANILLA         | 2/24/2007  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$360            |
| TOPEKA          | 5/3/2007   | Thunderstorm Wind | 53 kts. EG | 0/0             | \$1,176          |
| OMA             | 6/18/2007  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$1,174          |
| OMA             | 6/19/2007  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$82,153         |
| TILTON          | 7/10/2007  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| TILTON          | 7/13/2007  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| ARM             | 12/20/2007 | Thunderstorm Wind | 55 kts. EG | 0/0             | \$13,970         |
| DIVIDE          | 1/29/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$11,584         |
| HOOKER          | 2/21/2008  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$0              |
| TILTON          | 4/26/2008  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| HOOKER          | 4/26/2008  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| TILTON          | 5/3/2008   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| LAWRENCE (ZONE) | 8/2/2008   | Strong Wind       | 48 kts. EG | 0/0             | \$111,611        |
| LAWRENCE (ZONE) | 8/2/2008   | Strong Wind       | 48 kts. EG | 0/0             | \$2,232          |
| BOURNHAM        | 8/12/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$55,805         |
| SONTAG          | 12/9/2008  | Thunderstorm Wind | 57 kts. EG | 0/0             | \$0              |

**ANNEX E: LAWRENCE COUNTY**

| Location        | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|-----------------|------------|-------------------|------------|-----------------|------------------|
| LAMBERTS STORE  | 3/26/2009  | Thunderstorm Wind | 74 kts. EG | 0/0             | \$114,957        |
| ARM             | 3/28/2009  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| NOLA            | 4/12/2009  | Thunderstorm Wind | 70 kts. EG | 0/0             | \$57,335         |
| OMA             | 4/12/2009  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$1,147          |
| NOLA            | 5/3/2009   | Thunderstorm Wind | 65 kts. EG | 0/0             | \$57,170         |
| WANILLA         | 5/5/2009   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| WANILLA         | 5/24/2010  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| DIVIDE          | 6/5/2010   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| DIVIDE          | 6/15/2010  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$4,487          |
| HOOKER          | 6/19/2010  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$3,366          |
| ROSELLA         | 6/19/2010  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| DIVIDE          | 7/16/2010  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$5,608          |
| JAYESS          | 8/15/2010  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| ROSELLA         | 12/11/2010 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,231          |
| VERNA           | 2/1/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$16,573         |
| TILTON          | 6/7/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,250          |
| TOPEKA          | 6/12/2011  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$32,499         |
| OMA             | 6/6/2013   | Thunderstorm Wind | 52 kts. EG | 0/0             | \$0              |
| LAMBERTS STORE  | 6/13/2014  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$25,648         |
| HOOKER          | 7/22/2014  | Thunderstorm Wind | 54 kts. EG | 0/0             | \$0              |
| HOOKER          | 7/22/2014  | Thunderstorm Wind | 54 kts. EG | 0/0             | \$2,053          |
| TOPEKA          | 10/2/2014  | Thunderstorm Wind | 39 kts. EG | 0/0             | \$206            |
| GRANGE          | 12/23/2014 | Thunderstorm Wind | 51 kts. EG | 0/0             | \$2,083          |
| TOPEKA          | 5/30/2015  | Thunderstorm Wind | 48 kts. EG | 0/0             | \$8,226          |
| CAMPBELL        | 6/24/2015  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,123          |
| ROSELLA         | 6/24/2015  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,074          |
| TILTON          | 8/8/2015   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$9,234          |
| LAWRENCE (ZONE) | 11/17/2015 | Strong Wind       | 42 kts. EG | 0/0             | \$6,182          |
| JAYESS          | 12/28/2015 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,169          |
| HOOKER          | 3/17/2016  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$15,403         |
| TOPEKA          | 3/17/2016  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$66,745         |
| JAYESS          | 3/17/2016  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$102,684        |
| WANILLA         | 3/31/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,027          |
| TOPEKA          | 4/14/2016  | Thunderstorm Wind | 54 kts. EG | 0/0             | \$12,264         |
| ROSELLA         | 8/6/2016   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$7,107          |
| ARM             | 8/11/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$8,122          |
| BRISTERS STORE  | 1/2/2017   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$20,139         |
| NOLA            | 1/2/2017   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$20,139         |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

†E = estimated; EG = estimated gust; ES = estimated sustained; M = measured; MG = measured gust; MS = measured sustained

Source: National Climatic Data Center

### ***PROBABILITY OF FUTURE OCCURRENCES***

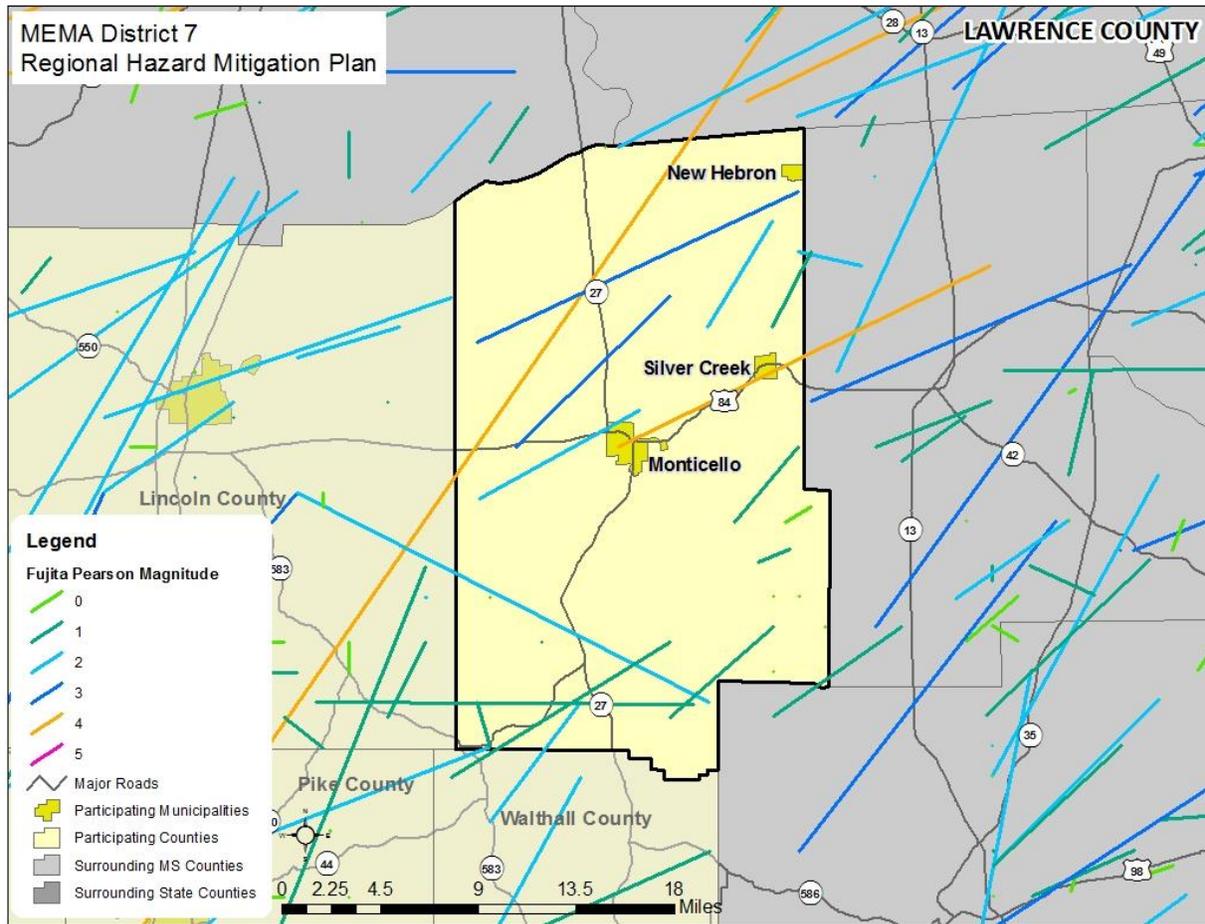
Given the high number of previous events, it is certain that thunderstorm events, including straight-line wind events, will occur in the future. This results in a probability level of highly likely (100 percent annual probability) for the entire county.

### **E.2.12 Tornado**

#### ***LOCATION AND SPATIAL EXTENT***

Tornadoes occur throughout the state of Mississippi, and thus in Lawrence County. Tornadoes typically impact a relatively small area, but damage may be extensive. Event locations are completely random and it is not possible to predict specific areas that are more susceptible to tornado strikes over time. Therefore, it is assumed that Lawrence County is uniformly exposed to this hazard. With that in mind, **Figure E.13** shows tornado track data for many of the major tornado events that have impacted the county between 1950 and 2015. While no definitive pattern emerges from this data, some areas that have been impacted in the past may be potentially more susceptible in the future.

FIGURE E.13: HISTORICAL TORNADO TRACKS IN LAWRENCE COUNTY



Source: National Weather Service Storm Prediction Center

### HISTORICAL OCCURRENCES

Tornadoes were at least partially responsible for six disaster declarations in Lawrence County in 1973, 1979, 1983, 1990, 2003, and 2009.<sup>19</sup> According to the National Climatic Data Center, there have been a total of 26 recorded tornado events in Lawrence County since 1968 (**Table E.23**), resulting in over \$554.5 million (2017 dollars) in property damages.<sup>20 21</sup> In addition, 4 fatalities and 52 injuries were reported. The magnitude of these tornadoes ranges from F0 to F4, although an F5 event is possible. Detailed information on historic tornado events can be found in **Table E.24**.

<sup>19</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>20</sup> These tornado events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1950 through February 2017. It is likely that additional tornadoes have occurred in Lawrence County. As additional local data becomes available, this hazard profile will be amended.

<sup>21</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE E.23: SUMMARY OF TORNADO OCCURRENCES IN LAWRENCE COUNTY**

| Location                     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Monticello                   | 1                     | 0/0             | \$83,627               | \$3,636                    |
| New Hebron                   | 0                     | 0/0             | \$0                    | \$0                        |
| Silver Creek                 | 1                     | 0/0             | \$100,524              | \$8,377                    |
| Unincorporated Area          | 24                    | 4/52            | \$554,347,015          | \$11,313,204               |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>26</b>             | <b>4/52</b>     | <b>\$554,531,166</b>   | <b>\$11,325,217</b>        |

Source: National Climatic Data Center

**TABLE E.24: HISTORICAL TORNADO IMPACTS IN LAWRENCE COUNTY**

| Location                   | Date       | Magnitude | Deaths/Injuries | Property Damage* | Details  |
|----------------------------|------------|-----------|-----------------|------------------|--|
| <b>Monticello</b>          |            |           |                 |                  |  |
| Monticello                 | 1/27/1994  | F0        | 0/0             | \$83,627         | Two mobile homes were damaged and one barn destroyed. Several trees were blown down.   |
| <b>New Hebron</b>          |            |           |                 |                  |  |
| <i>None reported</i>       | --         | --        | --              | --               | --   |
| <b>Silver Creek</b>        |            |           |                 |                  |  |
| SILVER CREEK               | 4/6/2005   | F1        | 0/0             | \$100,524        | This tornado touched down just N of Silver Creek and demolished a mobile home. Additionally, numerous large trees were uprooted along the 3.5 mile path. |
| <b>Unincorporated Area</b> |            |           |                 |                  |  |
| LAWRENCE CO.               | 11/17/1968 | F2        | 0/0             | \$0              | --   |
| LAWRENCE CO.               | 11/17/1968 | F2        | 0/0             | \$0              | --   |
| LAWRENCE CO.               | 4/13/1969  | F2        | 0/0             | \$168,405        | --   |
| LAWRENCE CO.               | 4/13/1969  | --        | 0/0             | \$168,405        | --   |
| LAWRENCE CO.               | 9/23/1970  | --        | 0/0             | \$0              | --   |
| LAWRENCE CO.               | 2/21/1974  | F3        | 0/13            | \$1,295,148      | --   |
| LAWRENCE CO.               | 1/10/1975  | F4        | 0/0             | \$1,173,340      | --   |
| LAWRENCE CO.               | 4/18/1978  | F4        | 4/31            | \$956,667        | --   |
| LAWRENCE CO.               | 4/12/1986  | F2        | 0/0             | \$5,629,006      | --   |
| LAWRENCE CO.               | 4/12/1986  | F1        | 0/0             | \$562,901        | --   |
| LAWRENCE CO.               | 8/26/1992  | F1        | 0/1             | \$43,386         | --   |

**ANNEX E: LAWRENCE COUNTY**

| Location          | Date       | Magnitude | Deaths/<br>Injuries | Property<br>Damage* | Details   |
|-------------------|------------|-----------|---------------------|---------------------|---|
| LAWRENCE<br>CO.   | 8/26/1992  | F0        | 0/0                 | \$434               | --  |
| LAWRENCE<br>CO.   | 8/26/1992  | F0        | 0/0                 | \$4,339             | --  |
| TOPEKA            | 1/22/1999  | F0        | 0/0                 | \$7,441             | Several trees were blown down by this tornado.  |
| SONTAG            | 2/27/1999  | F3        | 0/0                 | \$297,294           | This strong tornado moved across Northern Lawrence county through mainly rural areas knocking down many trees and power lines. Many homes received damage, particularly near the towns of Sontag and New Hebron. Several homes received major damage.   |
| OMA               | 2/27/1999  | F0        | 0/0                 | \$37,162            | This weak tornado blew down several trees. One tree fell on a house trapping several people inside.   |
| JAYESS            | 5/1/2004   | F1        | 0/0                 | \$25,862            | This tornado moved out of Walthall county 1 mile southeast of Jayess and continued to track to the northeast before dissipating 6 miles east of Topeka. As the tornado moved northeast it snapped and uprooted dozens of trees.   |
| OMA               | 11/24/2004 | F1        | 0/0                 | \$38,407            | This weak tornado touched down just to the east of Oma and moved northeast for 4 miles as it moved into southwest Simpson county. A few hundred trees were uprooted and snapped as the tornado moved from Lawrence county into Simpson county.  |
| TILTON            | 11/24/2004 | F1        | 0/0                 | \$32,006            | This weak tornado touched down 5 miles southwest of the Tilton community along Price Road and tracked northeast for 7 miles before dissipating near River Road on the east side of the Pearl River. A few hundred trees were uprooted and snapped along the path.   |
| BOURNHAM          | 12/9/2008  | EF0       | 0/0                 | \$0                 | This brief tornado snapped and uprooted several trees along a short path in the Arm Community. Maximum winds were around 80 mph.  |
| BRISTERS<br>STORE | 4/4/2011   | EF1       | 0/0                 | \$543,613,777       | The tornado started by downing trees along Cole Drive west of the Ruth community. The tornado quickly intensified and produced its first area of damage with winds estimated near 100 mph in Ruth. The awning of a gas station was destroyed, the volunteer fire department building had the back wall blown out, a church had the steeple blown off along with extensive shingle damage, and a number of homes suffered roof damage due to trees falling on them or due to direct minor roof damage. The tornado continued to move east across southeast Lincoln county and into southwest Lawrence county to the northwest and north of Jayess, causing tree damage. A few trees here fell on homes, and one fell on an RV vehicle, completely destroying it. After |

| Location          | Date       | Magnitude | Deaths/<br>Injuries | Property<br>Damage* | Details   |
|-------------------|------------|-----------|---------------------|---------------------|---|
|                   |            |           |                     |                     | <p>appearing to weaken northeast of Jayess, the tornado restrengthened after moving east of Mississippi Highway 27. The tornado again caused damaging indicative of winds of 100 mph along Tom Sistrunk Road. Numerous large trees were snapped and uprooted, and several homes had minor to moderate roof damage. The tornado then weakened as it moved east, dissipating just before reaching the border between Lawrence and Marion counties. Maximum winds were around 100 mph. Total path length across Lincoln and Lawrence Counties was 17 miles.</p> <p>While the damage pattern associated with this tornado had clear tornadic indications with a convergent damage pattern, there was also damage indicative of straight line winds to the west and north of the tornado, primarily from west to north of Ruth. A number of trees were downed in this area, some on power lines.</p>   |
| LAMBERTS<br>STORE | 12/25/2012 | EF2       | 0/7                 | \$212,999           | <p>The tornado touched down in a wooded area near Trace Road producing mostly tree and minor roof damage to the homes in the area. As it moved to the northeast, the width increased to near 0.25 miles near Ford-Calcote and James Fox Roads producing significant tree damage. As it continued northeast crossing Conley Peavey Road, a carport awning was removed and part of a barn was destroyed, along with more heavy tree damage. As it approached Highway 84, the width decreased to around 1/10 if a mile and the tornado increased in intensity. It was at this time that the tornado was most intense (EF-2) resulting in several mobile homes and travel trailers being lofted and ultimately destroyed. A small business had substantial roof damage with two walls being blown out. An abandoned brick gas station had its roof removed and windows blown out, with the awning support poles bent and awning roof blown away. As the tornado approached Highway 27 northwest of Monticello, more tree damage was noted while it collapsed a patio roof on a house on Friendship Lane just north of Monticello. Minor tree damage occurred along the remainder of the track. Maximum winds were estimated at 120 mph.</p> |
| ARM               | 2/10/2013  | EF1       | 0/0                 | \$78,992            | <p>This tornado started in a wooded area between River Road and GW Smith Road. As it moved east northeast, it snapped and uprooted a couple dozen hardwood and softwood trees along GW Smith Road. It also downed a couple power lines in this area.</p>  |

| Location | Date     | Magnitude | Deaths/<br>Injuries | Property<br>Damage* | Details   |
|----------|----------|-----------|---------------------|---------------------|---|
|          |          |           |                     |                     | Several hay barns were damaged with tin thrown along the path. A well defined convergent pattern was noted with the tree damage. Also along this road, a mobile home had the front porch removed, and three other homes sustained minor roof damage. The tornado dissipated as it crossed highway 43. Maximum wind speeds were estimated at 95 mph. |
| TILTON   | 1/3/2015 | EFO       | 0/0                 | \$1,046             | A brief tornado touchdown occurred according to multiple spotters near the Oak Vale Community. No notable damage was identified. Estimated maximum winds were 70 mph.   |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

**PROBABILITY OF FUTURE OCCURRENCES**

According to historical information, tornado events pose a significant threat to Lawrence County. The probability of future tornado occurrences affecting Lawrence County is likely (between 10 and 100 percent annual probability).

**E.2.13 Winter Storm and Freeze**

**LOCATION AND SPATIAL EXTENT**

Nearly the entire continental United States is susceptible to winter storm and freeze events. Some ice and winter storms may be large enough to affect several states, while others might affect limited, localized areas. The degree of exposure typically depends on the normal expected severity of local winter weather. Lawrence County is not accustomed to severe winter weather conditions and seldom receives severe winter weather, even during the winter months. Events tend to be mild in nature; however, this creates a situation where even relatively small accumulations of snow, ice, or other wintry precipitation can lead to losses and damage due to the fact that these events are not commonplace. Given the atmospheric nature of the hazard, the entire county has uniform exposure to a winter storm.

**HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, there have been a total of eight recorded winter storm events in Lawrence County since 2008 (Table E.25).<sup>22</sup> These events resulted in over \$1.3 million (2017 dollars) in damages.<sup>23</sup> Detailed information on the recorded winter storm events can be found in Table E.26.

<sup>22</sup> These ice and winter storm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional winter storm conditions have affected Lawrence County.

<sup>23</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE E.25: SUMMARY OF WINTER STORM EVENTS IN LAWRENCE COUNTY**

| Location        | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-----------------|-----------------------|-----------------|------------------------|----------------------------|
| Lawrence County | 8                     | 0/0             | \$1,323,156            | \$147,017                  |

Source: National Climatic Data Center

**TABLE E.26: HISTORICAL WINTER STORM IMPACTS IN LAWRENCE COUNTY**

| Location                   | Date       | Type           | Deaths/Injuries | Property Damage* |
|----------------------------|------------|----------------|-----------------|------------------|
| <b>Monticello</b>          |            |                |                 |                  |
| None reported              | --         | --             | --              | --               |
| <b>New Hebron</b>          |            |                |                 |                  |
| None reported              | --         | --             | --              | --               |
| <b>Silver Creek</b>        |            |                |                 |                  |
| None reported              | --         | --             | --              | --               |
| <b>Unincorporated Area</b> |            |                |                 |                  |
| LAWRENCE (ZONE)            | 1/19/2008  | Heavy Snow     | 0/0             | \$0              |
| LAWRENCE (ZONE)            | 12/11/2008 | Heavy Snow     | 0/0             | \$58,157         |
| LAWRENCE (ZONE)            | 12/4/2009  | Heavy Snow     | 0/0             | \$0              |
| LAWRENCE (ZONE)            | 2/11/2010  | Heavy Snow     | 0/0             | \$789,730        |
| LAWRENCE (ZONE)            | 1/9/2011   | Ice Storm      | 0/0             | \$33,310         |
| LAWRENCE (ZONE)            | 2/3/2011   | Ice Storm      | 0/0             | \$441,959        |
| LAWRENCE (ZONE)            | 1/28/2014  | Heavy Snow     | 0/0             | \$0              |
| LAWRENCE (ZONE)            | 1/6/2017   | Winter Weather | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

There have been several severe winter weather events in Lawrence County. The text below describes two of the major events and associated impacts on the county. Similar impacts can be expected with severe winter weather.

### February 2010

Heavy snow affected a large portion of the region, especially locations across central and southern Mississippi, on Thursday night and Friday, February 11th and 12th. The heavy snow was a result of a low pressure system that tracked eastward across the northern Gulf of Mexico, and a vigorous upper level disturbance that moved across the region while a cold air mass was in place. Light precipitation overspread the region late Thursday afternoon into the evening before becoming heavy Thursday night into early Friday morning. The snow tapered off from west to east during the midday hours Friday.

### February 2011

An ice storm developed across the area on February 3rd into the early morning hours of the 4th. While this icing event was not devastating, the impact to travel was a major issue across the region. Thousands of accidents occurred from slick roads. As a result of the accidents, three fatalities occurred along with a handful of injuries. Overall, most areas received 0.25 to 0.5 inches of ice accumulation from freezing rain. Additionally, some areas had a mix of precipitation with sleet accumulating. Some snow did occur, but those were just across select areas and the accumulation was mainly one inch or less.

Winter storms throughout the planning area have several negative externalities including hypothermia, cost of snow and debris cleanup, business and government service interruption, traffic accidents, and power outages. Furthermore, citizens may resort to using inappropriate heating devices that could lead to fire or an accumulation of toxic fumes.

### ***PROBABILITY OF FUTURE OCCURRENCES***

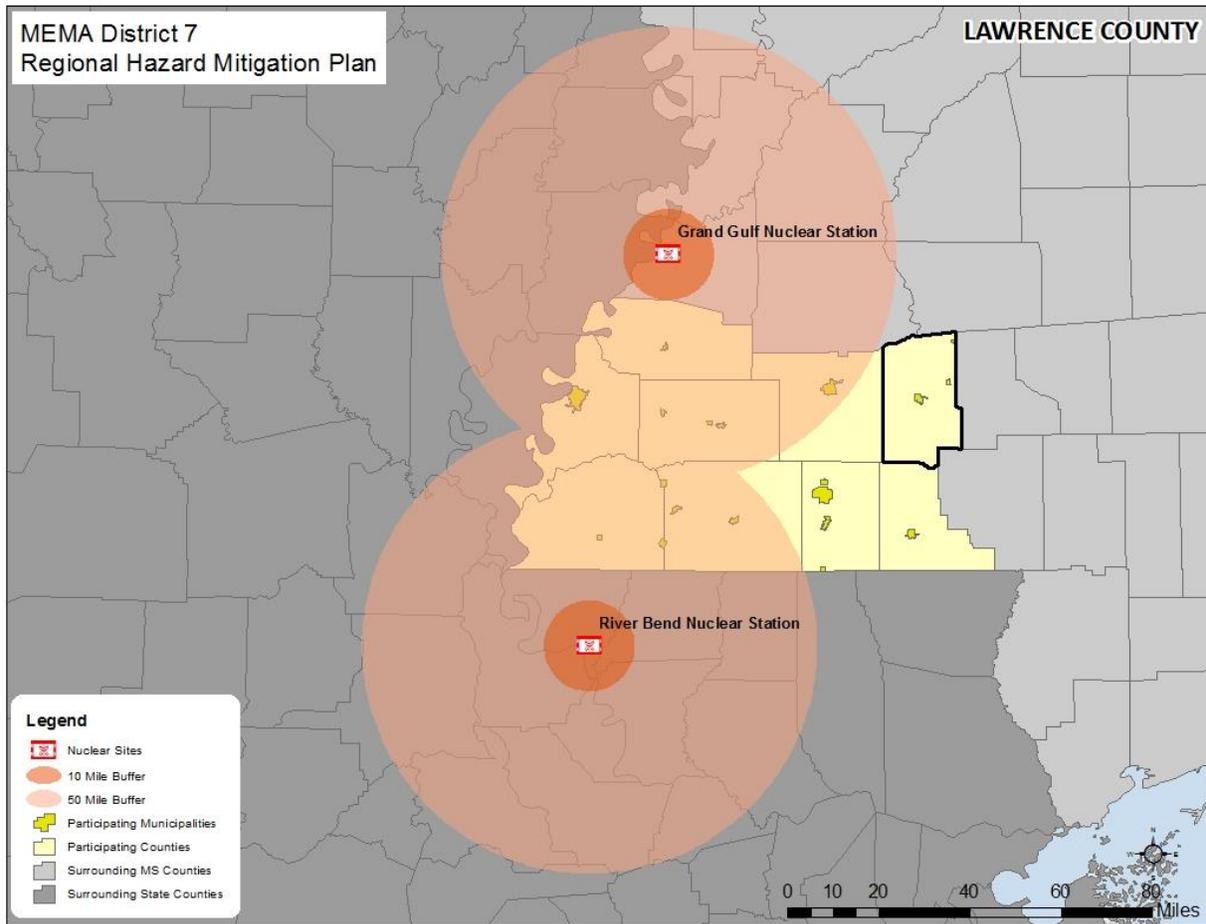
Winter storm events will continue to occur in Lawrence County. Based on historical information, the probability is likely (between 10 and 100 percent annual probability).

## ***HUMAN-CAUSED HAZARDS***

### **E.2.14 Radiological Event**

#### ***LOCATION AND SPATIAL EXTENT***

The Grand Gulf Nuclear Station and River Bend Nuclear Station are both located within a 50-mile radius of the MEMA District 7 Region. The Nuclear Regulatory Commission defines two emergency planning zones around nuclear plants. Areas located within 10 miles of the station are considered to be within the zone of highest risk to a nuclear incident and this radius is the designated evacuation radius recommended by the Nuclear Regulatory Commission. Within the 10-mile zone, the primary concern is exposure to and inhalation of radioactive contamination. No part of Lawrence County is located in the 10-mile radius of a nuclear station. The most concerning effects in the secondary 50-mile zone are related to ingestion of food and liquids that may have been contaminated. No part of Lawrence County is located within this 50-mile radius, however, the county is located just outside of this zone. The 50-mile zone is still considered to be at risk from a nuclear incident, though the impacts may be less severe than in the 10-mile zone (**Figure E.14**).

**FIGURE E.14: NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN LAWRENCE COUNTY**

Source: International Atomic Energy Agency

### **HISTORICAL OCCURRENCES**

Although there have been no major nuclear events at either the Grand Gulf or River Bend Nuclear Stations, there is some possibility that one could occur as there have been incidents in the past in the United States at other facilities and at facilities around the world. Additionally, a list of minor events/notifications was acquired from reports collected by the Nuclear Regulatory Commission (NRC). The NRC classifies events using the scale found in **Table E.27**. A list of events at Grand Gulf Nuclear Station can be found in **Table E.28** and a list of events at River Bend Nuclear Station can be found in **Table E.29**. It is noteworthy that all of the events were minor in magnitude and many were insignificant enough that they did not register on the classification scale.

**TABLE E.27: NUCLEAR REGULATORY COMMISSION EMERGENCY CLASSIFICATION SCALE FOR EVENTS OCCURRING AT NUCLEAR POWER PLANTS**

| Classification                       | Description   |
|--------------------------------------|---|
| Notification of Unusual Event (NOUE) | Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. [Note: This term is sometimes shortened to Unusual Event (UE). The terms Notification of Unusual Event, NOUE and Unusual Event are used interchangeably.]  |
| Alert                                | Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) protective action guides (PAGs)  |
| Site Area Emergency                  | Site Area Emergency (SAE) – Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile action that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary. |
| General Emergency                    | Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile action that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.  |

Source: Nuclear Regulatory Commission

**TABLE E.28: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT GRAND GULF NUCLEAR STATION**

| Date      | Retrieved From*                  | Classification | Plant             | Description  |
|-----------|----------------------------------|----------------|-------------------|--|
| 8/29/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST         |
| 10/1/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF NUCLEAR STATION SECURITY OFFICER LOCKOUT                  |
| 9/29/2016 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF EXTENDED PLANT SHUTDOWN TO ADDRESS OPERATIONS PERFORMANCE |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lsearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

**TABLE E.29: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT  
RIVER BEND NUCLEAR STATION**

| Date       | Retrieved From*                  | Classification                               | Plant             | Description   |
|------------|----------------------------------|--|-------------------|---|
| 11/26/1985 | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | ECCS Initiation: Improper restoration of a level transmitter causes HPSC injection    |
| 11/27/1985 | Licensee Event Report            | Alert  | River Bend Unit 1 | Failure to Perform Surveillance Tests   |
| 3/5/1992   | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | REACTOR SCRAM CAUSED BY A GENERATOR TRIP DUE TO HIGH WINDS CAUSING TRANSFORMER DAMAGE |
| 9/15/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE IVAN  |
| 10/4/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | Shutdown Greater than 72 Hours  |
| 9/23/2005  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | NRC ENTERS MONITORING MODE DUE TO HURRICANE RITA                                      |
| 5/23/2007  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REACTOR SHUTDOWN DUE TO UNEXPECTED CHANGE IN RECIRCULATION FLOW                       |
| 9/2/2008   | Preliminary Notification Reports | Notification of Unusual Event/Not Applicable | River Bend Unit 1 | NRC RESPONSE TO HURRICANE GUSTAV  |
| 5/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | AUGMENTED INSPECTION TEAM ONSITE AT RIVER BEND STATION                                |
| 8/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST                          |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lsearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

### **PROBABILITY OF FUTURE OCCURRENCES**

A nuclear event is a very rare occurrence in the United States due to the intense regulation of the industry. There have been minor incidents in the past, but it is considered unlikely (less than 1 percent annual probability).

### **RADIOLOGICAL EVACUATIONS**

Similar to the hurricane evacuations discussed above, in many ways the MEMA District 7 Region would potentially be impacted to a greater degree by evacuations caused by a radiological event than by the event itself. Since the region is not directly located within the 10-mile evacuation area but neighboring counties are located within this zone, it is highly likely that populations from those neighboring counties will be evacuated to the counties within the MEMA District 7 Region.

Due to the severe and long-term effects of a major radiological event, temporary sheltering will be an initial concern, but the greater challenge may be in the long-term. As has happened with historical radiological accidents in other locations, the danger in the impacted area will likely extend for a very long period after the event and evacuees may be unable to return to their homes for months or years. This additional influx of population will cause a major strain on resources within these relatively rural counties in the short-term, as local communities with limited resources will have an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people. In the long-term, there may be challenges for local officials as existing infrastructure will likely be inadequate to handle larger populations.

Although there have not been any major radiological events in the region historically, hurricane evacuations (discussed above) provide a similar scenario in terms of what the region might expect. However, one additional concern that officials will need to consider in a radiological event is that evacuees may be contaminated by radioactivity. According to the Centers for Disease Control, radioactive contamination can occur when radioactive materials are released into the environment and become deposited into the air, water, surfaces, soil, plants, buildings, people or animals. This contamination can then be spread when people touch other people, surfaces, or objects. Therefore, when people evacuate a contaminated zone, they pose a potential risk of spreading the contamination to others if they are not properly treated. Local officials in MEMA District 7 may need to be prepared to set up decontamination centers along major evacuation routes to ensure that the contamination is not spread. It is also important for citizens to understand the steps they can take to reduce the risk of spreading contamination such as evacuating quickly after an event and following decontamination instructions as directed by local officials.<sup>24</sup>

Based on the locations of the 10-mile evacuation areas near the region, many of these evacuees will likely come from Claiborne County to the north and West Feliciana and East Feliciana Parishes to the south. The main roads for these evacuees will probably be U.S. Highway 61 and Mississippi State Highway 33 since these are the primary and most direct roads into and out of the aforementioned evacuation counties and into MEMA District 7 (**Figure E.15**). Depending on the severity of the event, officials may even change these roads over to a contraflow traffic pattern to enable quicker evacuations.

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<sup>24</sup> Centers for Disease Control and Prevention. *Emergency Preparedness and Response: Contamination vs. Exposure*. Retrieved on September 1, 2017 from <https://emergency.cdc.gov/radiation/contamination.asp>



**HAZARD EXTENT**

**Table E.30** describes the extent of each natural hazard identified for Lawrence County. The extent of a hazard is defined as its severity or magnitude, as it relates to the planning area.

**TABLE E.30: EXTENT OF LAWRENCE COUNTY HAZARDS**

| Flood-related Hazards |   |             |  |                                     |                                 |  |   |    |
|-----------------------|---|-------------|--|-------------------------------------|---------------------------------|--|---|----|
| Dam and Levee Failure | Dam Failure extent is defined using the Mississippi Department of Environmental Quality classifications which include Low, Significant, and High. No dams are classified as high-hazard in Lawrence County.   |             |  |                                     |                                 |  |   |    |
| Erosion               | The extent of erosion can be defined by the measurable rate of erosion that occurs. There are no official erosion rate records in Lawrence County but local estimates are around 0.25 to 0.50 feet per year. Some areas of erosion have been identified by local coordinators.  |             |  |                                     |                                 |  |   |    |
| Flood                 | Flood extent can be measured by the amount of land and property in the floodplain as well as flood height and velocity. The amount of land in the floodplain accounts for 21.0 percent of the total land area in Lawrence County.   |             |  |                                     |                                 |  |   |    |
|                       | Flood depth and velocity are recorded via United States Geological Survey stream gages throughout the region. While a gage does not exist for each participating jurisdiction, there is one at or near many areas. The greatest peak discharge recorded for the county was on the Pearl River near Monticello. Water reached a discharge of 122,000 cubic feet per second (recorded on April 20, 1979). The highest stream gage height was also on the Pearl River near Monticello with a height that was recorded at 34.08 feet, or 1.08 feet above the major flood stage (recorded on April 20, 1979). Additional peak discharge readings, historic crest heights, and the corresponding flood categories (where available) are in the table below. |             |  |                                     |                                 |  |   |    |
|                       | <b>Location/<br/>Jurisdiction</b>   | <b>Date</b> | <b>Maximum<br/>Historic<br/>Crest (ft)</b> | <b>Peak<br/>Discharge<br/>(cfs)</b> | <b>Flood Categories</b>         |  |   |    |
|                       |   |             |  | <b>Action<br/>Stage<br/>(ft)</b>    | <b>Flood<br/>Stage<br/>(ft)</b> | <b>Moderate<br/>Flood<br/>Stage (ft)</b> | <b>Major<br/>Flood<br/>Stage<br/>(ft)</b> |    |
|                       | <b>Lawrence County</b>  |             |  |                                     |                                 |  |   |    |
|                       | Bahala<br>Creek near<br>Oma   | 4/12/1974   | 25.78                                      | 40,000                              | NA                              | NA                                       | NA  | NA |
|                       | Small Pine<br>Ditch near<br>Monticello  | 3/24/1973   | 8.24                                       | 281                                 | NA                              | NA                                       | NA  | NA |
|                       | Pearl River<br>near<br>Monticello   | 4/20/1979   | 34.08                                      | 122,000                             | 21                              | 22                                       | 25  | 33 |
|                       | Roadside<br>Park Ditch<br>near<br>Monticello  | 4/12/1974   | 7.06                                       | 289                                 | NA                              | NA                                       | NA  | NA |
|                       | New<br>Hebron<br>Gulley at<br>New<br>Hebron   | 4/12/1974   | 17.05                                      | 2,650                               | NA                              | NA                                       | NA  | NA |

|                              |           |       |        |    |    |    |    |
|------------------------------|-----------|-------|--------|----|----|----|----|
| Silver Creek at Silver Creek | 8/30/2012 | 17.55 | 20,500 | NA | NA | NA | NA |
| Whitesand Creek near Oakvale | 4/13/1974 | 18.76 | 25,400 | NA | NA | NA | NA |

NA= Data not available for this particular gage  
 \*Occurred on a different date than Maximum Historic Crest

**Fire-related Hazards**

|           |  |
|-----------|--|
| Drought   | Drought extent is defined by the U.S. Drought Monitor Classifications which include Abnormally Dry, Moderate Drought, Severe Drought, Extreme Drought, and Exceptional Drought. According to the U.S. Drought Monitor Classifications, the most severe drought condition is Exceptional. Lawrence County has received this ranking once over the 17-year reporting period.   |
| Lightning | According to the Vaisala’s flash density map, Lawrence County is located in an area that experiences 12 to 20 lightning flashes per square mile per year. It should be noted that future lightning occurrences may exceed these figures.   |
| Wildfire  | Wildfire data was provided by the Mississippi Forestry Commission and is reported annually by county from 2007-2016. The greatest number of fires to occur in Lawrence County in any year was 55 in 2007. The greatest number of acres to burn in the county in a single year occurred in 2007 when 562 acres were burned. Although this data lists the extent that has occurred, larger and more frequent wildfires are possible throughout the county. |

**Geologic Hazards**

|            |   |
|------------|---|
| Earthquake | Earthquake extent can be measured by the Richter Scale or the Modified Mercalli Intensity (MMI) scale. According to data provided by the National Centers for Environmental Information, no earthquakes were reported in Lawrence County. |
|------------|---|

**Wind-related Hazards**

|                                |  |
|--------------------------------|--|
| Extreme Heat                   | The extent of extreme heat can be measured by the record high temperature recorded. Official long term temperature records are not kept for any areas in Lawrence County. However, the highest recorded temperature in the region was 106°F in 2007 with heat index values recorded above 115°F.   |
| Hailstorm                      | Hail extent can be defined by the size of the hail stone. The largest hail stone reported in Lawrence County was 2.75 inches (last reported on March 18, 2013). It should be noted that future events may exceed this.   |
| Hurricane and Tropical Storm   | Hurricane extent is defined by the Saffir-Simpson Scale which classifies hurricanes into Category 1 through Category 5. The greatest classification of hurricane to impact the MEMA District 7 Region was a Category 3 storm. This occurred in 1969 with Hurricane Camille and in 2005 with Hurricane Katrina. The storm track of both storms passed just to the east of the region, but due to the size of these storms, their impact was felt across the region. |
| Severe Thunderstorm/ High Wind | Thunderstorm extent is defined by the number of thunder events and wind speeds reported. According to a 67-year history from the National Climatic Data Center, the strongest recorded wind event in Lawrence County was reported on January 7, 2005 at 75 knots (approximately 86 mph). It should be noted that future events may exceed these historical occurrences.  |
| Tornado                        | Tornado hazard extent is measured by tornado occurrences in the US provided by FEMA as well as the Fujita/Enhanced Fujita Scale. The greatest magnitude reported in Lawrence County was an F4 (last reported on April 18, 1978).   |

|                         |   |
|-------------------------|---|
| Winter Storm and Freeze | The extent of winter storms can be measured by the amount of snowfall received (in inches). Official long term snow records are not kept for any areas in Lawrence County. However, reports from NCDC of the greatest snowfall in the county has been 8 to 10 inches (reported on December 11, 2008). |
|-------------------------|---|

**Human-caused Hazards**

|                    |   |
|--------------------|---|
| Radiological Event | Although there is no history of a nuclear accident at either the Grand Gulf Nuclear Station or River Bend Nuclear Station, other events across the globe and in the United States in particular indicate that an event is possible. Since several national and international events were Level 7 events on the INES, the potential for a Level 7 event at these stations is possible. |
|--------------------|---|

**PRIORITY RISK INDEX RESULTS**

In order to draw some meaningful planning conclusions on hazard risk for Lawrence County, the results of the hazard profiling process were used to generate countywide hazard classifications according to a “Priority Risk Index” (PRI). More information on the PRI and how it was calculated can be found in Section 5.17.2.

**Table E.31** summarizes the degree of risk assigned to each category for all initially identified hazards based on the application of the PRI. Assigned risk levels were based on the detailed hazard profiles developed for this subsection, as well as input from the Regional Hazard Mitigation Council. The results were then used in calculating PRI values and making final determinations for the risk assessment.

**TABLE E.31: SUMMARY OF PRI RESULTS FOR LAWRENCE COUNTY**

| Hazard                        | Category/Degree of Risk |              |                |                    |                    |            |
|-------------------------------|-------------------------|--------------|----------------|--------------------|--------------------|------------|
|                               | Probability             | Impact       | Spatial Extent | Warning Time       | Duration           | PRI Score  |
| <b>Flood-related Hazards</b>  |                         |              |                |                    |                    |            |
| Dam Failure and Levee Failure | Possible                | Critical     | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>2.6</b> |
| Erosion                       | Possible                | Minor        | Small          | More than 24 hours | More than 1 week   | <b>1.8</b> |
| Flood                         | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 24 hours | <b>3.2</b> |
| <b>Fire-related Hazards</b>   |                         |              |                |                    |                    |            |
| Drought                       | Possible                | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.5</b> |
| Lightning                     | Highly Likely           | Limited      | Small          | 6 to 12 hours      | Less than 6 hours  | <b>2.6</b> |
| Wildfire                      | Highly Likely           | Limited      | Small          | Less than 6 hours  | Less than 1 week   | <b>2.9</b> |
| <b>Geologic Hazards</b>       |                         |              |                |                    |                    |            |
| Earthquake                    | Unlikely                | Minor        | Small          | Less than 6 hours  | Less than 6 hours  | <b>1.5</b> |
| <b>Wind-related Hazards</b>   |                         |              |                |                    |                    |            |
| Extreme Heat                  | Likely                  | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.8</b> |
| Hailstorm                     | Highly Likely           | Limited      | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>2.8</b> |
| Hurricane and Tropical Storm  | Likely                  | Catastrophic | Large          | More than 24 hours | Less than 1 week   | <b>3.3</b> |
| Severe Thunderstorm/High Wind | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>3.1</b> |
| Tornado                       | Likely                  | Catastrophic | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>3.2</b> |

| Hazard                      | Category/Degree of Risk |        |                |                    |                  |            |
|-----------------------------|-------------------------|--------|----------------|--------------------|------------------|------------|
|                             | Probability             | Impact | Spatial Extent | Warning Time       | Duration         | PRI Score  |
| Winter Storm and Freeze     | Likely                  | Minor  | Moderate       | More than 24 hours | Less than 1 week | <b>2.2</b> |
| <b>Human-caused Hazards</b> |                         |        |                |                    |                  |            |
| Radiological Event          | Unlikely                | Minor  | Moderate       | More than 24 hours | Less than 1 week | <b>1.6</b> |

### E.2.16 Final Determinations on Hazard Risk

The conclusions drawn from the hazard profiling process for Lawrence County, including the PRI results and input from the Regional Hazard Mitigation Council, resulted in the classification of risk for each identified hazard according to three categories: High Risk, Moderate Risk, and Low Risk (**Table E.32**). For purposes of these classifications, risk is expressed in relative terms according to the estimated impact that a hazard will have on human life and property throughout all of Lawrence County. A more quantitative analysis to estimate potential dollar losses for each hazard has been performed separately, and is described in Section 6: *Vulnerability Assessment* and below in Section E.3. It should be noted that although some hazards are classified below as posing low risk, their occurrence of varying or unprecedented magnitudes is still possible in some cases and their assigned classification will continue to be evaluated during future plan updates. In most cases, the hazards of greatest concern did not change much since the last plan update, indicating that the priorities remained relatively stable and there were few changes in priorities.

**TABLE E.32: CONCLUSIONS ON HAZARD RISK FOR LAWRENCE COUNTY**

|                      |   |
|----------------------|---|
| <b>HIGH RISK</b>     | Hurricane and Tropical Storm<br>Tornado<br>Flood<br>Severe Thunderstorm/High Wind<br>Wildfire |
| <b>MODERATE RISK</b> | Extreme Heat<br>Hailstorm<br>Dam and Levee Failure<br>Lightning<br>Drought                    |
| <b>LOW RISK</b>      | Winter Storm and Freeze<br>Erosion<br>Radiological Event<br>Earthquake                        |

## E.3 LAWRENCE COUNTY VULNERABILITY ASSESSMENT

This subsection identifies and quantifies the vulnerability of Lawrence County to the significant hazards previously identified. This includes identifying and characterizing an inventory of assets in the county and assessing the potential impact and expected amount of damages caused to these assets by each identified hazard event. More information on the methodology and data sources used to conduct this assessment can be found in Section 6: *Vulnerability Assessment*.

### E.3.1 Asset Inventory

**Table E.33** lists the estimated number of improved properties and the total value of improvements for Lawrence County and its participating jurisdictions (study area of vulnerability assessment). Because digital parcel data was not available for most communities, data obtained from Hazus-MH 4.0 inventory was utilized to complete the analysis.

**TABLE E.33: IMPROVED PROPERTY IN LAWRENCE COUNTY**

| Location                     | Counts of Improved Property | Total Value of Improvements |
|------------------------------|-----------------------------|-----------------------------|
| Monticello                   | 862                         | \$219,887                   |
| New Hebron                   | 262                         | \$53,898                    |
| Silver Creek                 | 139                         | \$19,344                    |
| Unincorporated Area          | 4,977                       | \$1,063,380,871             |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>6,240</b>                | <b>\$1,063,674,000</b>      |

Source: Hazus-MH 4.0

**Table E.34** lists the fire stations, police stations, medical care facilities, emergency operation centers, schools, government/public buildings, transportation infrastructure, and private facilities located in Lawrence County according to previous plan data and Hazus-MH 4.0 data that was reviewed and updated by local officials.

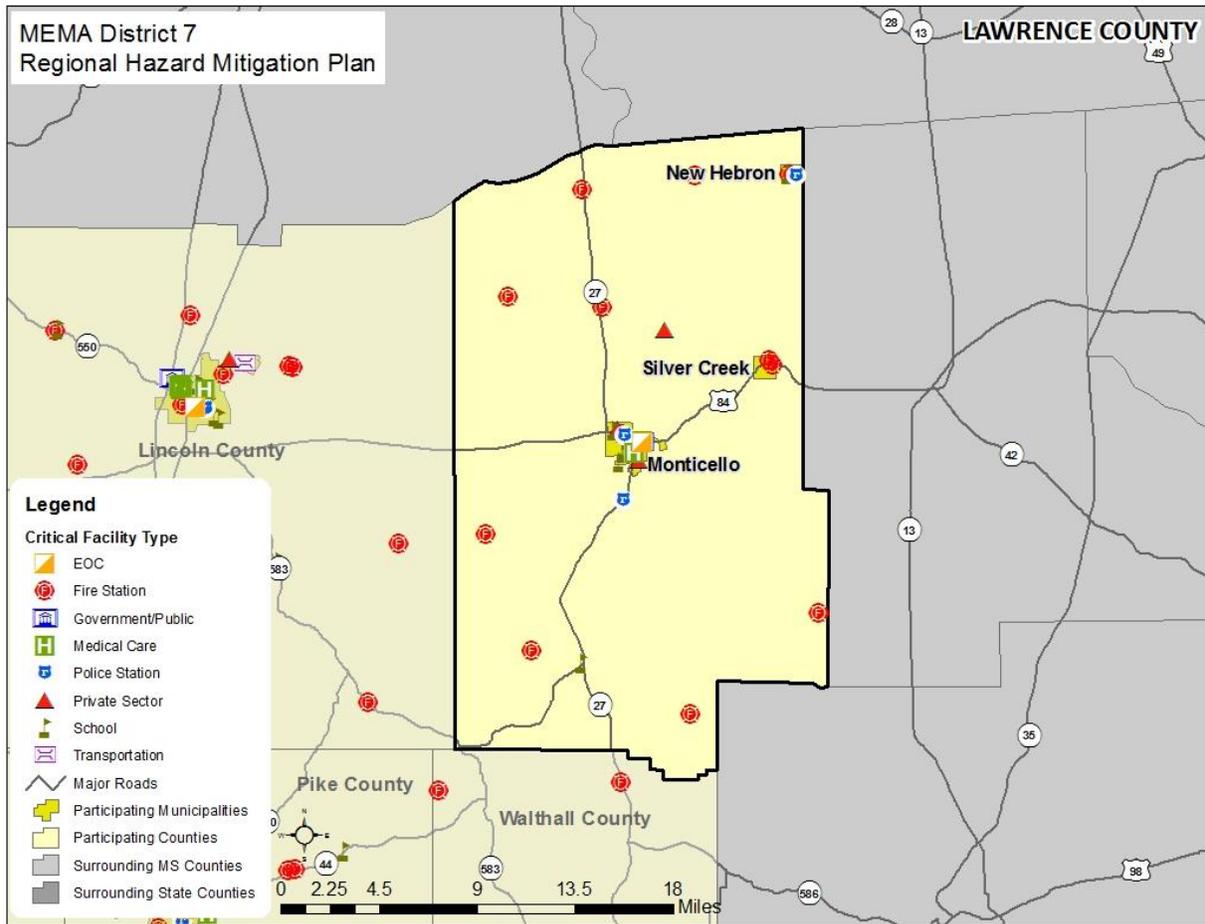
In addition, **Figure E.16** shows the locations of critical facilities in Lawrence County. **Table E.45**, at the end of this subsection, shows a complete list of the critical facilities by name, as well as the hazards that affect each facility. As noted previously, this list is not all-inclusive and only includes information provided through Hazus which was updated, as best as possible, with local knowledge.

**TABLE E.34: CRITICAL FACILITY INVENTORY IN LAWRENCE COUNTY**

| Location                     | Fire Stations | Police Stations | Medical Care | EOC      | Schools  | Gov't/ Public | Trans    | Private Sector |
|------------------------------|---------------|-----------------|--------------|----------|----------|---------------|----------|----------------|
| Monticello                   | 1             | 2               | 2            | 1        | 4        | 1             | 0        | 3              |
| New Hebron                   | 1             | 1               | 0            | 0        | 1        | 0             | 0        | 0              |
| Silver Creek                 | 2             | 0               | 0            | 0        | 0        | 0             | 0        | 0              |
| Unincorporated Area          | 8             | 0               | 0            | 0        | 1        | 0             | 0        | 1              |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>12</b>     | <b>3</b>        | <b>2</b>     | <b>1</b> | <b>6</b> | <b>1</b>      | <b>0</b> | <b>4</b>       |

Source: Hazus-MH 4.0; Local Officials

**FIGURE E.16: CRITICAL FACILITY LOCATIONS IN LAWRENCE COUNTY**



Source: Hazus-MH 4.0; Local Officials

### E.3.2 Social Vulnerability

In addition to identifying those assets potentially at risk to identified hazards, it is important to identify and assess those particular segments of the resident population in Lawrence County that are potentially at risk to these hazards.

**Table E.35** lists the population by jurisdiction according to U.S. Census, American Community Survey 2015 population estimates. The total population in Lawrence County according to Census data was 12,586 persons. Additional population estimates are presented above in Section E.1.

**TABLE E.35: TOTAL POPULATION IN LAWRENCE COUNTY**

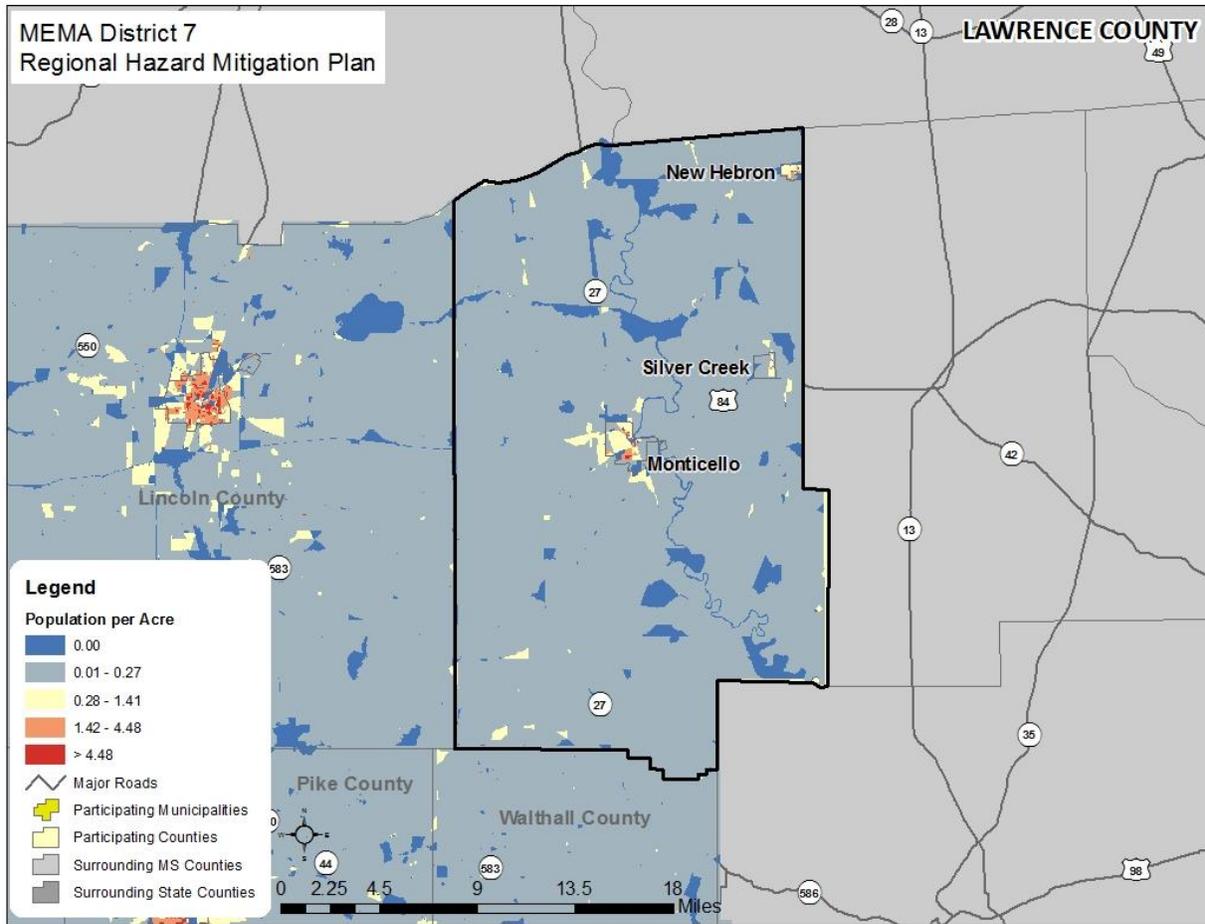
| Location                     | Total 2015 Population |
|------------------------------|-----------------------|
| Monticello                   | 1,559                 |
| New Hebron                   | 526                   |
| Silver Creek                 | 206                   |
| Unincorporated Area          | 10,295                |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>12,586</b>         |

| Location | Total 2015 Population |
|----------|-----------------------|
|----------|-----------------------|

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

In addition, **Figure E.17** illustrates the population density per acre by census block as it was reported by the U.S. Census Bureau in 2010. As can be seen in the figure, the population is spread out with concentrations in municipal areas such as New Hebron and Monticello.

**FIGURE E.17: POPULATION DENSITY IN LAWRENCE COUNTY**



Source: United States Census Bureau, 2010 Census

### E.3.3 Development Trends and Changes in Vulnerability

Since the previous hazard mitigation plan was approved, Lawrence County has experienced limited growth and development. **Table E.36** shows the number of building units constructed since 2010 according to the U.S. Census American Community Survey.

**TABLE E.36: BUILDING COUNTS FOR LAWRENCE COUNTY**

| Location   | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|------------|----------------------------|---------------------------|----------------------------------|
| Monticello | 780                        | 0                         | 0.00%                            |

| Location                     | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|------------------------------|----------------------------|---------------------------|----------------------------------|
| New Hebron                   | 204                        | 0                         | 0.00%                            |
| Silver Creek                 | 103                        | 0                         | 0.00%                            |
| Unincorporated Area          | 4,940                      | 142                       | 2.87%                            |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>6,027</b>               | <b>142</b>                | <b>2.36%</b>                     |

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

**Table E.37** shows population growth estimates for the county from 2010 to 2015 based on the U.S. Census American Community Survey.

**TABLE E.37: POPULATION GROWTH FOR LAWRENCE COUNTY**

| Location                     | Population Estimates |               |               |               |               |               | % Change 2010-2015 |
|------------------------------|----------------------|---------------|---------------|---------------|---------------|---------------|--------------------|
|                              | 2010                 | 2011          | 2012          | 2013          | 2014          | 2015          |                    |
| Monticello                   | 1,837                | 1,689         | 1,630         | 1,642         | 1,627         | 1,559         | -15.13%            |
| New Hebron                   | 470                  | 495           | 548           | 546           | 586           | 526           | 11.91%             |
| Silver Creek                 | 225                  | 237           | 182           | 241           | 223           | 206           | -8.44%             |
| Unincorporated Area          | 10,484               | 10,524        | 10,472        | 10,305        | 10,200        | 10,295        | -1.80%             |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>13,016</b>        | <b>12,945</b> | <b>12,832</b> | <b>12,734</b> | <b>12,636</b> | <b>12,586</b> | <b>-3.30%</b>      |

Source: United States Census Bureau, 2006-2010, 2007-2011, 2008-2012, 2009-2013, and 2010-2014, and 2011-2015 American Community Survey 5-Year Estimates

Based on the data above, there has been a low rate of residential development and population growth in the county since 2010, and the county has actually experienced a population decline. However, it is notable that the New Hebron has experienced a significant rate of growth compared to the rest of the county, resulting in an increased number of people that are vulnerable to the potential impacts of the identified hazards. Therefore, population growth has impacted the county's vulnerability since the previous local hazard mitigation plan was approved and there has been a slight increase in the overall vulnerability as well as a larger increase in certain areas and communities.

It is also important to note that as development increases in the future, greater populations and more structures and infrastructure will be exposed to potential hazards if development occurs in the floodplains or other high risk areas.

### E.3.4 Vulnerability Assessment Results

As noted in Section 6: *Vulnerability Assessment*, only hazards with a specific geographic boundary, available modeling tool, or sufficient historical data allow for further analysis. Those results, specific to Lawrence County, are presented here. All other hazards are assumed to impact the entire planning region (drought, extreme heat, hailstorm, lightning, severe thunderstorm/high wind, tornado, and winter storm) or, due to lack of data, analysis would not lead to credible results (erosion). The total county exposure, and thus risk to these hazards, was presented in **Table E.33**.

The hazards to be further analyzed in this subsection include: dam/levee failure, flood, wildfire, earthquake, hurricane and tropical storm winds, and radiological event.

The annualized loss estimate for all hazards is presented near the end of this subsection in **Table E.44**.

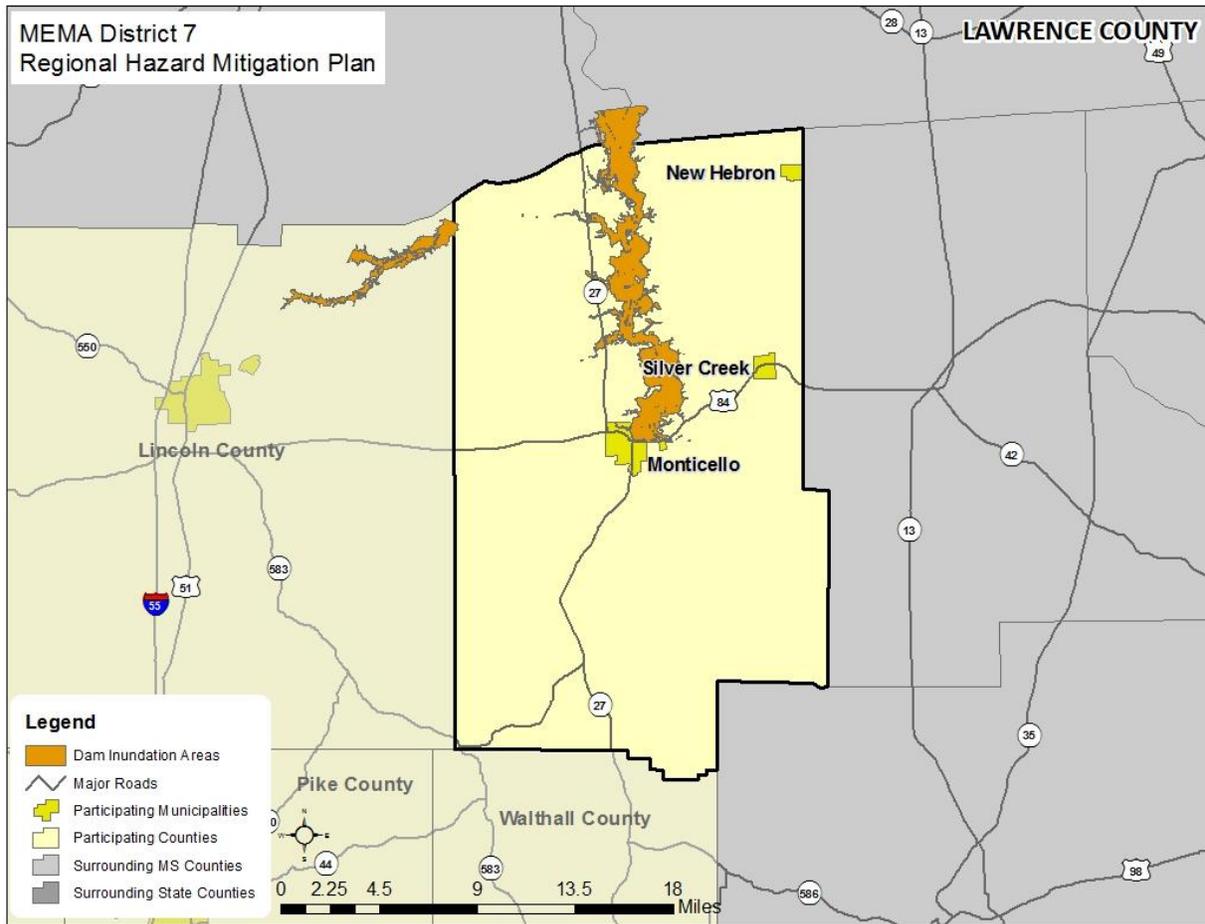
### ***DAM/LEVEE FAILURE***

In order to assess risk to a dam or levee failure, a GIS-based analysis was used to estimate exposure to one of the areas delineated by the Mississippi Department of Environmental Quality as a potential inundation area in the event of a failure. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified inundation area. As mentioned previously, this type of inundation mapping has not been completed for every dam/levee in the region, so the results of this analysis likely underestimate the overall vulnerability to a dam or levee failure. However, the analysis is still useful as a sort of baseline minimum of property that is potentially at-risk. The identified inundation areas can be found in **Figure E.18**.

In general, building footprint and parcel data were used in this analysis. However, in some communities, due to a lack of digital parcel data, it was determined that analysis using the inventory from Hazus-MH 4.0 would be used to supplement the building/parcel data. It should be noted that this data will merely be an estimation and may not reflect actual counts or values located in dam inundation areas. Indeed, in almost all cases, this data likely overestimates the amount of property in the identified risk zones.

**Table E.38** presents the potential at-risk property. Both the number of buildings and the approximate improved value are presented.

**FIGURE E.18: DAM INUNDATION AREAS IN LAWRENCE COUNTY**



Source: Mississippi Department of Environmental Quality

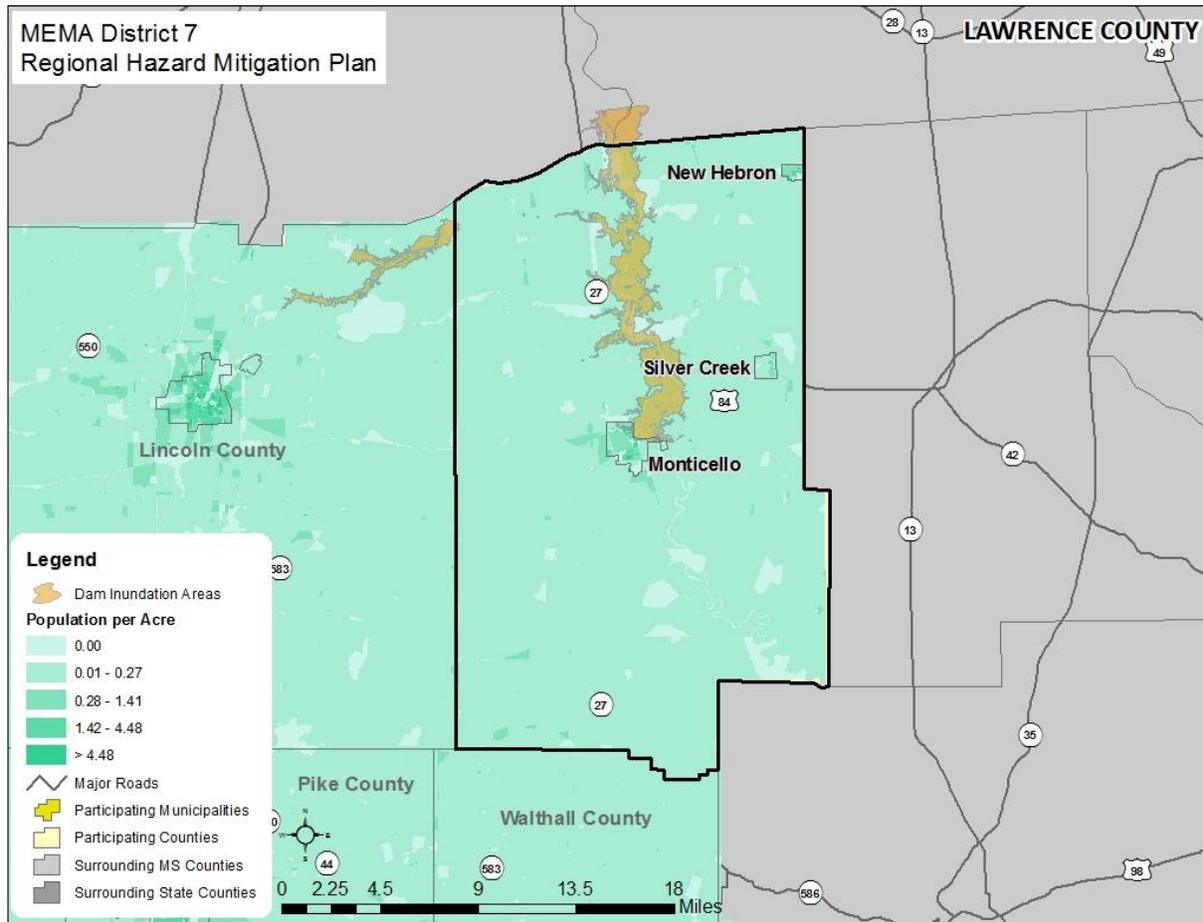
**TABLE E.38: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE DAM/LEEVE FAILURE HAZARD**

| Location                     | Dam Inundation Area            |                        |
|------------------------------|--------------------------------|------------------------|
|                              | Approx. Number of Improvements | Approx. Improved Value |
| Monticello                   | 135                            | \$29,179,000           |
| New Hebron                   | 0                              | \$0                    |
| Silver Creek                 | 0                              | \$0                    |
| Unincorporated Area          | 656                            | \$90,573,000           |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>791</b>                     | <b>\$119,752,000</b>   |

Source: Mississippi Department of Environmental Quality; Hazus 4.0

**Social Vulnerability**

Figure E.19 is presented to gain a better understanding of at-risk population by evaluating census block level population data against dam inundation areas. There are several areas of concern in the county, although it should be noted that most of the population of the county is not at risk to a dam/levee failure.

**FIGURE E.19: POPULATION DENSITY NEAR DAM INUNDATION AREAS IN LAWRENCE COUNTY**

Source: Mississippi Department of Environmental Quality; United States Census Bureau, 2010 Census

### Critical Facilities

There are no critical facilities located within the identified dam inundation areas. Although there are no facilities located in the identified areas, this does not indicate that there is no risk to a dam/levee failure, especially considering not all dams have delineated inundation areas. A list of specific critical facilities and their associated risk can be found in **Table E.45** at the end of this section.

In conclusion, a dam/levee failure has the potential to impact many existing and future buildings, facilities, and populations in Lawrence County, though structures located near or in the dam inundation areas are at highest risk. Specific vulnerabilities for Lawrence County assets will be greatly dependent on their individual design and the mitigation measures in place where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates if data becomes available.

**FLOOD**

Historical evidence indicates that Lawrence County is susceptible to flood events. A total of 26 flood events have been reported by the National Climatic Data Center resulting in \$1.4 million (2017 dollars) in property damage. On an annualized level, these damages amounted to \$125,607 for Lawrence County.

In order to assess flood risk, a GIS-based analysis was used to estimate exposure to flood events using Digital Flood Insurance Rate Map (DFIRM) data in combination with improved property records for the county. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified floodplain. Due to a lack of digital parcel data in most counties, it was determined that an analysis using the inventory from Hazus-MH 4.0 would be used, though it should be noted that the data will merely be an estimation and may not reflect actual counts or values located in the floodplain. Indeed, in almost all cases, this analysis likely overestimates the amount of property at risk. **Table E.39** presents the potential at-risk property. Both the number of parcels and the approximate value are presented.

**TABLE E.39: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE FLOOD HAZARD<sup>25</sup>**

| Location                     | 1.0-percent ACF                |                                | 0.2-percent ACF                |                                |
|------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|                              | Approx. Number of Improvements |
| Monticello                   | 412                            | \$103,031,000                  | 0                              | \$0                            |
| New Hebron                   | 44                             | \$7,794,000                    | 0                              | \$0                            |
| Silver Creek                 | 94                             | \$14,154,000                   | 0                              | \$0                            |
| Unincorporated Area          | 2,757                          | \$417,192,000                  | 0                              | \$0                            |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>3,307</b>                   | <b>\$542,171,000</b>           | <b>0</b>                       | <b>\$0</b>                     |

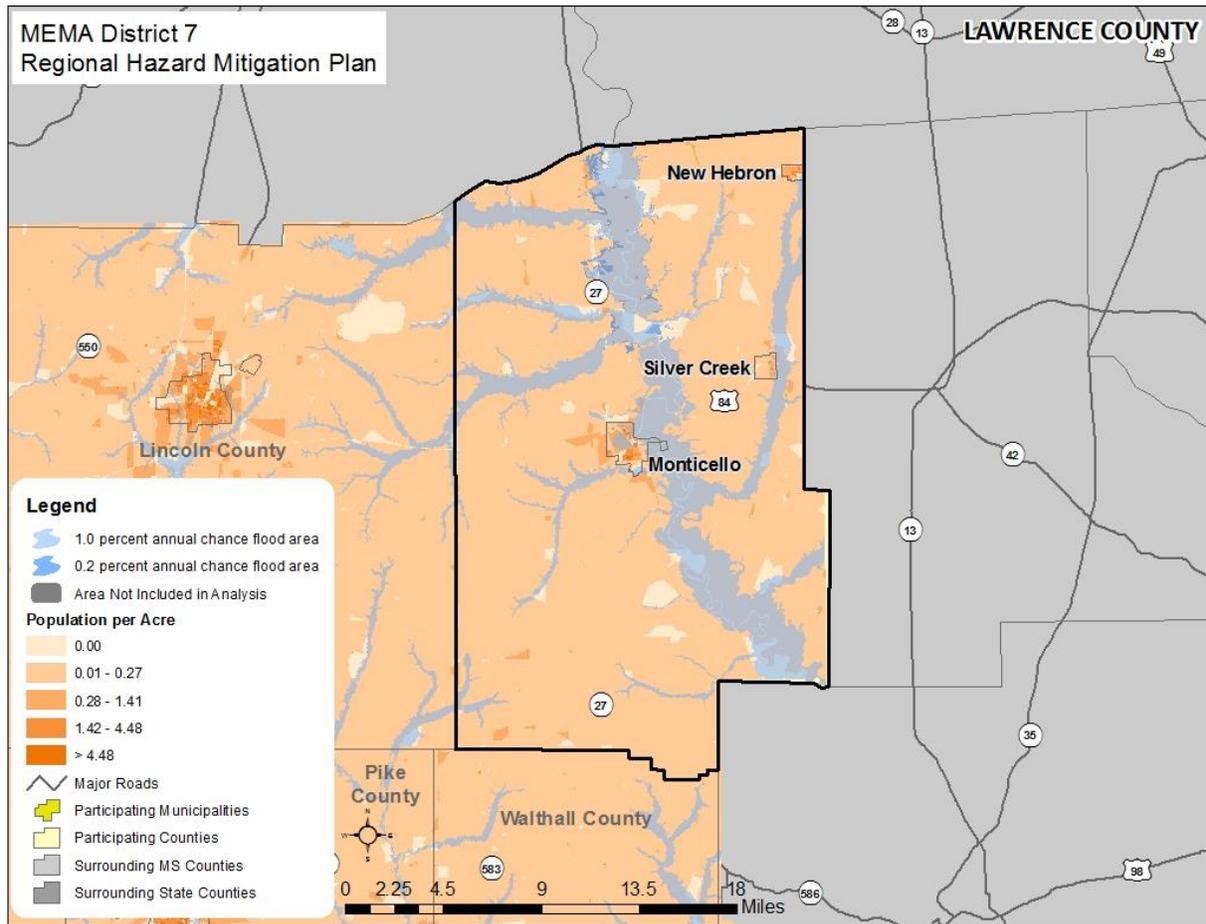
Source: Federal Emergency Management Agency DFIRM; Hazus MH 4.0

**Social Vulnerability**

**Figure E.20** is presented to gain a better understanding of at-risk population by evaluating census block level population data against mapped floodplains. There are areas of concern in several of the population centers. Therefore, further investigation in these areas may be warranted.

<sup>25</sup> As noted in Section 6.4, no building-specific data, such as building footprints, was available to determine buildings at risk. As a result of this data limitation, at-risk census block building counts and values of the structures were used.

**FIGURE E.20 : POPULATION DENSITY NEAR FLOODPLAINS IN LAWRENCE COUNTY**



Source: Federal Emergency Management Agency DFIRM; United States Census Bureau, 2010 Census

### Critical Facilities

The critical facility analysis revealed that there are no critical facilities located in the floodplain. (Please note, as previously indicated, this analysis does not consider building elevation, which may negate risk.) A list of specific critical facilities and their associated risk can be found in **Table E.45** at the end of this subsection.

In conclusion, a flood has the potential to impact many existing and future buildings, facilities, and populations in Lawrence County, though some areas are at a higher risk than others. All types of structures in a floodplain are at-risk, though elevated structures will have a reduced risk. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. Furthermore, areas subject to repetitive flooding should be analyzed for potential mitigation actions.

### WILDFIRE

Although historical evidence indicates that Lawrence County is susceptible to wildfire events, there are few reports which include information on historic dollar losses. Therefore, it is difficult to calculate a

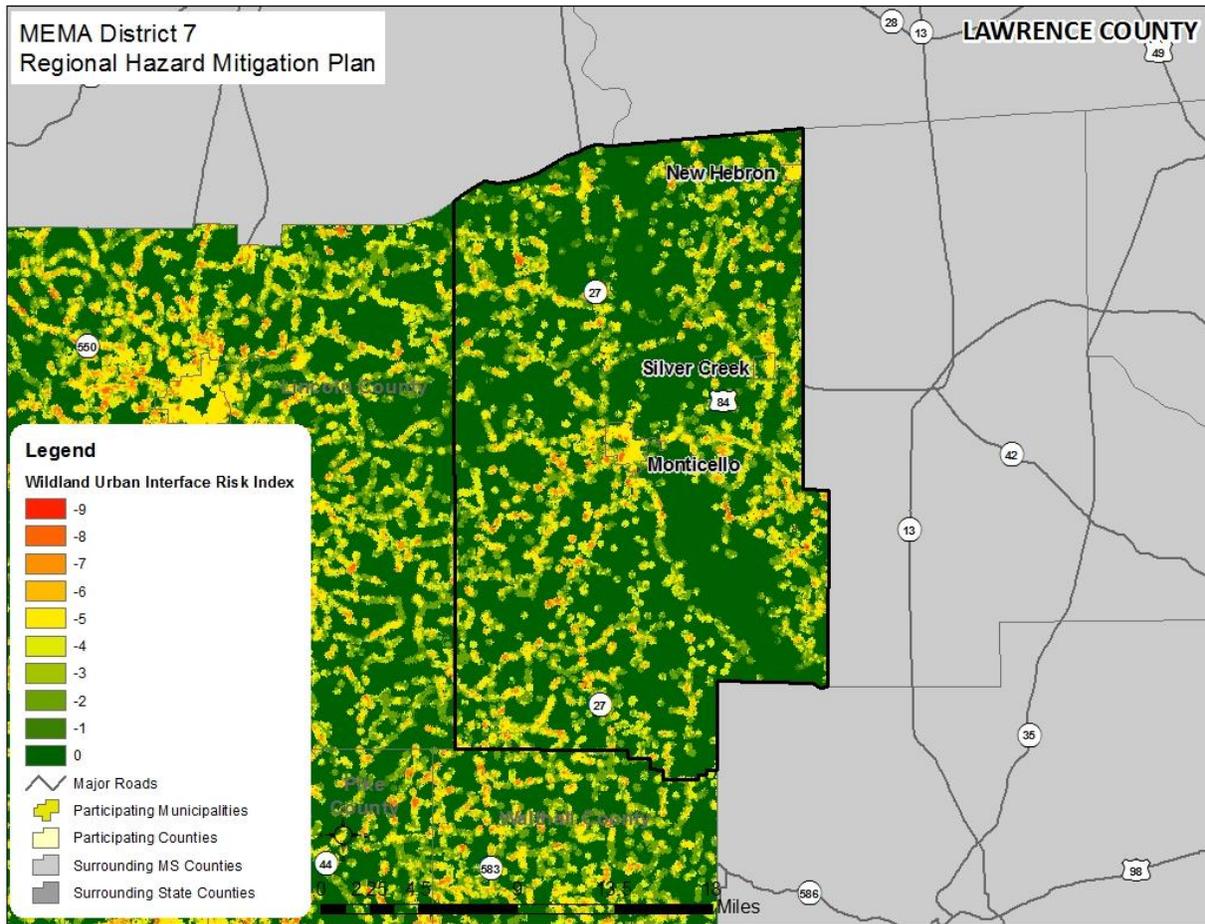
reliable annualized loss figure. Annualized loss is considered negligible though it should be noted that a single event could result in significant damages throughout the county.

To estimate exposure to wildfire, building data was obtained from Hazus-MH 4.0 which includes information that has been aggregated at the census block level and which has been deemed useful for analyzing wildfire vulnerability. However, it should be noted that the accuracy of Hazus data is somewhat lower than that of parcel data. For the critical facility analysis, areas of concern were intersected with critical facility locations.

**Figure E.21** shows the Wildland Urban Interface Risk Index (WUIRI) data, which is a data layer that shows a rating of the potential impact of a wildfire on people and their homes. The key input, Wildland Urban Interface (WUI), reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the WUI and rural areas is key information for defining potential wildfire impacts to people and homes. Initially provided as raster data, it was converted to a polygon to allow for analysis. The Wildland Urban Interface Risk Index data ranges from 0 to -9 with lower values being most severe (as noted previously, this is only a measure of relative risk). **Figure E.22** shows the areas of analysis where any grid cell is less than -4. Areas with a value below -4 were chosen to be displayed as areas of risk because this showed the upper echelon of the scale and the areas at highest risk.

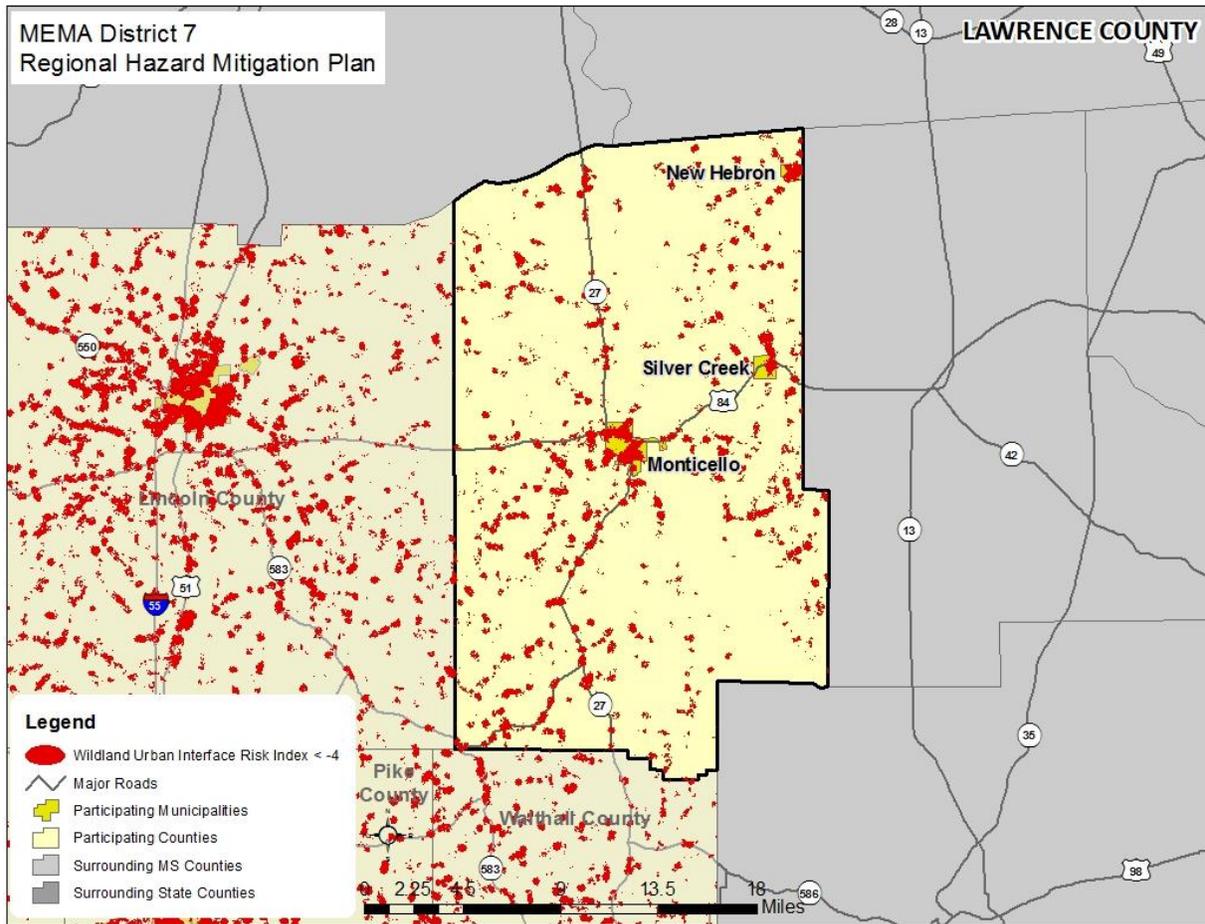
**Table E.40** shows the results of the analysis.

FIGURE E.21: WUI RISK INDEX AREAS IN LAWRENCE COUNTY



Source: Southern Wildfire Risk Assessment Data

**FIGURE E.22: WILDFIRE RISK AREAS IN LAWRENCE COUNTY**



Source: Southern Wildfire Risk Assessment Data

**TABLE E.40: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO WILDFIRE RISK AREAS<sup>26</sup>**

| Location                     | Wildfire Risk Area             |                        |
|------------------------------|--------------------------------|------------------------|
|                              | Approx. Number of Improvements | Approx. Improved Value |
| Monticello                   | 862                            | \$219,887,000          |
| New Hebron                   | 262                            | \$53,898,000           |
| Silver Creek                 | 139                            | \$19,344,000           |
| Unincorporated Area          | 4,896                          | \$754,251,000          |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>6,159</b>                   | <b>\$1,047,380,000</b> |

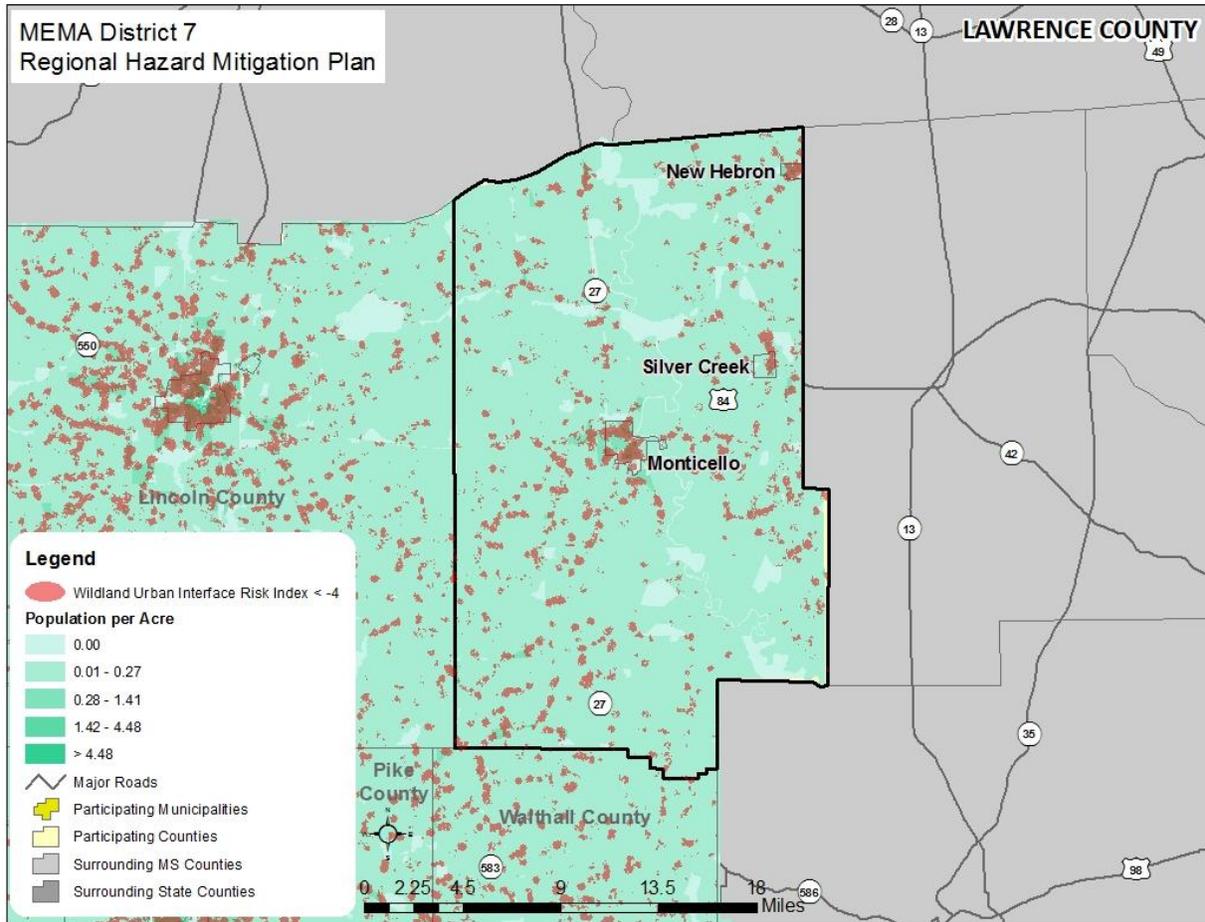
Source: Southern Wildfire Risk Assessment; Hazus-MH 4.0

<sup>26</sup> Parcel/Building Footprint data was not available for Lawrence County. Therefore, building counts and values were pulled from Hazus-MH at the census block level and approximate improved value was calculated.

**Social Vulnerability**

Given some level of susceptibility across the entire county, it is assumed that the total population is at risk to the wildfire hazard. **Figure E.23** shows an overlay of the wildfire risk areas identified above with the population density by census block. This shows that many of the areas of higher population concentration are susceptible to wildfire because of their proximity to the wildland urban interface.

**FIGURE E.23: WILDFIRE RISK AREAS IN LAWRENCE COUNTY**



Source: Southern Wildfire Risk Assessment Data; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are 23 critical facilities located in wildfire areas of concern, including 1 EOC, 8 fire stations, 1 government/public building, 2 medical care facilities, 3 police stations, 2 private sector buildings, and 6 schools. It should be noted, that several factors could impact the spread of a wildfire putting all facilities at risk. A list of specific critical facilities and their associated risk can be found in **Table E.45** at the end of this subsection.

In conclusion, a wildfire event has the potential to impact many existing and future buildings, critical facilities, and populations in Lawrence County.

## EARTHQUAKE

As the Hazus-MH model suggests below, and historical occurrences confirm, any significant earthquake activity in the area is likely to inflict minor damage to the county. Hazus-MH 4.0 estimates a total annualized loss of \$8,000 which includes structural and non-structural damage to buildings, contents, and inventory throughout the county.

For the earthquake hazard vulnerability assessment, a probabilistic scenario was created to estimate the average annualized loss<sup>27</sup> for the county. The results of the analysis are generated at the census tract level within Hazus-MH and then aggregated to the county level. Since the scenario is annualized, no building counts are provided. Losses reported included losses due to structure failure, building loss, contents damage, and inventory loss. They do not include losses to business interruption, lost income, or relocation. **Table E.41** summarizes the findings with results rounded to the nearest thousand.

**TABLE E.41: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR EARTHQUAKE HAZARD**

| Location        | Structural Damage | Non-Structural Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|-----------------|-------------------|-----------------------|-----------------|----------------|-----------------------|
| Lawrence County | \$2,000           | \$5,000               | \$1,000         | \$0            | \$8,000               |

Source: Hazus-MH 4.0

### Social Vulnerability

It can be assumed that all existing and future populations are at risk to the earthquake hazard.

### Critical Facilities

The Hazus-MH probabilistic analysis did not indicate that any critical facilities would sustain measurable damage in an earthquake event. However, all critical facilities should be considered at-risk to minor to moderate damage should an event occur. A list of specific critical facilities and their associated risk can be found in **Table E.45** at the end of this subsection.

In conclusion, an earthquake has the potential to impact all existing and future buildings, facilities, and populations in Lawrence County. Specific vulnerabilities for these assets will be greatly dependent on their individual design and the mitigation measures in place. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. The Hazus-MH scenario indicates that minimal to moderate damage is expected from an earthquake occurrence. While Lawrence County may not experience a catastrophic earthquake, localized damage is possible with a moderate to larger scale occurrence.

## HURRICANE AND TROPICAL STORM

Historical evidence indicates that Lawrence County has significant risk to the hurricane and tropical storm hazard. There have been five disaster declarations due to hurricanes as noted in previous sections. Several tracks have come near or traversed through the county, as shown and discussed in Section E.2.10. Hazus-MH 4.0 estimates a total annualized loss of \$335,000 which includes buildings, contents, and inventory throughout the county.

<sup>27</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

Hurricanes and tropical storms can cause damage through numerous additional hazards such as flooding, erosion, tornadoes, and high winds, thus it is difficult to estimate total potential losses from these cumulative effects. The current Hazus-MH hurricane model only analyzes hurricane winds and is not capable of modeling and estimating cumulative losses from all hazards associated with hurricanes; therefore, only hurricane winds are analyzed in this section. It can be assumed that all existing and future buildings and populations are at risk to the hurricane and tropical storm hazard. Hazus-MH 4.0 was used to determine average annualized losses<sup>28</sup> for the county as shown below in **Table E.42**. Only losses to buildings, inventory, and contents are included in the results.

**TABLE E.42: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR HURRICANE WIND HAZARD**

| Location        | Building Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|-----------------|-----------------|-----------------|----------------|-----------------------|
| Lawrence County | \$232,000       | \$103,000       | \$0            | \$335,000             |

Source: Hazus-MH 4.0

**Social Vulnerability**

Given some equal susceptibility across the entire county, it is assumed that the total population, both current and future, is at risk to the hurricane and tropical storm hazard.

**Critical Facilities**

Given equal vulnerability across Lawrence County, all critical facilities are considered to be at risk. Some buildings may perform better than others in the face of such an event due to construction and age, among other factors. Determining individual building response is beyond the scope of this plan. However, this plan will consider mitigation action for especially vulnerable structures and/or critical facilities to mitigate against the effects of the hurricane hazard. A list of specific critical facilities can be found in **Table E.45** at the end of this subsection.

In conclusion, a hurricane event has the potential to impact many existing and future buildings, critical facilities, and populations in Lawrence County.

**RADIOLOGICAL EVENT**

The location of Grand Gulf and River Bend Nuclear Stations north and south of the region, respectively, demonstrate that the county is at some risk to the effects of a nuclear accident. Although there have not been any major events at these plants in the past, there have been major events at other nuclear stations around the country. Additionally, smaller scale incidents at both these nuclear stations have occurred.

In order to assess nuclear risk, a GIS-based analysis was used to estimate exposure during a nuclear event within each of the risk zones described in Section E.2.14. The determination of assessed value at-risk (exposure) was calculated using GIS analysis by summing the total values for those properties that were confirmed to be located within one of the risk zones. **Table E.43** presents potential at-risk properties in the 50-mile buffer zone (no property was located in the 10-mile buffer zone). The number of buildings, parcels, and the approximate value are presented.

<sup>28</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

**TABLE E.43: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO A NUCLEAR ACCIDENT**

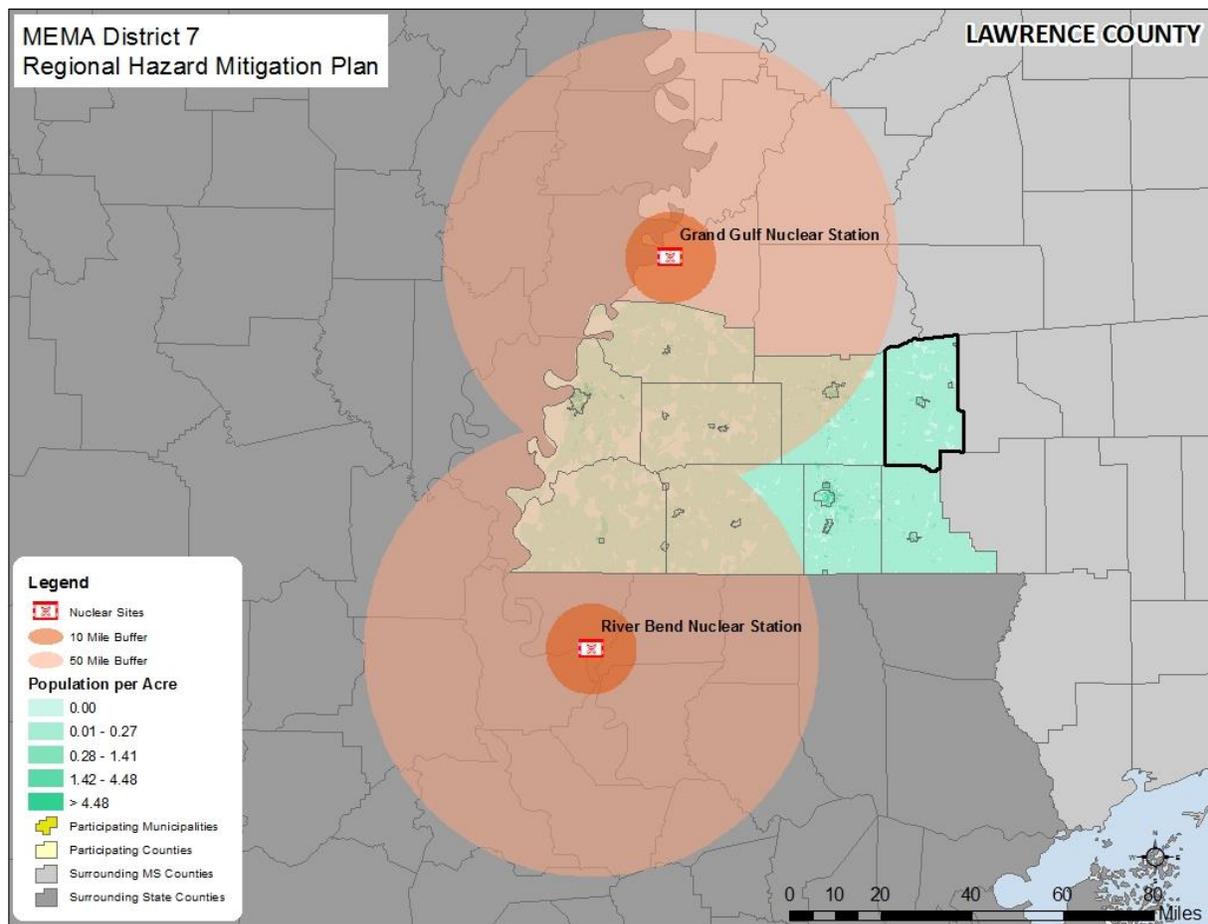
| Location                     | 50-mile Nuclear Buffer Area    |                        |
|------------------------------|--------------------------------|------------------------|
|                              | Approx. Number of Improvements | Approx. Improved Value |
| Monticello                   | 0                              | \$0                    |
| New Hebron                   | 0                              | \$0                    |
| Silver Creek                 | 0                              | \$0                    |
| Unincorporated Area          | 0                              | \$0                    |
| <b>LAWRENCE COUNTY TOTAL</b> | <b>3,686</b>                   | <b>\$697,417,000</b>   |

Source: International Atomic Energy Agency; Hazus-MH 4.0

**Social Vulnerability**

Although none of the county is within the 50-mile buffer area, the county is located just outside of this zone, so the entire population may be at some risk to a radiological event. This risk can be seen in **Figure E.24**.

**FIGURE E.24: POPULATION DENSITY NEAR NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN LAWRENCE COUNTY**



Source: International Atomic Energy Agency; United States Census Bureau, 2010 Census

### Critical Facilities

The critical facility analysis revealed that there are no critical facilities located in the 50-mile nuclear buffer area. However, the county is located just outside of the buffer area, so facilities may be at some risk. No critical facilities are located in the 10-mile buffer area. A list of specific critical facilities and their associated risk can be found in **Table E.45** at the end of this section.

In conclusion, a nuclear accident has the potential to impact existing and future buildings, facilities, and populations in Lawrence County.

### CONCLUSIONS ON HAZARD VULNERABILITY

**Table E.44** presents a summary of annualized loss for each hazard in Lawrence County. Due to the reporting of hazard damages primarily at the county level, it was difficult to determine an accurate annualized loss estimate for each municipality. Therefore, an annualized loss was determined through the damage reported through historical occurrences at the county level. These values should be used as an additional planning tool or measure risk for determining hazard mitigation strategies throughout the county.

**TABLE E.44: ANNUALIZED LOSS FOR LAWRENCE COUNTY**

| Event                         | Lawrence County |
|-------------------------------|-----------------|
| <b>Flood-related Hazards</b>  |                 |
| Dam and Levee Failure         | Negligible      |
| Erosion                       | Negligible      |
| Flood                         | \$125,607       |
| <b>Fire-related Hazards</b>   |                 |
| Drought                       | \$5,336         |
| Lightning                     | \$25,249        |
| Wildfire                      | Negligible      |
| <b>Geologic Hazards</b>       |                 |
| Earthquake*                   | \$2,000         |
| <b>Wind-related Hazards</b>   |                 |
| Extreme Heat                  | Negligible      |
| Hailstorm                     | \$13,278        |
| Hurricane & Tropical Storm    | \$10,431,225    |
| Severe Thunderstorm/High Wind | \$67,885        |
| Tornado                       | \$11,325,217    |
| Winter Storm & Freeze         | \$147,017       |
| <b>Human-caused Hazards</b>   |                 |
| Radiological Event            | Negligible      |

\*No historic losses for earthquake were recorded, so Hazus estimates for annualized loss were used.

| Event | Lawrence County |
|-------|-----------------|
|-------|-----------------|

Note: In this table, the term “Negligible” is used to indicate that no records of dollar losses for the particular hazard were recorded. This could be the case either because there were no events that caused dollar damage or because documentation of that particular type of event is not well kept.

As noted previously, all existing and future buildings and populations (including critical facilities) are vulnerable to atmospheric hazards including drought, lightning, extreme heat, hailstorm, hurricane and tropical storm, severe thunderstorm/high wind, tornado, and winter storm and freeze. Some buildings may be more vulnerable to these hazards based on other factors such as construction and building type. **Table E.45** shows the critical facilities vulnerable to the hazards analyzed in this section. The table lists those assets that are determined to be exposed to each of the identified hazards (marked with an “X”).

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**TABLE E.45: AT-RISK CRITICAL FACILITIES IN LAWRENCE COUNTY**

| FACILITY NAME                       | FACILITY TYPE     | FLOOD-RELATED         |         |                | FIRE-RELATED   |         |           | GEO      | WIND-RELATED |              |           |                              |                                    |         | HUM                     |                                 |
|-------------------------------------|-------------------|-----------------------|---------|----------------|----------------|---------|-----------|----------|--------------|--------------|-----------|------------------------------|------------------------------------|---------|-------------------------|---------------------------------|
|                                     |                   | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought | Lightning | Wildfire | Earthquake   | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Linch Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area |
| <b>Lawrence County</b>              |                   |                       |         |                |                |         |           |          |              |              |           |                              |                                    |         |                         |                                 |
| Lawrence County EOC                 | EOC               |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Arm Volunteer Fire Department       | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Center Fire Department              | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Monticello Fire Department          | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| New Hebron Volunteer Fire Rescue    | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| North Pleasant Hill Fire Department | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Oakvale Fire Department             | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Oma Fire Department                 | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Silver Creek Fire & Rescue          | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Sontag Fire Department              | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Tilton Fire Department              | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Topeka Fire Department              | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Wanilla Fire Department             | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Lawrence County Courthouse          | Government/Public |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Lawrence County Hospital            | Medical Care      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Lawrence County Nursing Home        | Medical Care      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Lawrence County Sheriff's Ofc       | Police Station    |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Monticello Police Dept              | Police Station    |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |

ANNEX E: LAWRENCE COUNTY

| FACILITY NAME                   | FACILITY TYPE  | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                                   |         |                         | HUM                             |                                 |
|---------------------------------|----------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-----------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|                                 |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Lightning | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| New Hebron Police Dept          | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |
| Georgia-Pacific Corp            | Private Sector |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |
| Kellwood                        | Private Sector |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |
| Monticello Hardwood Inc         | Private Sector |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |
| Screening Systems Int.          | Private Sector |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |
| Lawrence County High School     | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |
| Lawrence County Voc-Tech Center | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |
| Monticello Elementary School    | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |
| New Hebron Attendance Center    | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |
| Paige Middle School             | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |
| Topeka-Tilton Attendance Center | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |

## E.4 LAWRENCE COUNTY CAPABILITY ASSESSMENT

This subsection discusses the capability of Lawrence County to implement hazard mitigation activities. More information on the purpose and methodology used to conduct the assessment can be found in Section 7: *Capability Assessment*.

### E.4.1 Planning and Regulatory Capability

**Table E.46** provides a summary of the relevant local plans, ordinances, and programs already in place or under development for Lawrence County. A checkmark (✓) indicates that the given item is currently in place and being implemented. An asterisk (\*) indicates that the given item is currently being developed for future implementation. A dagger (†) indicates that the given item is administered for that municipality by the county. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the MEMA District 7 Regional Hazard Mitigation Plan.

**TABLE E.46: RELEVANT PLANS, ORDINANCES, AND PROGRAMS**

| Planning Tool/Regulatory Tool | Hazard Mitigation Plan | Threat and Hazard Identification and Risk Assessment (THIRA) | Comprehensive Land Use Plan | Floodplain Management Plan/Flood Mitigation Plan | Open Space Management Plan (Parks & Rec/Greenway Plan) | Stormwater Management Plan/Ordinance | Natural Resource Protection Plan | Flood Response Plan | Emergency Operations Plan | Emergency Management Accreditation Program (EMAP Accreditation) | Continuity of Operations Plan | Evacuation Plan | Disaster Recovery Plan | Capital Improvements Plan | Economic Development Plan | Historic Preservation Plan | Flood Damage Prevention Ordinance | Zoning Ordinance | Subdivision Ordinance | Unified Development Ordinance | Post-Disaster Redevelopment/ Reconstruction Plan/ Ordinance | Building Code | Fire Code | National Flood Insurance Program (NFIP) | NFIP Community Rating System (CRS Program) |
|-------------------------------|------------------------|--|-----------------------------|--|--|--------------------------------------|----------------------------------|---------------------|---------------------------|---|-------------------------------|-----------------|------------------------|---------------------------|---------------------------|----------------------------|-----------------------------------|------------------|-----------------------|-------------------------------|---|---------------|-----------|---|--|
|                               | LAWRENCE COUNTY        | ✓  |                             |  |  |                                      |                                  |                     |                           | ✓   |                               |                 |                        |                           |                           | ✓                          |                                   | ✓                |                       |                               |   |               |           |   | ✓  |
| Monticello                    | †                      |  |                             |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            | ✓                                 | ✓                | ✓                     |                               |   |               |           | ✓                                       |  |
| New Hebron                    | †                      |  |                             |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            | ✓                                 |                  |                       |                               |   |               |           | ✓                                       |  |
| Silver Creek                  | †                      |  |                             |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            | ✓                                 |                  |                       |                               |   |               |           | ✓                                       |  |

A more detailed discussion on the county’s planning and regulatory capabilities follows.

### EMERGENCY MANAGEMENT

#### Hazard Mitigation Plan

Lawrence County has previously adopted a hazard mitigation plan. The Town of Monticello, Town of New Hebron, and Town of Silver Creek were also included in this plan.

### Emergency Operations Plan

Lawrence County maintains an emergency operations plan through its Emergency Management Agency. The Town of Monticello, Town of New Hebron, and Town of Silver Creek are also covered by this plan.

### GENERAL PLANNING

#### Zoning Ordinance

The Town of Monticello is the only jurisdiction in Lawrence County that has adopted a zoning ordinance.

#### Subdivision Ordinance

The Town of Monticello is the only jurisdiction in Lawrence County that has adopted a subdivision ordinance.

### FLOODPLAIN MANAGEMENT

Table E.47 provides NFIP policy and claim information for each participating jurisdiction in Lawrence County.

**TABLE E.47: NFIP POLICY AND CLAIM INFORMATION**

| Jurisdiction     | Date Joined NFIP | Current Effective Map Date | NFIP Policies in Force | Insurance in Force | Closed Claims | Total Payments to Date |
|------------------|------------------|----------------------------|------------------------|--------------------|---------------|------------------------|
| LAWRENCE COUNTY† | 09/15/89         | 06/02/11                   | 50                     | \$6,992,300        | 15            | \$327,839              |
| Monticello       | 04/02/86         | 06/02/11                   | 17                     | \$4,137,100        | 10            | \$136,891              |
| New Hebron       | 08/05/85         | 06/02/11(M)                | 0                      | \$0                | 1             | \$250                  |
| Silver Creek     | 06/02/11         | 06/02/11(M)                | 0                      | \$0                | 0             | \$0                    |

†Includes unincorporated areas of county only

(M) – No Elevation Determined, All Zone A, C and X

Source: NFIP Community Status information as of 8/17/2017; NFIP claims and policy information as of 4/30/2017

All jurisdictions listed above that are participants in the NFIP will continue to comply with all required provisions of the program and will work to adequately comply in the future utilizing a number of strategies. For example, the jurisdictions will coordinate with MEMA and FEMA to develop maps and regulations related to special flood hazard areas within their jurisdictional boundaries and, through a consistent monitoring process, will design and improve their floodplain management program in a way that reduces the risk of flooding to people and property.

#### Flood Damage Prevention Ordinance

All communities participating in the NFIP are required to adopt a local flood damage prevention ordinance. Lawrence County, Town of Monticello, Town of New Hebron, and Town of Silver Creek all participate in the NFIP and have adopted flood damage prevention regulations.

## E.4.2 Administrative and Technical Capability

**Table E.48** provides a summary of the capability assessment results for Lawrence County with regard to relevant staff and personnel resources. A checkmark (✓) indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill. A dagger (†) indicates a county-level staff member(s) provides the specified knowledge or skill to that municipality.

**TABLE E.48: RELEVANT STAFF/PERSONNEL RESOURCES**

| Staff/Personnel Resource | Planners with knowledge of land development/land management practices | Engineers or professionals trained in construction practices related to buildings and/or infrastructure | Planners or engineers with an understanding of natural and/or human-caused hazards | Emergency Manager | Floodplain Manager | Land Surveyors | Scientists familiar with the hazards of the community | Staff with education or expertise to assess the community's vulnerability to hazards | Personnel skilled in GIS and/or Hazus | Resource development staff or grant writers |
|--------------------------|---|---|--|-------------------|--------------------|----------------|---|--|---------------------------------------|---|
| LAWRENCE COUNTY          |   |   |  | ✓                 | ✓                  |                | ✓   | ✓  | ✓                                     |   |
| Monticello               |   | ✓   |  | †                 | ✓                  |                | †   | †  | †                                     |   |
| New Hebron               |   |   |  | †                 | ✓                  |                | †   | †  | †                                     |   |
| Silver Creek             |   |   |  | †                 | ✓                  |                | †   | †  | †                                     |   |

Credit for having a floodplain manager was given to those jurisdictions that have a flood damage prevention ordinance, and therefore an appointed floodplain administrator, regardless of whether the appointee was dedicated solely to floodplain management. Credit was given for having a scientist familiar with the hazards of the community if a jurisdiction has a Cooperative Extension Service or Soil and Water Conservation Department. Credit was also given for having staff with education or expertise to assess the community's vulnerability to hazards if a staff member from the jurisdiction was a participant on the existing hazard mitigation plan's planning committee.

## E.4.3 Fiscal Capability

**Table E.49** provides a summary of the results for Lawrence County with regard to relevant fiscal resources. A checkmark (✓) indicates that the given fiscal resource has previously been used to implement hazard mitigation actions. A dagger (†) indicates that the given fiscal resource is locally available for hazard mitigation purposes (including match funds for state and federal mitigation grant funds).

**TABLE E.49: RELEVANT FISCAL RESOURCES**

| <b>Fiscal Tool/Resource</b> | Capital Improvement Programming | Community Development Block Grants (CDBG) | Special Purpose Taxes (or taxing districts) | Gas/Electric Utility Fees | Water/Sewer Fees | Stormwater Utility Fees | Development Impact Fees | General Obligation, Revenue, and/or Special Tax Bonds | Partnering Arrangements or Intergovernmental Agreements | Other: FEMA Hazard Mitigation Grants, Homeland Security Grants, USDA Rural Development Agency Grants, and US Economic Development Administration Grants |
|-----------------------------|---------------------------------|---|---|---------------------------|------------------|-------------------------|-------------------------|---|---|---|
| <b>LAWRENCE COUNTY</b>      |                                 | †   |   |                           |                  |                         |                         |   |   | †   |
| Monticello                  |                                 | †   |   |                           |                  |                         |                         |   |   | †   |
| New Hebron                  |                                 | †   |   |                           |                  |                         |                         |   |   | †   |
| Silver Creek                |                                 | †   |   |                           |                  |                         |                         |   |   | †   |

### E.4.4 Political Capability

During the months immediately following a disaster, local public opinion in Lawrence County is more likely to shift in support of hazard mitigation efforts.

**Table E.50** provides a summary of the results for Lawrence County with regard to political capability. A checkmark (✓) indicates the expected degree of political support by local elected officials in terms of adopting/funding information.

**TABLE E.50: LOCAL POLITICAL SUPPORT**

| <b>Political Support</b> | Limited | Moderate | High |
|--------------------------|---------|----------|------|
| <b>LAWRENCE COUNTY</b>   |         | ✓        |      |
| Monticello               |         |          | ✓    |
| New Hebron               |         | ✓        |      |
| Silver Creek             |         | ✓        |      |

## E.4.5 Conclusions on Local Capability

**Table E.51** shows the results of the capability assessment using the designed scoring methodology described in Section 7: *Capability Assessment*. The capability score is based solely on the information found in existing hazard mitigation plans and readily available on the jurisdictions' government websites. This information was reviewed by all jurisdictions and each jurisdiction provided feedback on the information included in the capability assessment. Local government input was vital to identifying capabilities. According to the assessment, the average local capability score for the county and its jurisdictions is 20.3, which falls into the limited capability ranking.

**TABLE E.51: CAPABILITY ASSESSMENT RESULTS**

| Jurisdiction    | Overall Capability Score | Overall Capability Rating |
|-----------------|--------------------------|---------------------------|
| LAWRENCE COUNTY | 22                       | Limited                   |
| Monticello      | 23                       | Limited                   |
| New Hebron      | 18                       | Limited                   |
| Silver Creek    | 18                       | Limited                   |

## E.5 LAWRENCE COUNTY MITIGATION STRATEGY

This subsection provides the blueprint for Lawrence County to follow in order to become less vulnerable to its identified hazards. It is based on general consensus of the Regional Hazard Mitigation Council and the findings and conclusions of the capability assessment and risk assessment. Additional Information can be found in Section 8: *Mitigation Strategy* and Section 9: *Mitigation Action Plan*.

### E.5.1 Mitigation Goals

Lawrence County developed six mitigation goals in coordination with the other participating MEMA District 7 Region jurisdictions. The regional mitigation goals are presented in **Table E.52**.

**TABLE E.52: MEMA DISTRICT 7 REGIONAL MITIGATION GOALS**

|         | Goal   |
|---------|--|
| Goal #1 | Increase the overall public awareness of natural hazards that face the region.   |
| Goal #2 | Retrofit of critical facilities and/or critical infrastructure to lower the risk of damage from natural hazards.   |
| Goal #3 | General improvement of regional or local mitigation planning and capability.   |
| Goal #4 | Support State Identified Mitigation Initiatives such as saferooms and storm shelters, severe weather warning systems for universities and colleges, and severe weather notification systems for local communities. |
| Goal #5 | Reduce loss of life, damage and loss of property and infrastructure, economic costs, including response, recovery and disruption of economic activity.   |

|         | Goal  |
|---------|---|
| Goal #6 | Foster cooperation among all levels of governments and the private sector with respect to improving, updating, and implementing the hazard mitigation plan. |

### **E.5.2 Mitigation Action Plan**

The mitigation actions proposed by Lawrence County, Town of Monticello, Town of New Hebron, Town of Silver Creek are listed in the following individual Mitigation Action Plans.

## Lawrence County Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------------|-------------------|---|---|-------------------------|---|
| <b>Prevention</b> |  |                           |                   |   |   |                         |   |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning</b> – The Lawrence County Board of Supervisors/Towns of Monticello, Silver Creek, and New Hebron should have a Comprehensive Plan developed to guide long term recovery and development.                   | Hurricane or other hazard | High              | Lawrence County Board of Supervisors/ Towns of Monticello, Silver Creek, and New Hebron | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Lawrence County Board of Supervisors/Towns of Monticello, Silver Creek, and New Hebron recognize that comprehensive land use planning yields many benefits for both the county and towns. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. The county and towns have not developed a Comprehensive Plan. Therefore, this action will remain in the plan. |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction. | Flood                     | Moderate          | Southwest Mississippi Planning and Development District, Inc.                           | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

| Action #                           | Description  | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|------------------------------------|--|---|-------------------|---|---|-------------------------|---|
| <b>Property Protection</b>         |  |   |                   |   |   |                         |   |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Lawrence County Board of Supervisors/Towns of Monticello, Silver Creek, and New Hebron should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Lawrence County Board of Supervisors/ Towns of Monticello, Silver Creek, and New Hebron | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Lawrence County Board of Supervisors/Towns of Monticello, Silver Creek, and New Hebron recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/town government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures |
| <b>Natural Resource Protection</b> |  |   |                   |   |   |                         |   |
| NRP-1                              |  |   |                   |   |   |                         |   |
| <b>Structural Projects</b>         |  |   |                   |   |   |                         |   |
| SP-1                               |  |   |                   |   |   |                         |   |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. The county is in the process of becoming “storm ready” countywide including the towns, so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|---|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Lawrence County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Lawrence County has received 5 generators since 2005. One at the Emergency Management office and one at New Hebron, Sontag, Monticello, and Silver Creek water associations. Lawrence County will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|--------------------------------------|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Lawrence County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Lawrence County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

**ANNEX E: LAWRENCE COUNTY**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|--------------------------------------|---|-------------------------|---|
| ES-4     | <b>Construct New Emergency Shelter</b><br>– The county should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions.                           | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Lawrence County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Lawrence County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. A 200 person evacuation shelter is still being planned but still in the initial stages of planning, so this action will remain in the plan. |
| ES-5     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system. | Tornado  | High              | Lawrence County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County General Fund  | 2022                    | Many citizens in Lawrence County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. The county currently has 5 weather sirens in addition to the sirens located within the municipalities. Additional sirens can be installed/upgraded to further improve the warning system in Lawrence County, so this action will remain in the plan.  |

**ANNEX E: LAWRENCE COUNTY**

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---|---------------------------|-------------------------|--|
| ES-6                                  | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA                | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |
| <b>Public Education and Awareness</b> |   |                     |                   |   |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Lawrence County Board of Supervisors    | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |

ANNEX E: LAWRENCE COUNTY

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| PEA-2    | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.  |
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                            |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.  | Dam Failure         | Moderate          | MDEQ, Dam Safety Division | N/A                       | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Lawrence County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan. |

**ANNEX E: LAWRENCE COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others</b> – Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.                  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                      | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan.  |

**ANNEX E: LAWRENCE COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-7    | <p><b>Education: Public Outreach –</b><br/>                     Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan. |

## Town of Monticello Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as cities develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**ANNEX E: LAWRENCE COUNTY**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as cities develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan.   |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              | <b>Bank Stabilization along Pearl River</b> – The Town of Monticello Board of Aldermen and Mayor plan to embark on a bank stabilization project to shore up the river bank in this area and prevent further damage.  | Flood               | High              | Town of Monticello Board of Aldermen and Mayor                | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2022                    | Continued failure of a section of the bank of the Pearl River in Monticello is threatening both public and private structures, including the library, county offices, and private homes and businesses. The town installed rocks along the river bank at the library and at the end of Caswell Street to assist in the stabilization and continues to explore any additional options for future stabilization, so this action will remain in the plan. |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. The county is in the process of becoming “storm ready” countywide including the towns, so this action will remain in the plan This action was combined with ES-5 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                               | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of Monticello Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Lawrence County has received 5 generators since 2005. One at the Emergency Management office and one at New Hebron, Sontag, Monticello, and Silver Creek water associations. The Town of Monticello will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|--|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Monticello Board of Aldermen and Mayor           | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Monticello continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Monticello/ Lawrence County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | Completed               | In the event of inclement weather, it is essential that residents of the Town of Monticello receive timely warnings. The town currently has 4 sirens which is deemed adequate.  |

**ANNEX E: LAWRENCE COUNTY**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                        | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency        | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Monticello Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Monticello        | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Monticello will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of New Hebron Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**ANNEX E: LAWRENCE COUNTY**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. The county is in the process of becoming “storm ready” countywide including the towns, so this action will remain in the plan This action was combined with ES-6 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                               | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of New Hebron Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Lawrence County has received 5 generators since 2005. One at the Emergency Management office and one at New Hebron, Sontag, Monticello, and Silver Creek water associations. The Town of New Hebron will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                        | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|--|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of New Hebron Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of New Hebron continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

ANNEX E: LAWRENCE COUNTY

| Action # | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                        | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|--|-------------------|--|---|-------------------------|--|
| ES-4     | <b>Construct New Emergency Shelter</b><br>– The town should construct a 50 person evacuation shelter. The town’s Volunteer Fire Department could also be housed in the new facility. | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of New Hebron Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Town of New Hebron Board of Aldermen and Mayor recognize the need to have modern, safe emergency shelters for county/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short- term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. Also, the facilities for the Volunteer Fire Department do not have adequate storage space for all of the firefighting equipment. The county has installed storm shelters for workers at all county barns, fire stations and town halls. Also, the town is still in the initial stages of planning a larger shelter, so this action will remain in the plan. |

**ANNEX E: LAWRENCE COUNTY**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                     | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---|---|-------------------------|---|
| ES-5     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system.  | Tornado             | High              | Town of New Hebron/<br>Lawrence County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund | Completed               | In the event of inclement weather, it is essential that residents of the Town of New Hebron receive timely warnings. The town has 2 sirens which is deemed adequate at this time. |
| ES-6     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency                     | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of New Hebron        | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**ANNEX E: LAWRENCE COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of New Hebron will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Silver Creek Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**ANNEX E: LAWRENCE COUNTY**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. The county is in the process of becoming “storm ready” countywide including the towns, so this action will remain in the plan This action was combined with ES-5 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                                 | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of Silver Creek Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Lawrence County has received 5 generators since 2005. One at the Emergency Management office and one at New Hebron, Sontag, Monticello, and Silver Creek water associations. The Town of Silver Creek will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|--|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Silver Creek Board of Aldermen and Mayor           | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Silver Creek continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Silver Creek/ Lawrence County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | Completed               | In the event of inclement weather, it is essential that residents of the Town of Silver Creek receive timely warnings. The town has 1 siren which is deemed adequate.   |

**ANNEX E: LAWRENCE COUNTY**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                          | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency          | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Silver Creek Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Sliver Creek      | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

ANNEX E: LAWRENCE COUNTY

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Silver Creek will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**ANNEX E: LAWRENCE COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

# ANNEX F

## LINCOLN COUNTY

This annex includes jurisdiction-specific information for Lincoln County and its participating municipalities. It consists of the following five subsections:

- F.1 Lincoln County Community Profile
  - F.2 Lincoln County Risk Assessment
  - F.3 Lincoln County Vulnerability Assessment
  - F.4 Lincoln County Capability Assessment
  - F.5 Lincoln County Mitigation Strategy
- 

### F.1 LINCOLN COUNTY COMMUNITY PROFILE

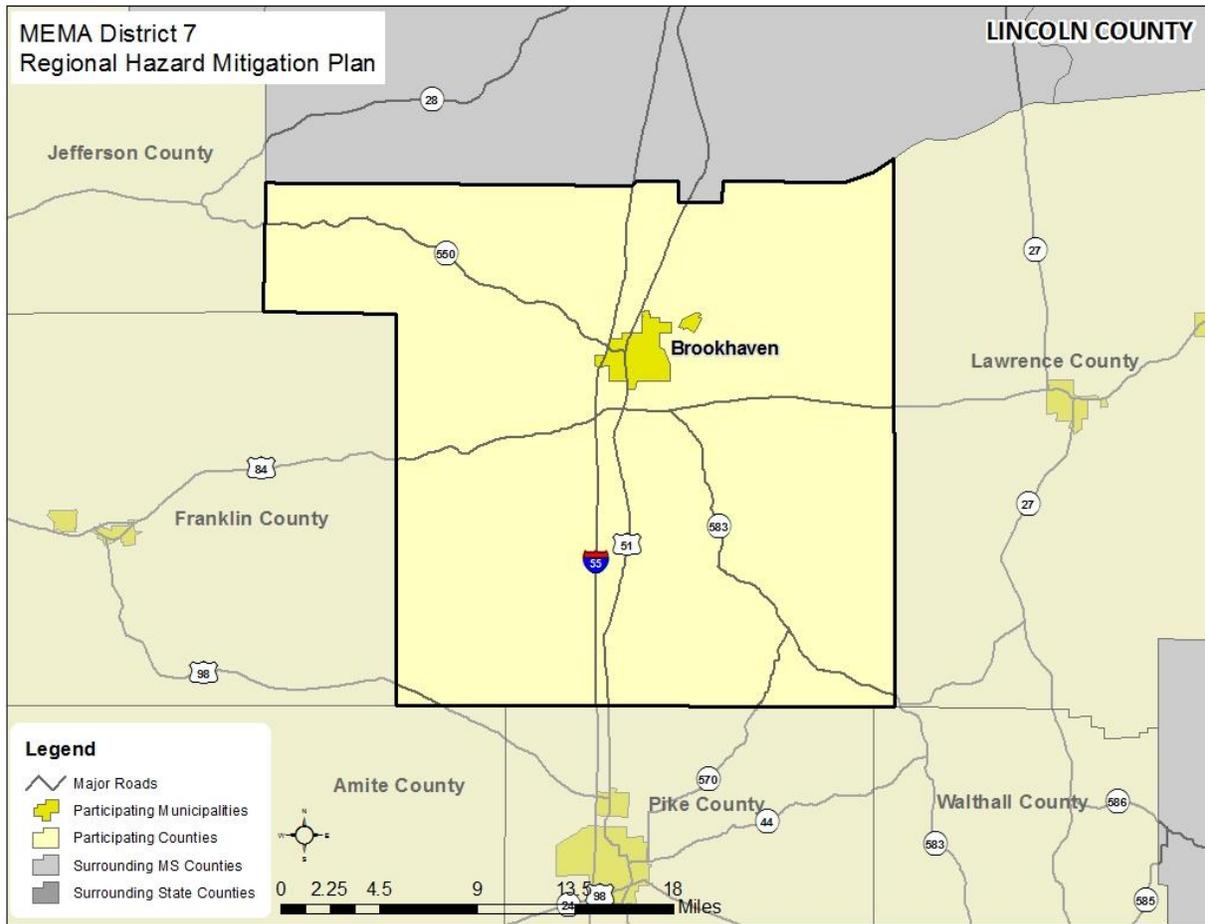
#### F.1.1 Geography and the Environment

Lincoln County is located in southwestern Mississippi. It comprises one city, City of Brookhaven, as well as many small unincorporated communities. An orientation map is provided as **Figure F.1**.

The county is located to the east of the Mississippi River supplying diverse recreational activities. The total area of the county is 588 square miles, 2 square miles of which is water area.

Lincoln County enjoys four distinct seasons but the climate in the region is generally hot and humid compared to the rest of the United States given its latitude and relative proximity to the Gulf Coast. Precipitation is generally highest in winter months when the temperatures are moderately lower, but the likelihood of precipitation remains relatively constant throughout the year. Summers in the region can become fairly hot with average highs in the nineties and lows in the seventies. The region is also often susceptible to turbulent weather when warm, wet air from the Gulf of Mexico is pushed up into the region to mix with cooler air coming down from across the continent which can result in severe weather conditions. This is particularly true in the spring when seasons are changing and diverse weather patterns interact.

**FIGURE F.1: LINCOLN COUNTY ORIENTATION MAP**



### F.1.2 Population and Demographics

According to the 2015 American Community Survey, Lincoln County has a population of 34,765 people. The county has seen an increase in population between 2000 and 2015, and the population density is 59 people per square mile. Population counts from the U.S. Census Bureau for 2000 and 2010 and from the American Community Survey for 2015 for the county and participating jurisdictions are presented in **Table F.1**.

**TABLE F.1: POPULATION COUNTS FOR LINCOLN COUNTY**

| Jurisdiction   | 2000 Census Population | 2010 Census Population | 2015 American Community Survey Estimate | % Change 2000-2015 |
|----------------|------------------------|------------------------|---|--------------------|
| Lincoln County | 33,166                 | 34,869                 | 34,765                                  | 4.8%               |
| Brookhaven     | 9,861                  | 12,513                 | 12,465                                  | 26.4%              |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

Based on the 2010 Census, the median age of residents of Lincoln County is 37.8 years. The racial characteristics of the county are presented in **Table F.2**. Whites make up the majority of the population in the county, accounting for 68 percent of the population.

**TABLE F.2: DEMOGRAPHICS OF LINCOLN COUNTY**

| Jurisdiction   | White, Percent | Black or African American, Percent | American Indian or Alaska Native, Percent | Asian, Percent | Native Hawaiian or Other Pacific Islander, Percent | Other Race, Percent | Two or More Races, percent | Persons of Hispanic Origin, Percent* |
|----------------|----------------|------------------------------------|---|----------------|--|---------------------|----------------------------|--------------------------------------|
| Lincoln County | 68.2%          | 30.8%                              | 0.0%                                      | 0.6%           | 0.0%   | 0.0%                | 0.3%                       | 1.1%                                 |
| Brookhaven     | 41.6%          | 56.7%                              | 0.0%                                      | 1.6%           | 0.0%   | 0.0%                | 0.0%                       | 0.2%                                 |

\*Hispanics may be of any race, so also are included in applicable race categories

Source: 2011-2015 American Community Survey 5-Year Estimates

### F.1.3 Housing

According to the 2010 U.S. Census, there are 15,255 housing units in Lincoln County, the majority of which are single family homes or mobile homes. Housing information for the county and municipality is presented in **Table F.3**. As shown in the table, both the incorporated city and unincorporated county have a low percentage of seasonal housing units.

**TABLE F.3: HOUSING CHARACTERISTICS OF LINCOLN COUNTY**

| Jurisdiction   | Housing Units (2000) | Housing Units (2010) | Seasonal Units, Percent (2010) | Median Home Value (2011-2015) |
|----------------|----------------------|----------------------|--------------------------------|-------------------------------|
| Lincoln County | 14,052               | 15,255               | 2.0%                           | \$85,300                      |
| Brookhaven     | 4,240                | 5,519                | 0.7%                           |                               |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

### F.1.4 Infrastructure

#### TRANSPORTATION

In Lincoln County, Interstate 55 and U.S. Highway 51 provide access to the north and south and U.S. Highway 84 provides access to the east and west.

Brookhaven-Lincoln County Airport is a general aviation airport located in the northern half of Lincoln County.

Two major freight rail lines operate within Lincoln County. Canadian National Railway is a Class I railway that operates and runs east to west and north to south in the county. Natchez Railroad is a Class III Local railway that also operates and runs east to west in the county. Business and industries rely on this line along with various other major highway routes as distribution of merchandises.

## **UTILITIES**

Electrical power in Lincoln County is provided by Entergy Mississippi Inc., Magnolia Electric Power Association, South Mississippi Electric Power Association, Southern Pine Electric Power Association, and Southwest Mississippi Electric Power Association.

Water and sewer service is provided by participating jurisdictions and/or community based associations, but unincorporated areas often rely on septic systems and wells in Lincoln County.

## **COMMUNITY FACILITIES**

There are a number of buildings and community facilities located throughout Lincoln County. According to the data collected for the vulnerability assessment (Section 6.4.1), there are 14 fire stations, 2 police stations, and 14 schools located within the county.

There are also 6 hospitals and medical care facilities located in Lincoln County. This includes King's Daughter Medical Center, a 99-bed short term acute facility located in Brookhaven.

Recreational opportunities exist throughout Lincoln County. The Homochitto National Forest comprises almost 200,000 acres of land and is partially located in Lincoln County. Visitors can camp, hike, hunt, and fish in the forest.

The Mississippi River, which runs to the east of the county, has played an integral part in the history of the county. The river acted as a major conduit for trade in the 19<sup>th</sup> century as plantations produced large quantities of cotton that could be easily shipped down to ports such as New Orleans. Today, the river is still an important part of the local economy as products are shipped worldwide out of the Natchez port. Apart from the Mississippi River there are multiple water based refuges, activities, and recreational features focused on local water bodies in the region. For instance, in Lincoln County, Lake Lincoln is great for camping, hiking, and water activities. There are also numerous other small lakes, creeks, and other water bodies throughout the region that offer the outstanding outdoor recreational opportunities for which the region is known.

### **F.1.5 Land Use**

Lincoln County has a blend of old and new development that contributes to physical, cultural, and economic attributes throughout the region. There is one incorporated municipality located in the county. This area is where the county's population is generally concentrated. The incorporated area is also where many of the businesses, commercial uses, and institutional uses are located. Land uses in the balance of the county generally consist of rural residential development, agricultural uses, and recreational areas. There are multiple county- and regional-based agencies that serve to coordinate growth and promote economic development. Local land use and associated regulations are further discussed in *Section 7: Capability Assessment*.

### **F.1.6 Employment and Industry**

According to the U.S. Census Bureau's American Community Survey (ACS), in 2015, Lincoln County had an average annual employment of 26,902 workers and an average unemployment rate of 7.5 percent

(compared to 10.3 percent for the state). In 2015, the Educational services, and health care and social assistance industry employed the most people, with 27.4 percent of the workforce, followed by Retail trade (13.0%) and Manufacturing (9.7%). The average annual median household in 2015 for Lincoln County was \$36,473 compared to \$39,665 in the state of Mississippi.

## **F.2 LINCOLN COUNTY RISK ASSESSMENT**

This subsection includes hazard profiles for each of the significant hazards identified in Section 4: *Hazard Identification* as they pertain to Lincoln County. Each hazard profile includes a description of the hazard's location and extent, notable historical occurrences, and the probability of future occurrences. Additional information can be found in Section 5: *Hazard Profiles*.

### ***FLOOD-RELATED HAZARDS***

#### **F.2.1 Dam and Levee Failure**

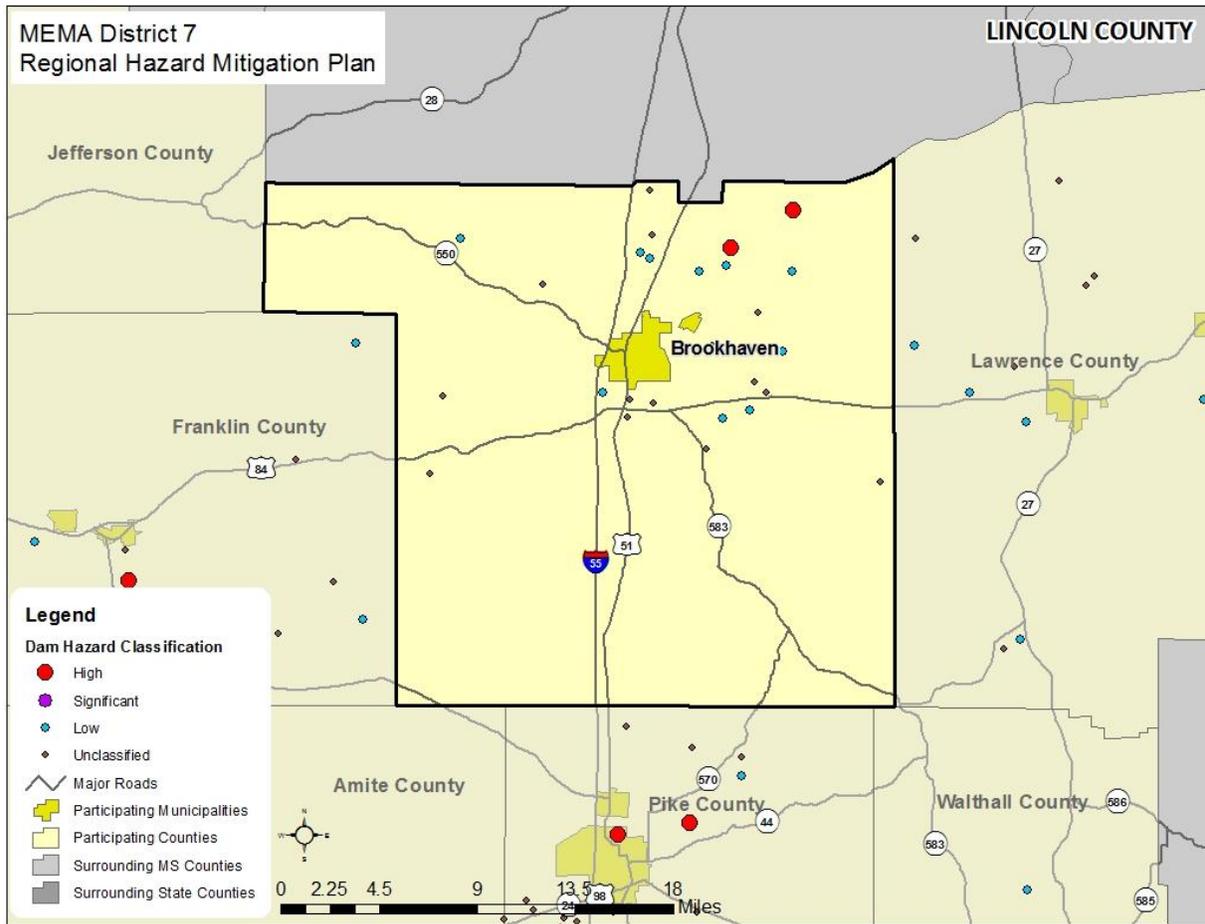
##### ***LOCATION AND SPATIAL EXTENT***

According to the Mississippi Department of Environmental Quality, there are two high hazard dams in Lincoln County.<sup>1</sup> **Figure F.2** and **Figure F.3** show the location of these high hazard dams as well as mapped inundation areas, and **Table F.4** lists them by name.

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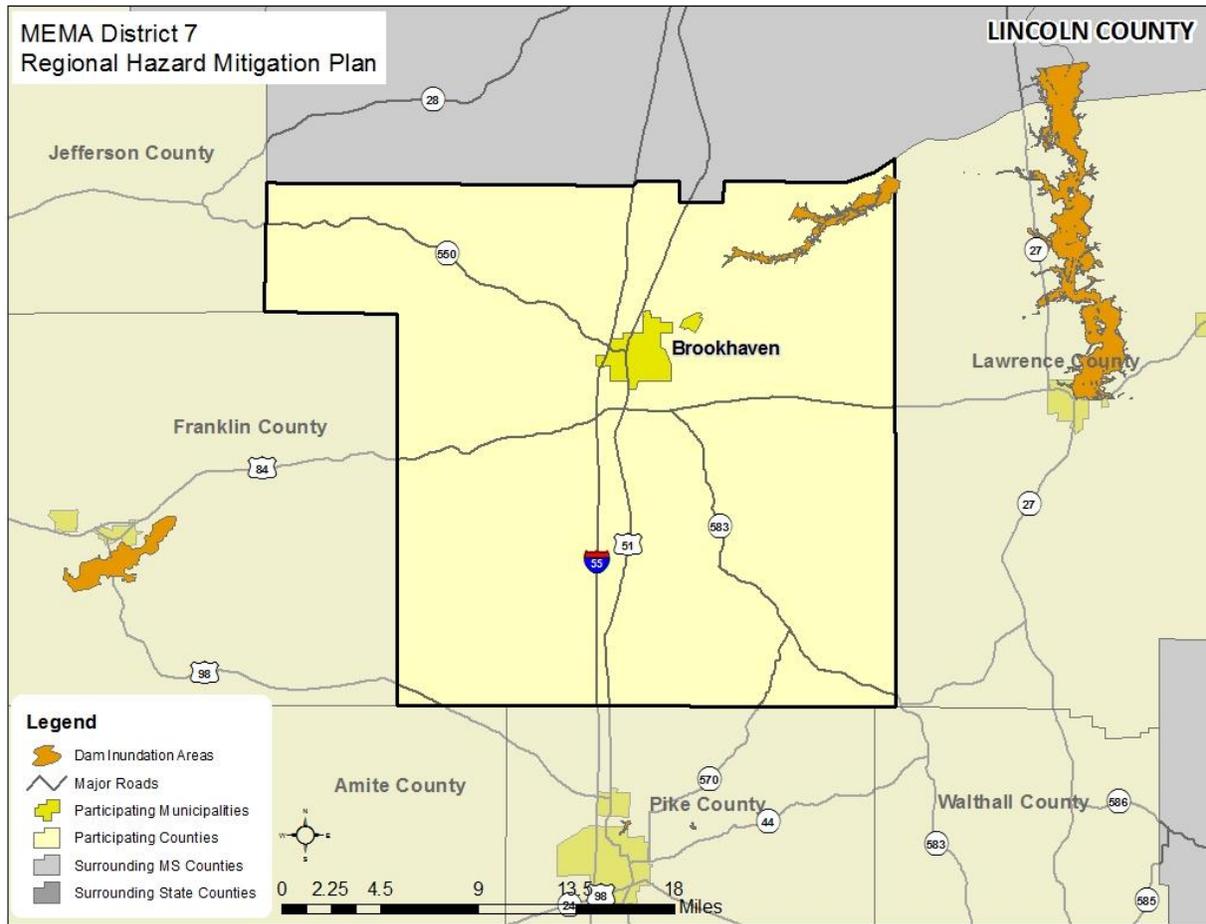
<sup>1</sup> The list of high hazard dams obtained from the Mississippi Department of Environmental Quality was reviewed and amended by local officials to the best of their knowledge.

FIGURE F.2: LINCOLN COUNTY HIGH HAZARD DAM LOCATIONS



Source: Mississippi Department of Environmental Quality

**FIGURE F.3: LINCOLN COUNTY DAM INUNDATION AREAS**



Source: Mississippi Department of Environmental Quality

**TABLE F.4: LINCOLN COUNTY HIGH HAZARD DAMS**

| Dam Name                  | Hazard Potential | Max Storage (ac/ft) | Dam Height (ft) |
|---------------------------|------------------|---------------------|-----------------|
| <b>Lincoln County</b>     |                  |                     |                 |
| LAKE LINCOLN DAM          | High             | 6,544               | 39.5            |
| BAHALA CREEK WS STR 2 DAM | High             | 1,250               | 31.0            |

Source: Mississippi Department of Environmental Quality

**HISTORICAL OCCURRENCES**

According to the Mississippi State Hazard Mitigation Plan, there have been no dam failures reported in Lincoln County (Table F.5). However, several breach scenarios in the region could be catastrophic.

**TABLE F.5: LINCOLN COUNTY DAM FAILURES (1982-2012)**

| Date          | County  | Structure Name | Cause of Failure |
|---------------|---------|----------------|------------------|
| None reported | Lincoln | --             | --               |

Source: Mississippi Department of Environmental Quality

### **PROBABILITY OF FUTURE OCCURRENCES**

Given the current dam inventory and historic data, a dam breach is possible (between 1 and 10 percent annual probability) in the future. As has been demonstrated in the past, regular monitoring is necessary to prevent these events.

## **F.2.2 Erosion**

### **LOCATION AND SPATIAL EXTENT**

Erosion in Lincoln County is typically caused by flash flooding events. Unlike coastal areas, areas of concern for erosion in Lincoln County are primarily rivers/streams and reservoirs. Generally, vegetation also helps to prevent erosion in the area, but in recent years, erosion has become a growing threat to many of the participating counties and jurisdictions.

At this time, there is no regional or state-level data available on localized areas of erosion so it is a challenge to identify particularly prone areas on a wider geographic scale. However, a few areas of concern were reported by members of the hazard mitigation council and other local sources. Locations along the Mississippi River are known to be especially at-risk, but there are locations in many areas within the region where erosion is prominent.

### **HISTORICAL OCCURRENCES**

Several sources were vetted to identify areas of erosion in Lincoln County. This includes searching local newspapers, interviewing local officials, and reviewing previous hazard mitigation plans. The locations identified above are representative of areas where erosion has taken place in the past.

These incidents have caused major problems as bridges have become damaged in many instances and made unsafe for emergency services vehicles to cross during and after storm events. This delays response times and critical life-safety support. In addition, the shutdown of roads has hurt local communities economically as trade and commerce are temporarily shut down as bridges are repaired. It has also caused disruption to daily activities for local school boards who must re-route buses around affected areas, causing additional fuel resources to be expended and increasing drive times for students.

### **PROBABILITY OF FUTURE OCCURRENCES**

Erosion remains a natural, dynamic, and continuous process for Lincoln County, and it will continue to occur. The annual probability level assigned for erosion is possible (between 1 and 10 percent annually).

## **F.2.3 Flood**

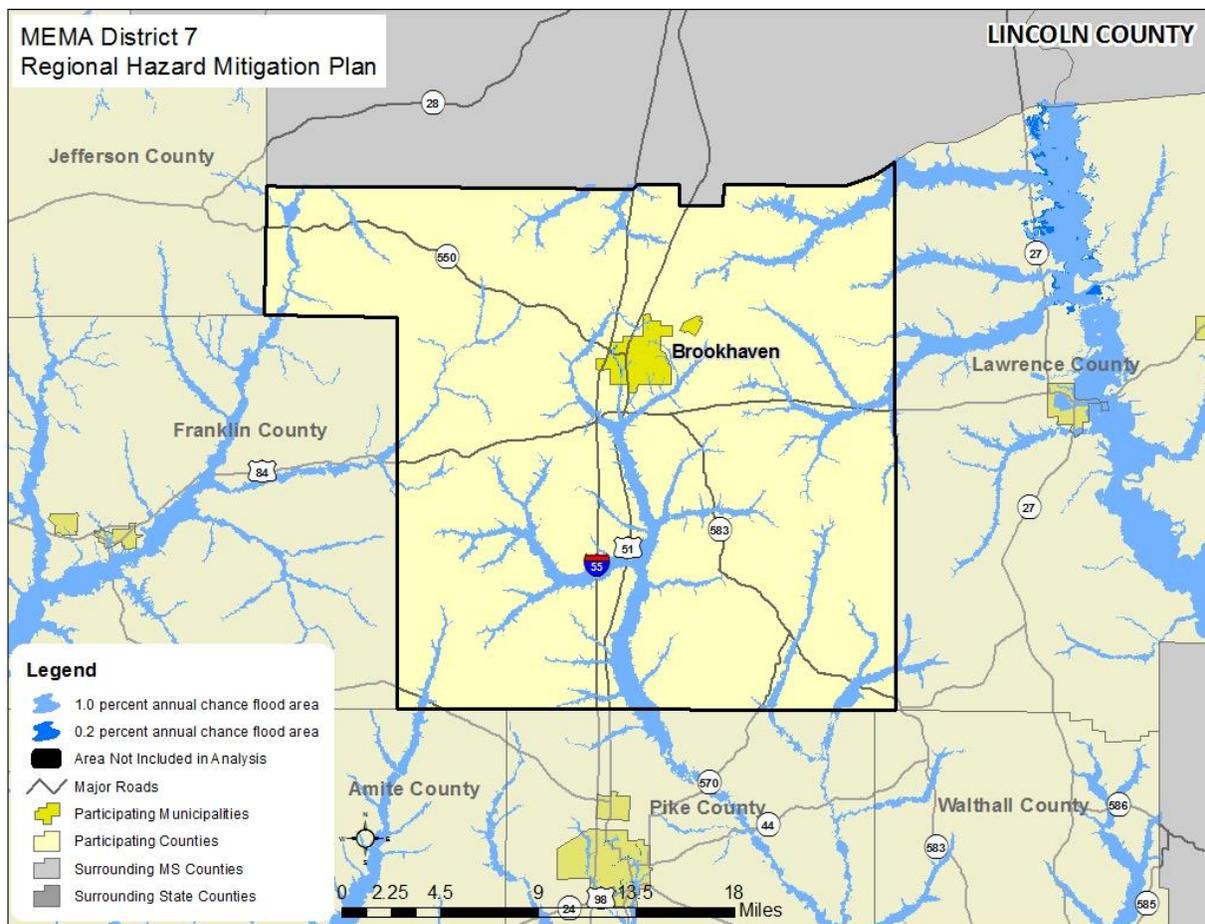
### **LOCATION AND SPATIAL EXTENT**

There are areas in Lincoln County that are susceptible to flood events. Special flood hazard areas in the county were mapped using Geographic Information System (GIS) and FEMA Digital Flood Insurance Rate

Maps (DFIRM).<sup>2</sup> This includes Zone A (1-percent annual chance floodplain), Zone AE (1-percent annual chance floodplain with elevations), and Zone X-500 (0.2-percent annual chance floodplain). According to GIS analysis, of the 584 square miles that make up Lincoln County, there are 60.42 square miles of land in zones A and AE (1-percent annual chance floodplain/100-year floodplain) and 0.04 square miles of land in zone X-500 (0.2 percent annual change floodplain/500-year floodplain).

These flood zone values account for 10.4 percent of the total land area in Lincoln County. It is important to note that while FEMA digital flood data is recognized as best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Flooding and flood-related losses often do occur outside of delineated special flood hazard areas. **Figure F.4** illustrates the location and extent of currently mapped special flood hazard areas for Lincoln County based on best available FEMA Digital Flood Insurance Rate Map (DFIRM) data.

**FIGURE F.4: SPECIAL FLOOD HAZARD AREAS IN LINCOLN COUNTY**



Source: Federal Emergency Management Agency

<sup>2</sup> The county-level DFIRM data used for Lincoln County were updated in 2010.

**HISTORICAL OCCURRENCES**

Floods were at least partially responsible for seven disaster declarations in Lincoln County in 1972, 1973, 1974, 1990, 2003, 2009, and 2016.<sup>3</sup> Information from the National Climatic Data Center was used to ascertain additional historical flood events. The National Climatic Data Center reported a total of 36 events in Lincoln County since 2001.<sup>4</sup> A summary of these events is presented in **Table F.6**. These events accounted for almost \$7.3 million (2017 dollars) in property damage.<sup>5</sup> Specific information on flood events, including date, type of flooding, and deaths and injuries, can be found in **Table F.7**.

**TABLE F.6: SUMMARY OF FLOOD OCCURRENCES IN LINCOLN COUNTY**

| Location                    | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-----------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Brookhaven                  | 14                    | 0/0             | \$1,395,306            | \$99,665                   |
| Unincorporated Area         | 22                    | 0/0             | \$5,896,211            | \$368,513                  |
| <b>LINCOLN COUNTY TOTAL</b> | <b>36</b>             | <b>0/0</b>      | <b>\$7,291,517</b>     | <b>\$468,178</b>           |

Source: National Climatic Data Center

**TABLE F.7: HISTORICAL FLOOD EVENTS IN LINCOLN COUNTY**

| Location                   | Date      | Type        | Deaths/Injuries | Property Damage* |
|----------------------------|-----------|-------------|-----------------|------------------|
| <b>Brookhaven</b>          |           |             |                 |                  |
| BROOKHAVEN                 | 2/21/2003 | Flash Flood | 0/0             | \$13,355         |
| BROOKHAVEN                 | 2/21/2003 | Flash Flood | 0/0             | \$10,684         |
| BROOKHAVEN                 | 2/21/2003 | Flash Flood | 0/0             | \$13,355         |
| BROOKHAVEN                 | 6/15/2003 | Flash Flood | 0/0             | \$266,221        |
| BROOKHAVEN                 | 5/14/2004 | Flash Flood | 0/0             | \$2,586          |
| BROOKHAVEN                 | 7/6/2004  | Flash Flood | 0/0             | \$0              |
| BROOKHAVEN                 | 12/9/2004 | Flash Flood | 0/0             | \$192,741        |
| BROOKHAVEN                 | 6/5/2005  | Flash Flood | 0/0             | \$12,572         |
| BROOKHAVEN                 | 3/8/2011  | Flash Flood | 0/0             | \$656,537        |
| BROOKHAVEN                 | 3/9/2011  | Flash Flood | 0/0             | \$218,846        |
| BROOKHAVEN                 | 9/5/2011  | Heavy Rain  | 0/0             | \$0              |
| BROOKHAVEN                 | 9/5/2011  | Flash Flood | 0/0             | \$5,389          |
| BROOKHAVEN                 | 7/21/2012 | Flash Flood | 0/0             | \$0              |
| BROOKHAVEN                 | 1/19/2017 | Flash Flood | 0/0             | \$3,021          |
| <b>Unincorporated Area</b> |           |             |                 |                  |
| COUNTYWIDE                 | 3/1/2001  | Flash Flood | 0/0             | \$0              |
| COUNTYWIDE                 | 3/2/2001  | Flash Flood | 0/0             | \$0              |
| COUNTYWIDE                 | 3/2/2001  | Flash Flood | 0/0             | \$41,633         |

<sup>3</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>4</sup> These flood events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported. As additional local data becomes available, this hazard profile will be amended.

<sup>5</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| Location          | Date       | Type        | Deaths/Injuries | Property Damage* |
|-------------------|------------|-------------|-----------------|------------------|
| COUNTYWIDE        | 3/3/2001   | Flash Flood | 0/0             | \$27,755         |
| COUNTYWIDE        | 3/3/2001   | Flash Flood | 0/0             | \$0              |
| COUNTYWIDE        | 8/12/2001  | Flash Flood | 0/0             | \$13,776         |
| COUNTYWIDE        | 9/3/2001   | Flash Flood | 0/0             | \$16,457         |
| COUNTYWIDE        | 9/26/2002  | Flash Flood | 0/0             | \$2,702          |
| COUNTYWIDE        | 2/5/2004   | Flash Flood | 0/0             | \$3,939,699      |
| BOGUE CHITTO      | 10/27/2006 | Flash Flood | 0/0             | \$60,586         |
| NEW SIGHT         | 2/21/2008  | Flash Flood | 0/0             | \$231,018        |
| THAYER            | 2/22/2008  | Flash Flood | 0/0             | \$1,155,088      |
| ARLINGTON         | 3/3/2008   | Flash Flood | 0/0             | \$5,726          |
| CASEVILLE         | 9/2/2008   | Flash Flood | 0/0             | \$223,531        |
| EAST LINCOLN      | 3/27/2009  | Flash Flood | 0/0             | \$3,449          |
| AUBURN            | 4/12/2009  | Flash Flood | 0/0             | \$114,671        |
| NORFIELD          | 5/16/2010  | Flash Flood | 0/0             | \$28,019         |
| JOHNSTONS STATION | 9/4/2011   | Flash Flood | 0/0             | \$3,233          |
| THAYER            | 10/26/2015 | Flash Flood | 0/0             | \$2,056          |
| FAIR OAKS SPGS    | 2/2/2016   | Flash Flood | 0/0             | \$10,313         |
| VAUGHN            | 2/2/2016   | Flash Flood | 0/0             | \$8,250          |
| ENTERPRISE        | 2/2/2016   | Flash Flood | 0/0             | \$8,250          |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

### HISTORICAL SUMMARY OF INSURED FLOOD LOSSES

According to FEMA flood insurance policy records as of March 31, 2017, there have been 12 flood losses reported in Lincoln County through the National Flood Insurance Program (NFIP) since 1978, totaling over \$50,000 in claims payments. A summary of these figures for the county is provided in **Table F.8**. It should be emphasized that these numbers include only those losses to structures that were insured through the NFIP policies, and for losses in which claims were sought and received. It is likely that many additional instances of flood loss in Lincoln County were either uninsured, denied claims payment, or not reported.

**TABLE F.8: SUMMARY OF INSURED FLOOD LOSSES IN LINCOLN COUNTY**

| Location                    | Number of Policies | Flood Losses | Claims Payments    |
|-----------------------------|--------------------|--------------|--------------------|
| Brookhaven                  | 67                 | 12           | \$50,445.46        |
| Unincorporated Area*        | --                 | --           | --                 |
| <b>LINCOLN COUNTY TOTAL</b> | <b>67</b>          | <b>12</b>    | <b>\$50,445.46</b> |

\*These communities do not participate in the NFIP. Therefore, no values are reported.

Source: National Flood Insurance Program

### REPETITIVE LOSS PROPERTIES

According to the Mississippi Emergency Management Agency, there are 6 non-mitigated repetitive loss properties located in Lincoln County, which accounted for 15 losses and more than \$681,000 in claims payments under the NFIP. The average claim amount for these properties is \$45,409. All six properties are single family. Without mitigation, these properties will likely continue to experience flood losses. **Table**

F.9 presents detailed information on repetitive loss properties and NFIP claims and policies for Lincoln County.

**TABLE F.9: REPETITIVE LOSS PROPERTIES IN LINCOLN COUNTY**

| Location                    | Number of Properties | Types of Properties | Number of Losses | Building Payments  | Content Payments   | Total Payments      | Average Payment    |
|-----------------------------|----------------------|---------------------|------------------|--------------------|--------------------|---------------------|--------------------|
| Brookhaven                  | 6                    | 6 single family     | 15               | \$51,572.97        | \$16,564.37        | \$681,137.34        | \$45,409.16        |
| Unincorporated Area*        | --                   | --                  | --               | --                 | --                 | --                  | --                 |
| <b>LINCOLN COUNTY TOTAL</b> | <b>6</b>             |                     | <b>15</b>        | <b>\$51,572.97</b> | <b>\$16,564.37</b> | <b>\$681,137.34</b> | <b>\$45,409.16</b> |

\*These communities do not participate in the NFIP. Therefore, no values are reported.

Source: National Flood Insurance Program

**PROBABILITY OF FUTURE OCCURRENCES**

Flood events will remain a threat in Lincoln County, and the probability of future occurrences will remain highly likely (100 percent annual probability). The probability of future flood events based on magnitude and according to best available data is illustrated in the figure above, which indicates those areas susceptible to the 1-percent annual chance flood (100-year floodplain).

It can be inferred from the floodplain location maps, previous occurrences, and repetitive loss properties that risk varies throughout the county. For example, areas in the central portion and northeastern corner of the county have more floodplain and thus a higher risk of flood than the rest of the county. Flood is not the greatest hazard of concern but will continue to occur and cause damage. Therefore, mitigation actions may be warranted, particularly for repetitive loss properties.

**FIRE-RELATED HAZARDS**

**F.2.4 Drought**

**LOCATION AND SPATIAL EXTENT**

Drought typically covers a large area and cannot be confined to any geographic or political boundaries. Furthermore, it is assumed that Lincoln County would be uniformly exposed to drought, making the spatial extent potentially widespread. It is also notable that drought conditions typically do not cause significant damage to the built environment but may exacerbate wildfire conditions.

**HISTORICAL OCCURRENCES**

According to the U.S. Drought Monitor, Lincoln County had drought levels of Severe or worse in 7 of the last 17 years (January 2000-December 2016). **Table F.10** shows the most severe drought classification for each year, according to U.S. Drought Monitor classifications. It should be noted that the U.S. Drought Monitor also estimates what percentage of the county is in each classification of drought severity. For example, the most severe classification reported may be exceptional but a majority of the county may actually be in a less severe condition.

**TABLE F.10: HISTORICAL DROUGHT OCCURRENCES IN LINCOLN COUNTY**

Abnormally Dry (D0) Moderate Drought (D1) Severe Drought (D2) Extreme Drought (D3) Exceptional Drought (D4)



| Year | Lincoln County |
|------|----------------|
| 2000 | EXCEPTIONAL    |
| 2001 | MODERATE       |
| 2002 | MODERATE       |
| 2003 | ABNORMAL       |
| 2004 | ABNORMAL       |
| 2005 | ABNORMAL       |
| 2006 | SEVERE         |
| 2007 | SEVERE         |
| 2008 | MODERATE       |
| 2009 | MODERATE       |
| 2010 | SEVERE         |
| 2011 | EXTREME        |
| 2012 | ABNORMAL       |
| 2013 | ABNORMAL       |
| 2014 | MODERATE       |
| 2015 | EXTREME        |
| 2016 | SEVERE         |

Source: United States Drought Monitor

Some additional anecdotal information was provided from the National Climatic Data Center on droughts in Lincoln County.

**Summer to Fall 2006** – During a four and a half month period, from June to the middle of October, abnormally dry conditions prevailed across most of the Jackson, MS County Warning Area (CWA). Widespread drought conditions were reported across the area during this time period. The U.S. Drought Monitor classified the drought as extreme (D3) over Southeast Mississippi. Drought conditions in the region peaked in intensity during early August over this area.

**Summer 2007** – During the month of June, the drought peaked across the region. It held firm across the same areas since May with no expansion. What did expand was the severity as by the end of June, most of Central and East-Central Mississippi was now in extreme drought (D3) with some locations across Northeast Mississippi now experiencing exceptional drought (D4). The month of June did not offer much rain as most of the forecast area saw less than 40% of the normal rainfall.

**Summer to Fall 2010** – Very dry conditions continued across central Mississippi during most of October. There were some rains that came late in the month which provided some temporary relief. Rainfall amounts ranged from a half to two inches with locally higher amounts. Most locations were 1 to 3 inches below normal for the month. The dry stretch resulted in severe (D2) drought conditions to expand during the month with even the portions of extreme (D3) drought conditions expanding as well. Crops were put under stress under the warm and dry conditions.

**Fall 2015** – The very dry conditions continued across Central Mississippi in October. The extended dry stretch resulted in an area of Severe (D2) drought developing across the area by October 6th. The drought intensified and Extreme (D3) drought conditions developed by October 13th. Approximately 25 to 50 percent of normal rainfall occurred across this area from August into mid-October. Crops were put under more stress from the dry and hot conditions.

**Fall to Winter 2016** – Dry conditions continued into November, which created continued stress on crops. The drought continued to get worse across the state through the month before some relief came in the form of showers and thunderstorms near the end of November.

### **PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that Lincoln County has a probability level of possible (between 1 and 10 percent annual probability) for future drought events. However, the extent (or magnitude) of drought and the amount of geographic area covered by drought, varies with each year. Historic information indicates that there is a much lower probability for extreme, long-lasting drought conditions.

## **F.2.5 Lightning**

### **LOCATION AND SPATIAL EXTENT**

Lightning occurs randomly, therefore it is impossible to predict where and with what frequency it will strike. It is assumed that all of Lincoln County is uniformly exposed to lightning.

### **HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, there have been eight recorded lightning events in Lincoln County since 1997.<sup>6</sup> These events resulted in over \$295,000 (2017 dollars) in damages, as listed in summary **Table F.11**.<sup>7</sup> Furthermore, lightning has caused one reported injury in Lincoln County. Detailed information on historical lightning events can be found in **Table F.12**.

It is certain that more than eight events have impacted the county. Many of the reported events are those that cause damage, and it should be expected that damages are likely much higher for this hazard than what is reported.

**TABLE F.11: SUMMARY OF LIGHTNING OCCURRENCES IN LINCOLN COUNTY**

| <b>Location</b> | <b>Number of Occurrences</b> | <b>Deaths/Injuries</b> | <b>Property Damage (2017)</b> | <b>Annualized Property Losses</b> |
|-----------------|------------------------------|------------------------|-------------------------------|-----------------------------------|
| Brookhaven      | 1                            | 0/0                    | \$152,637                     | \$7,632                           |

<sup>6</sup> These lightning events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is certain that additional lightning events have occurred in Lincoln County. As additional local data becomes available, this hazard profile will be amended.

<sup>7</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| Location                    | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-----------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Unincorporated Area         | 7                     | 0/1             | \$142,664              | \$14,266                   |
| <b>LINCOLN COUNTY TOTAL</b> | <b>8</b>              | <b>0/1</b>      | <b>\$295,301</b>       | <b>\$21,898</b>            |

Source: National Climatic Data Center

**TABLE F.12: HISTORICAL LIGHTNING OCCURRENCES IN LINCOLN COUNTY**

| Location                   | Date       | Deaths/Injuries | Property Damage* | Details   |
|----------------------------|------------|-----------------|------------------|---|
| <b>Brookhaven</b>          |            |                 |                  |   |
| BROOKHAVEN                 | 4/22/1997  | 0/0             | \$152,637        | Lightning caused two house fires.   |
| <b>Unincorporated Area</b> |            |                 |                  |   |
| RUTH                       | 8/27/2007  | 0/0             | \$47,043         | Several lightning strikes damaged several transformers near Ruth.         |
| NORFIELD                   | 1/8/2008   | 0/1             | \$0              | A house was struck by lightning and the person inside was injured.        |
| ENTERPRISE                 | 6/25/2008  | 0/0             | \$0              | Lightning struck a tree on a cattle farm and killed 7 head of cattle.     |
| BOGUE CHITTO               | 7/29/2008  | 0/0             | \$11,117         | Lightning struck the Bogue Chitto Baptist Church and damaged the steeple. |
| BOGUE CHITTO               | 12/14/2009 | 0/0             | \$39,631         | A lightning strike resulted in a house fire causing major damage.         |
| NORFIELD                   | 6/2/2010   | 0/0             | \$11,219         | A vehicle was struck by lightning near Bogue Chitto.                      |
| BOGUE CHITTO               | 6/2/2010   | 0/0             | \$33,656         | During the mid afternoon a house was struck by lightning in Bogue Chitto. |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

**PROBABILITY OF FUTURE OCCURRENCES**

Although there was not a high number of historical lightning events reported in Lincoln County via NCDC data, it is a regular occurrence accompanied by thunderstorms. In fact, lightning events will assuredly happen on an annual basis, though not all events will cause damage. According to Vaisala’s U.S. National Lightning Detection Network (NLDN), Lincoln County is located in an area of the country that experienced an average of 12 to 20 lightning flashes per square mile per year between 2007 and 2016. Therefore, the probability of future events is highly likely (100 percent annual probability). It can be expected that future lightning events will continue to threaten life and cause minor property damages throughout the county.

**F.2.6 Wildfire**

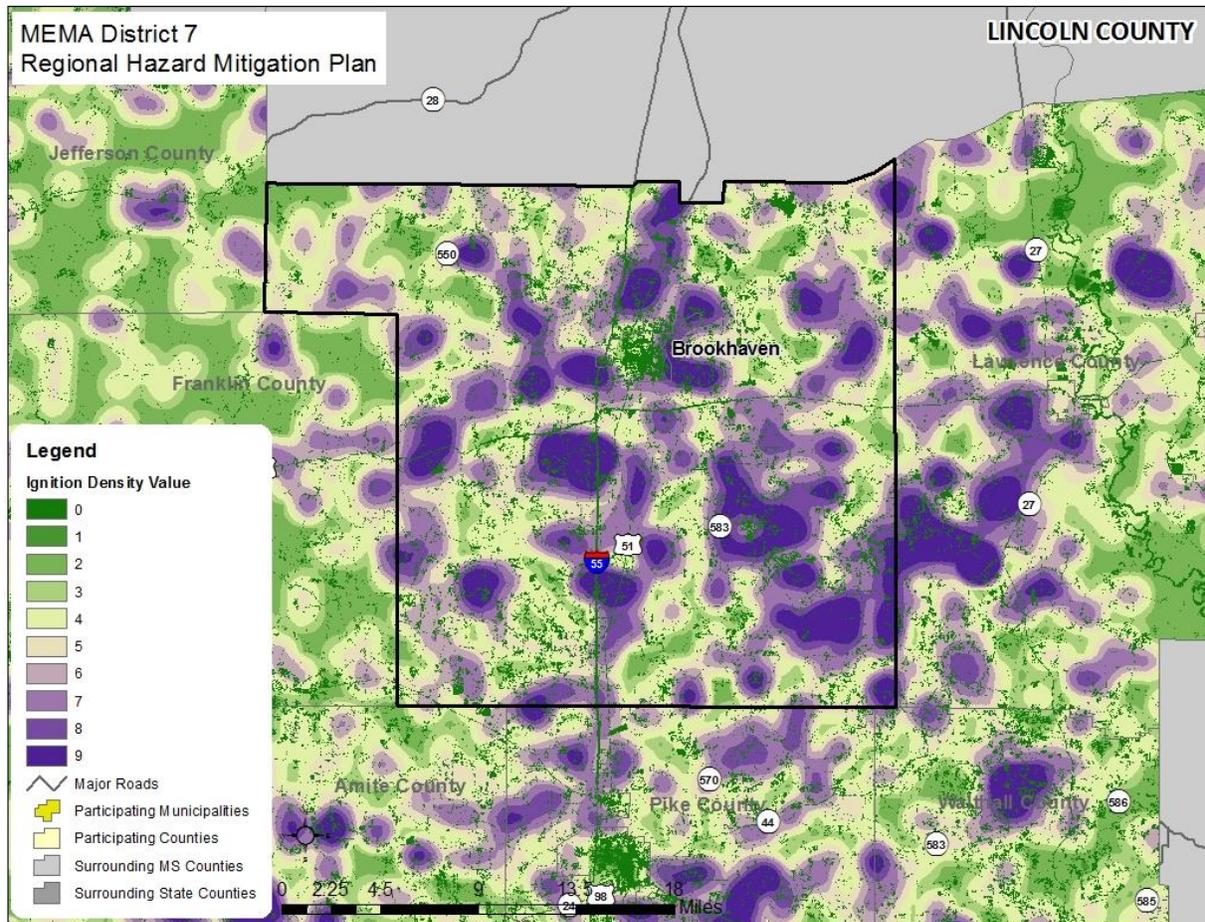
**LOCATION AND SPATIAL EXTENT**

The entire county is at risk to a wildfire occurrence. However, several factors such as drought conditions or high levels of fuel on the forest floor, may make a wildfire more likely. Furthermore, areas in the urban-wildland interface are particularly susceptible to fire hazard as populations abut formerly undeveloped areas. The Wildfire Ignition Density data shown in the figure below give an indication of historic location.

**HISTORICAL OCCURRENCES**

**Figure F.5** shows the Wildfire Ignition Density in Lincoln County based on data from the Southern Wildfire Risk Assessment. This data is based on historical fire ignitions and the likelihood of a wildfire igniting in an area. Occurrence is derived by modeling historic wildfire ignition locations to create an average ignition rate map. This is measured in the number of fires per year per 1,000 acres.<sup>8</sup>

**FIGURE F.5: WILDFIRE IGNITION DENSITY IN LINCOLN COUNTY**



Source: Southern Wildfire Risk Assessment

Based on data from the Mississippi Forestry Commission from 2007 to 2016, Lincoln County experienced an average of 50.3 wildfires annually which burned a combined 719.6 acres per year. The data indicate that most of these fires were small to moderate in size, averaging about 14.3 acres per fire. **Table F.13** provides a summary of wildfire occurrences in Lincoln County and **Table F.14** lists the number of reported wildfire occurrences in the county between the years 2007 and 2016.

<sup>8</sup> Southern Wildfire Risk Assessment, 2014.

**TABLE F.13: SUMMARY TABLE OF ANNUAL WILDFIRE OCCURRENCES (2007-2016)\***

|   | Lincoln County |
|---|----------------|
| Average Number of Fires per year        | 50.3           |
| Average Number of Acres Burned per year | 719.6          |
| Average Number of Acres Burned per fire | 14.3           |

\*These values reflect averages over a 10-year period.

Source: Mississippi Forestry Commission

**TABLE F.14: HISTORICAL WILDFIRE OCCURRENCES IN LINCOLN COUNTY**

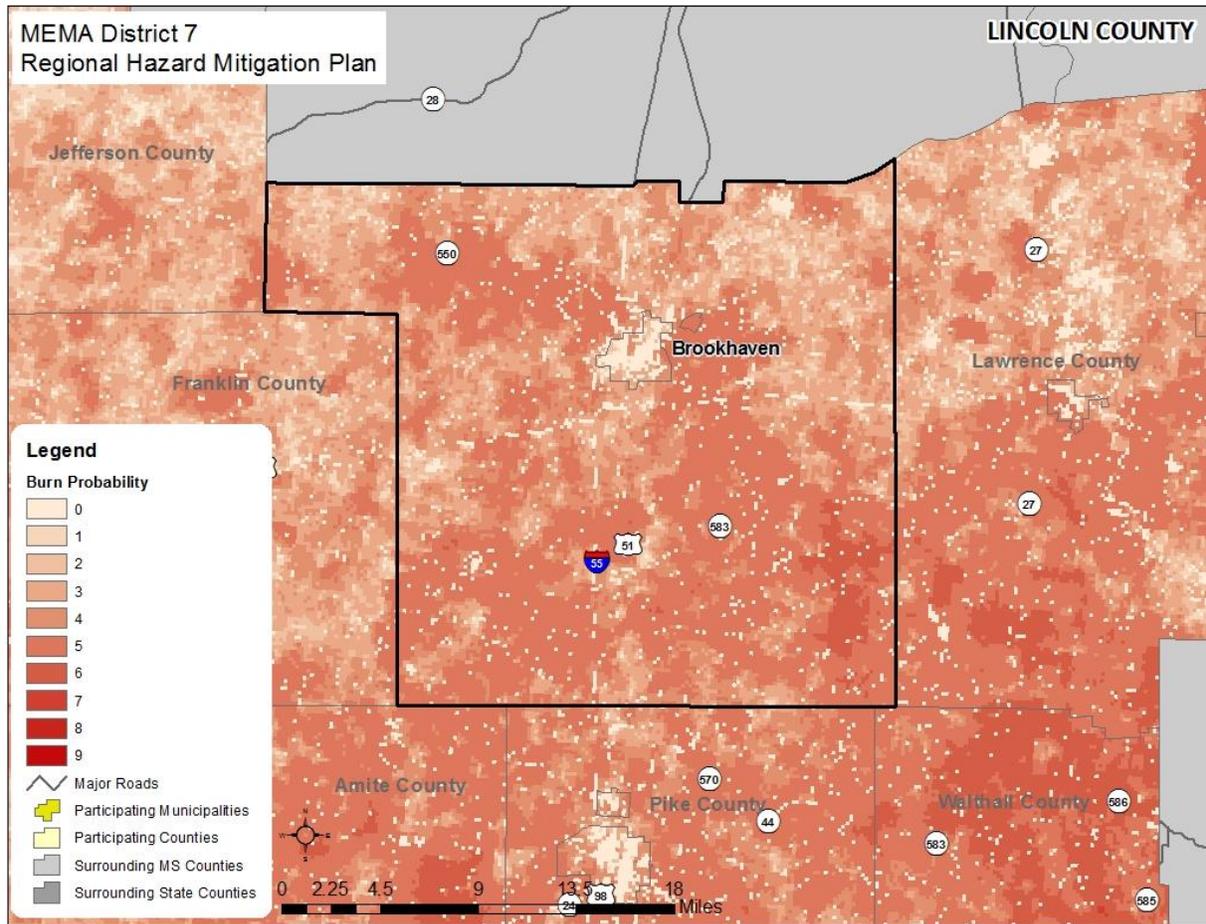
| Year                   | 2007  | 2008  | 2009 | 2010 | 2011  | 2012 | 2013 | 2014 | 2015 | 2016 |
|------------------------|-------|-------|------|------|-------|------|------|------|------|------|
| <b>Lincoln County</b>  |       |       |      |      |       |      |      |      |      |      |
| Number of Fires        | 75    | 71    | 49   | 41   | 87    | 33   | 34   | 60   | 24   | 29   |
| Number of Acres Burned | 1,632 | 1,129 | 576  | 364  | 1,292 | 344  | 486  | 877  | 218  | 278  |

Source: Mississippi Forestry Commission

### **PROBABILITY OF FUTURE OCCURRENCES**

Wildfire events will be an ongoing occurrence in Lincoln County. **Figure F.6** shows that there is some probability a wildfire will occur throughout the county. However, the likelihood of wildfires increases during drought cycles and abnormally dry conditions. Fires are likely to stay small in size but could increase due to local climate and ground conditions. Dry, windy conditions with an accumulation of forest floor fuel (potentially due to ice storms or lack of fire) could create conditions for a large fire that spreads quickly. It should also be noted that some areas do vary somewhat in risk. For example, highly developed areas are less susceptible unless they are located near the urban-wildland boundary. The risk will also vary due to assets. Areas in the urban-wildland interface will have much more property at risk, resulting in increased vulnerability and need to mitigate compared to rural, mainly forested areas. The probability assigned to Lincoln County for future wildfire events is highly likely (100 percent annual probability).

**FIGURE F.6: BURN PROBABILITY IN LINCOLN COUNTY**



Source: Southern Wildfire Risk Assessment

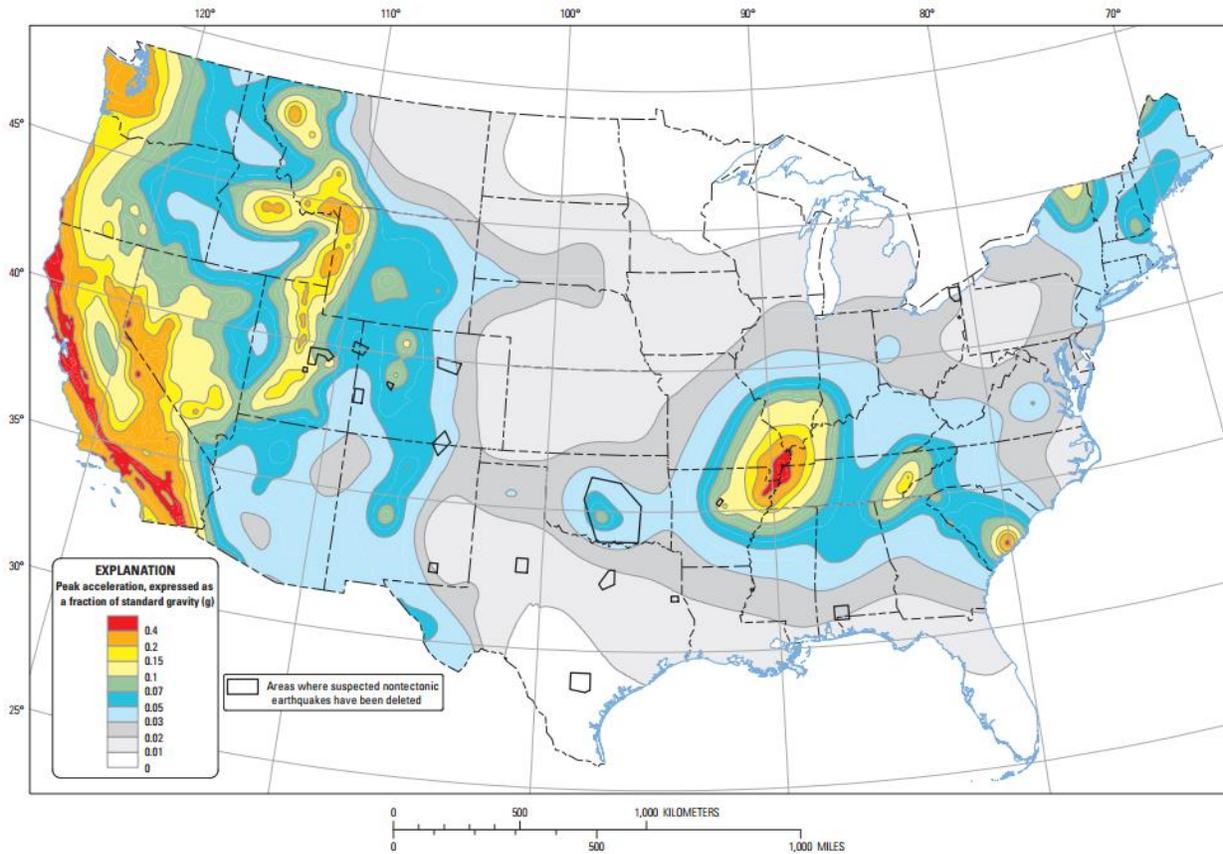
## ***GEOLOGIC HAZARDS***

### **F.2.7 Earthquake**

#### ***LOCATION AND SPATIAL EXTENT***

Figure F.7 shows the intensity level associated with Lincoln County, based on the national USGS map of peak acceleration with 10 percent probability of exceedance in 50 years. It is the probability that ground motion will reach a certain level during an earthquake. The data show peak horizontal ground acceleration (the fastest measured change in speed, for a particle at ground level that is moving horizontally due to an earthquake) with a 10 percent probability of exceedance in 50 years. The map was compiled by the U.S. Geological Survey (USGS) Geologic Hazards Team, which conducts global investigations of earthquake, geomagnetic, and landslide hazards. According to this map, Lincoln County lies within an approximate zone of level “0.01” to “0.03” ground acceleration. This indicates that the county exists within an area of low seismic risk.

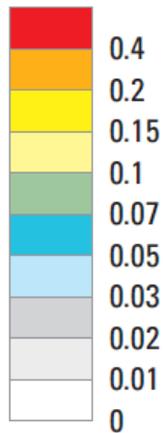
**FIGURE F.7: PEAK ACCELERATION WITH 10 PERCENT PROBABILITY OF EXCEEDANCE IN 50 YEARS**



**Ten-percent probability of exceedance in 50 years map of peak ground acceleration**

**EXPLANATION**

Peak acceleration, expressed as a fraction of standard gravity (g)



Areas where suspected nontectonic earthquakes have been deleted

Source: United States Geological Survey, 2014

The primary source of potential damage to Lincoln County from an earthquake is the New Madrid Seismic Zone (NMSZ). Historically, a series of earthquakes in 1811 and 1812 demonstrated that this fault zone can produce high magnitude seismic events, sometimes on the scale of a 7.5-8.0 on the Richter scale. The biggest challenge with earthquakes that occur in this area of seismic activity is predicting the recurrence of earthquakes emanating from this zone. Although the magnitude of earthquakes from the NMSZ can be large, they occur very irregularly and fairly infrequently. This makes it extremely difficult to project when they will occur.

It should also be noted that the State of Mississippi Hazard Mitigation Plan identifies certain areas of concern for liquefaction and lists the counties and corresponding zones within those counties that have the highest liquefaction potential. Lincoln County does not have any identified liquefaction potential risk.

**HISTORICAL OCCURRENCES**

At least one earthquake is known to have affected Lincoln County since 1886. This earthquake measured a II on the Modified Mercalli Intensity (MMI) scale. **Table F.15** provides a summary of earthquake events reported by the National Centers for Environmental Information (formerly National Geophysical Data Center) between 1638 and 1985, and **Figure F.8** presents a map showing earthquakes whose epicenters have occurred near the county between 1985 and 2015 (no earthquakes occurred within the county’s boundaries during this period). **Table F.16** presents a detailed occurrence of each event including the date, distance for the epicenter, magnitude and Modified Mercalli Intensity (if known).<sup>9</sup>

**TABLE F.15: SUMMARY OF SEISMIC ACTIVITY IN LINCOLN COUNTY**

| Location                    | Number of Occurrences | Greatest MMI Reported | Greatest Richter Scale Reported |
|-----------------------------|-----------------------|-----------------------|---------------------------------|
| Brookhaven                  | 1                     | II                    | Not Available                   |
| Unincorporated Area         | 0                     | --                    | --                              |
| <b>LINCOLN COUNTY TOTAL</b> | <b>1</b>              | <b>II</b>             | <b>--</b>                       |

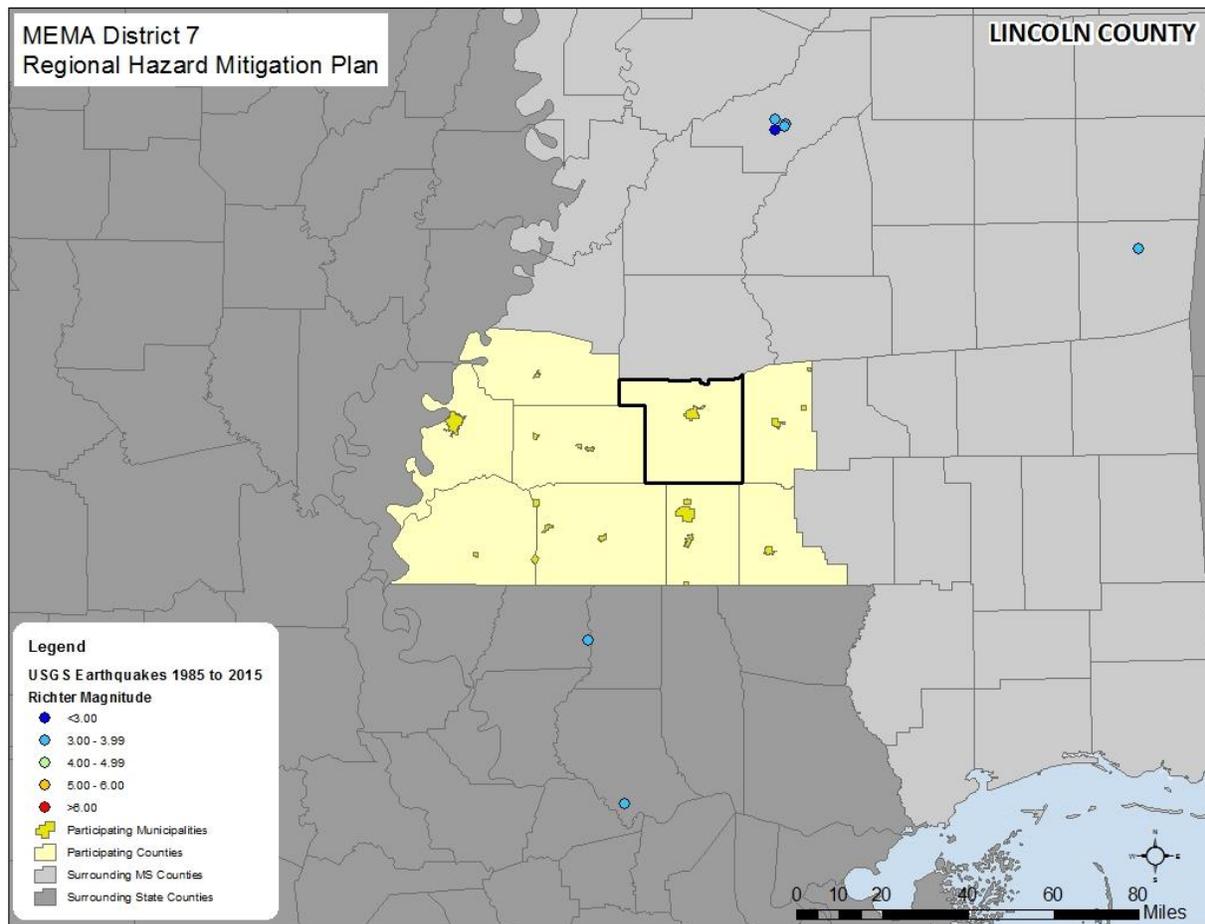
Source: National Centers for Environmental Information

**TABLE F.16: SIGNIFICANT SEISMIC EVENTS IN LINCOLN COUNTY (1638 -1985)**

| Location                   | Date     | Epicentral Distance | Magnitude | MMI |
|----------------------------|----------|---------------------|-----------|-----|
| <b>Brookhaven</b>          |          |                     |           |     |
| BROOKHAVEN                 | 9/1/1886 | 992.0 km            | Unknown   | II  |
| <b>Unincorporated Area</b> |          |                     |           |     |
| None reported              | --       | --                  | --        | --  |

Source: National Centers for Environmental Information

<sup>9</sup> Due to reporting mechanisms, not all earthquakes events were recorded during this time. Furthermore, some are missing data, such as the epicenter location, due to a lack of widely used technology. In these instances, a value of “unknown” is reported.

**FIGURE F.8: HISTORIC EARTHQUAKES WITH EPICENTERS NEAR LINCOLN COUNTY (1985-2015)**

Source: United States Geological Survey

### **PROBABILITY OF FUTURE OCCURRENCES**

The probability of significant, damaging earthquake events affecting Lincoln County is unlikely. However, it is certainly possible that future earthquakes resulting in light or moderate perceived shaking and damages will affect the county much more frequently. The annual probability level for the county is estimated to be less than 1 percent (unlikely).

## **WIND-RELATED HAZARDS**

### **F.2.8 Extreme Heat**

#### **LOCATION AND SPATIAL EXTENT**

Heat waves typically impact a large area and cannot be confined to any geographic or political boundaries. Therefore, the entire county is considered to be equally susceptible to extreme heat.

## **HISTORICAL OCCURRENCES**

The National Climatic Data Center was used to determine historical heat wave occurrences in the county.

**August 2005** – A "HOT" stretch of weather occurred during the middle to later part of August 2005. This "Heat Wave" covered a large portion of the south and lasted for a period of about 10 days. Each of these days had high temperatures consistently between 95 and 100 degrees, with 1 or 2 of these days actually reaching 100 degrees or more. Additionally, overnight lows remained warm with lower and middle 70s recorded. This is the first time since August 2000 where 100 degree temperatures were reached in this area as well as having such an extended period of "HOT" weather.

**July 2006** – A small "heat wave" gripped the region during the middle of July with high temperature ranging from the upper 90s to around 100 degrees for five days with overnight lows only reaching the middle 70s. The hottest temperatures during this period occurred from the Mississippi Delta, across northern Mississippi and then down to the Jackson Metro and toward Meridian. This area peaked between 100 and 102 degrees for at least two days during the hot five day stretch.

**August 2007** – During the first half of August, a heat wave took hold of the region and brought some of the warmest temperatures since the summer of 2000. This heat wave began around August 5th and lasted until the 16th. Between August 10th and 15th, the entire area reached 100 degrees or higher. Twenty-three record highs were also set during this time. As the temperature soared each day, high relative humidities resulted in heat index values between 105 and 112 degrees.

**August 2010** – A four day stretch of extreme temperatures occurred across the region to start off the month of August. High pressure was firmly entrenched across the southeast and allowed temperatures to soar into the triple digits across much of the region. Across the NWS Jackson, MS forecast area, 19 record highs were set between August 1st and 4th. On August 2nd, the 2nd warmest average temperature was recorded. The low was 78 and the high 105, this resulted in an average temperature of 91.5 degrees. Additionally, relatively high humidity levels made conditions even more oppressive, with heat index readings surpassing 110 degrees in many areas. This extreme heat resulted in 3 fatalities across the forecast area.

## **PROBABILITY OF FUTURE OCCURRENCES**

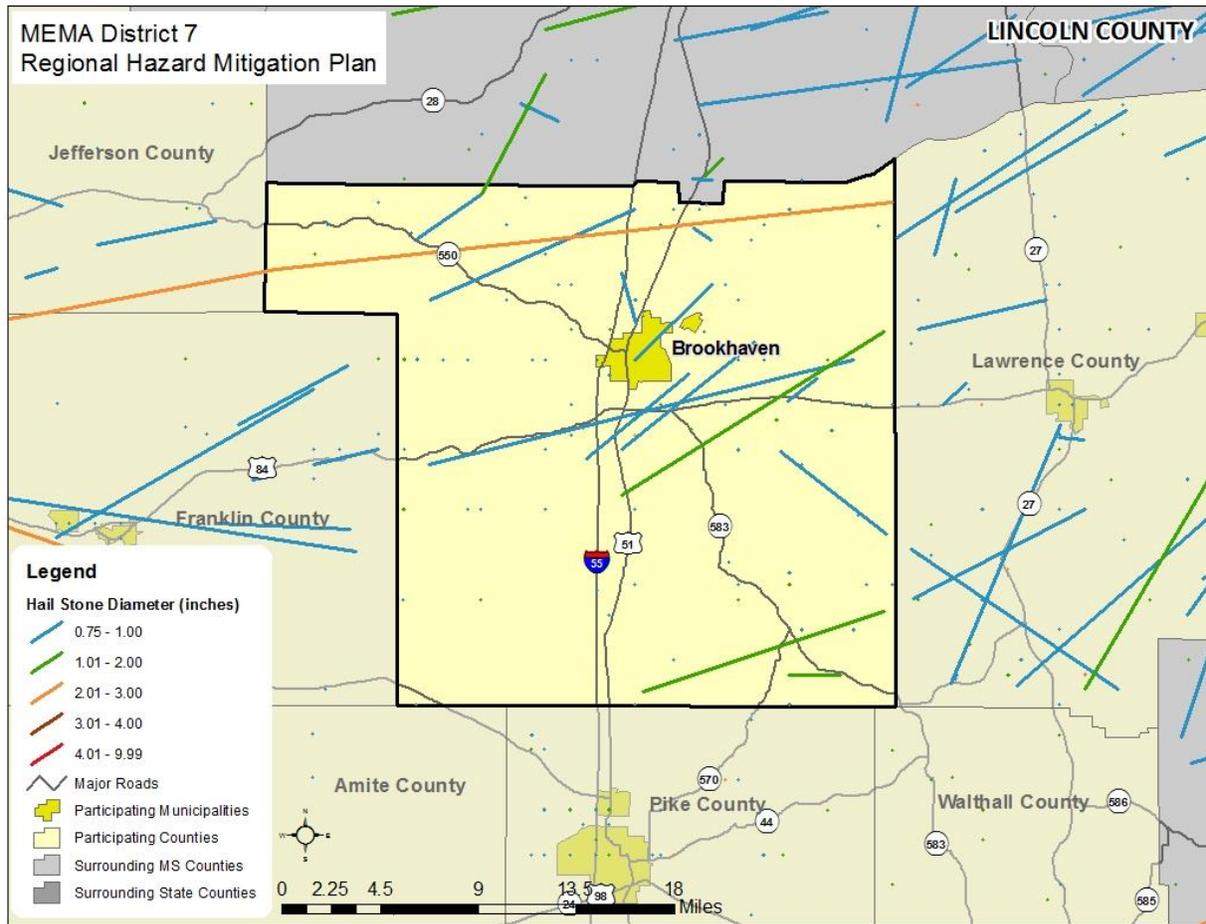
Based on historical occurrence information, it is assumed that all of Lincoln County has a probability level of likely (between 10 and 100 percent annual probability) for future heat wave events.

## **F.2.9 Hailstorm**

### **LOCATION AND SPATIAL EXTENT**

Hailstorms frequently accompany thunderstorms, so their locations and spatial extents coincide. It is assumed that Lincoln County is uniformly exposed to severe thunderstorms; therefore, all areas of the county are equally exposed to hail which may be produced by such storms. With that in mind, **Figure F.9** shows the location of hail events that have impacted the county between 1955 and 2015.

**FIGURE F.9: HAILSTORM TRACKS IN LINCOLN COUNTY**



Source: National Weather Service Storm Prediction Center

**HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, 148 recorded hailstorm events have affected Lincoln County since 1968.<sup>10</sup> **Table F.17** is a summary of the hail events in Lincoln County. **Table F.18** provides detailed information about each event that occurred in the county. In all, hail occurrences resulted in approximately \$3.0 million (2017 dollars) in property damages.<sup>11</sup> Hail ranged in diameter from 0.75 inches to 2.75 inches. It should be noted that hail is notorious for causing substantial damage to cars, roofs, and other areas of the built environment that may not be reported to the National Climatic Data Center. Therefore, it is likely that damages are greater than the reported value.

<sup>10</sup> These hail events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017. It is likely that additional hail events have affected Lincoln County. As additional local data becomes available, this hazard profile will be amended.

<sup>11</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE F.17: SUMMARY OF HAIL OCCURRENCES IN LINCOLN COUNTY**

| Location                    | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-----------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Brookhaven                  | 55                    | 0/0             | \$1,957,251            | \$88,966                   |
| Unincorporated Area         | 93                    | 0/0             | \$1,016,847            | \$20,752                   |
| <b>LINCOLN COUNTY TOTAL</b> | <b>148</b>            | <b>0/0</b>      | <b>\$2,974,098</b>     | <b>\$109,718</b>           |

Source: National Climatic Data Center

**TABLE F.18: HISTORICAL HAIL OCCURRENCES IN LINCOLN COUNTY**

| Location          | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|-------------------|------------|-----------|-----------------|------------------|
| <b>Brookhaven</b> |            |           |                 |                  |
| Brookhaven        | 3/7/1995   | 0.75 in.  | 0/0             | \$0              |
| Brookhaven        | 10/27/1995 | 2.75 in.  | 0/0             | \$795,459        |
| BROOKHAVEN        | 5/28/1997  | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 3/7/1998   | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 3/7/1998   | 1.75 in.  | 0/0             | \$376,887        |
| BROOKHAVEN        | 3/7/1998   | 0.88 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 3/7/1998   | 0.88 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 3/19/1998  | 0.88 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 3/19/1998  | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 5/3/1998   | 1.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 8/30/1998  | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 1/29/1999  | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 2/9/1999   | 1.75 in.  | 0/0             | \$111,485        |
| BROOKHAVEN        | 3/2/1999   | 1.50 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 3/2/1999   | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 4/2/2000   | 0.88 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 7/18/2000  | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 2/16/2001  | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 5/12/2001  | 1.00 in.  | 0/0             | \$11,008         |
| BROOKHAVEN        | 5/12/2001  | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 5/24/2001  | 1.00 in.  | 0/0             | \$6,880          |
| BROOKHAVEN        | 5/24/2001  | 0.88 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 6/4/2001   | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 7/6/2001   | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 3/26/2002  | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 7/7/2002   | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 7/22/2002  | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 7/22/2002  | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 3/13/2003  | 0.88 in.  | 0/0             | \$1,327          |
| BROOKHAVEN        | 4/6/2003   | 1.25 in.  | 0/0             | \$6,652          |
| BROOKHAVEN        | 4/6/2003   | 1.00 in.  | 0/0             | \$1,330          |
| BROOKHAVEN        | 4/24/2003  | 0.75 in.  | 0/0             | \$1,330          |
| BROOKHAVEN        | 2/22/2005  | 1.75 in.  | 0/0             | \$6,374          |
| BROOKHAVEN        | 2/22/2005  | 1.00 in.  | 0/0             | \$0              |
| BROOKHAVEN        | 3/22/2005  | 0.88 in.  | 0/0             | \$0              |

**ANNEX F: LINCOLN COUNTY**

| Location                   | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-----------|-----------------|------------------|
| BROOKHAVEN                 | 3/22/2005  | 0.88 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 4/6/2005   | 1.00 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 4/6/2005   | 1.75 in.  | 0/0             | \$628,273        |
| BROOKHAVEN                 | 4/26/2005  | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 7/2/2005   | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 12/4/2005  | 1.00 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 2/6/2006   | 1.00 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 7/18/2006  | 0.88 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 7/18/2006  | 0.88 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 7/19/2006  | 1.00 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 7/19/2006  | 0.88 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 8/4/2006   | 0.88 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 5/3/2007   | 0.88 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 6/24/2008  | 1.00 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 6/25/2008  | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 5/25/2010  | 0.75 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 3/17/2016  | 1.00 in.  | 0/0             | \$0              |
| BROOKHAVEN                 | 3/17/2016  | 1.75 in.  | 0/0             | \$5,134          |
| BROOKHAVEN                 | 4/14/2016  | 1.75 in.  | 0/0             | \$5,110          |
| BROOKHAVEN                 | 1/2/2017   | 1.00 in.  | 0/0             | \$0              |
| <b>Unincorporated Area</b> |            |           |                 |                  |
| LINCOLN CO.                | 4/23/1968  | 1.00 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 4/23/1968  | 0.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 5/25/1973  | 2.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 5/7/1975   | 1.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 2/25/1978  | 1.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 5/1/1978   | 2.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 5/2/1978   | 1.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 5/2/1984   | 1.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 7/23/1984  | 1.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 3/12/1986  | 0.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 4/12/1986  | 1.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 4/12/1986  | 1.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 5/18/1986  | 1.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 3/25/1988  | 0.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 4/18/1988  | 0.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 4/28/1989  | 1.00 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 11/15/1989 | 0.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 5/21/1990  | 0.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 4/14/1991  | 1.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 4/19/1991  | 1.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 4/19/1991  | 0.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 12/2/1991  | 0.75 in.  | 0/0             | \$0              |
| LINCOLN CO.                | 3/5/1992   | 0.75 in.  | 0/0             | \$0              |
| BOGUE CHITTO               | 5/28/1997  | 0.75 in.  | 0/0             | \$0              |
| VAUGHN                     | 7/15/1997  | 0.88 in.  | 0/0             | \$0              |
| AUBURN                     | 5/3/1998   | 0.88 in.  | 0/0             | \$0              |

**ANNEX F: LINCOLN COUNTY**

| Location          | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|-------------------|------------|-----------|-----------------|------------------|
| ARLINGTON         | 5/3/1998   | 1.75 in.  | 0/0             | \$0              |
| COUNTYWIDE        | 2/27/1999  | 0.75 in.  | 0/0             | \$0              |
| BOGUE CHITTO      | 4/23/2000  | 0.75 in.  | 0/0             | \$0              |
| WEST LINCOLN      | 8/31/2000  | 1.00 in.  | 0/0             | \$14,151         |
| BOGUE CHITTO      | 4/15/2001  | 1.75 in.  | 0/0             | \$22,116         |
| BOGUE CHITTO      | 7/11/2001  | 0.75 in.  | 0/0             | \$0              |
| VAUGHN            | 10/11/2001 | 1.75 in.  | 0/0             | \$6,880          |
| BOGUE CHITTO      | 4/25/2003  | 1.00 in.  | 0/0             | \$1,330          |
| RUTH              | 4/25/2003  | 1.00 in.  | 0/0             | \$1,330          |
| FAIR OAKS SPGS    | 5/14/2003  | 0.75 in.  | 0/0             | \$1,333          |
| RUTH              | 3/31/2005  | 1.00 in.  | 0/0             | \$0              |
| BOGUE CHITTO      | 4/6/2005   | 0.88 in.  | 0/0             | \$0              |
| BOGUE CHITTO      | 4/6/2005   | 0.75 in.  | 0/0             | \$0              |
| REDSTAR           | 4/6/2005   | 1.75 in.  | 0/0             | \$0              |
| VAUGHN            | 4/6/2005   | 1.00 in.  | 0/0             | \$0              |
| WEST LINCOLN      | 4/6/2005   | 1.75 in.  | 0/0             | \$62,827         |
| RUTH              | 4/6/2005   | 1.75 in.  | 0/0             | \$37,696         |
| NEW SIGHT         | 4/6/2005   | 0.88 in.  | 0/0             | \$0              |
| CASEYVILLE        | 5/8/2006   | 1.50 in.  | 0/0             | \$24,151         |
| WOOLWORTH         | 5/8/2006   | 1.00 in.  | 0/0             | \$0              |
| ARLINGTON         | 5/8/2006   | 1.00 in.  | 0/0             | \$0              |
| ENTERPRISE        | 7/18/2006  | 1.75 in.  | 0/0             | \$180,239        |
| CASEYVILLE        | 2/13/2007  | 1.00 in.  | 0/0             | \$0              |
| VAUGHN            | 2/24/2007  | 0.88 in.  | 0/0             | \$0              |
| NEW SIGHT         | 7/9/2007   | 0.75 in.  | 0/0             | \$0              |
| BOGUE CHITTO      | 2/12/2008  | 0.75 in.  | 0/0             | \$0              |
| REDSTAR           | 4/11/2008  | 2.75 in.  | 0/0             | \$569,129        |
| RUTH              | 6/25/2008  | 0.75 in.  | 0/0             | \$0              |
| CASEYVILLE        | 6/25/2008  | 0.75 in.  | 0/0             | \$0              |
| NEW SIGHT         | 6/25/2008  | 0.75 in.  | 0/0             | \$0              |
| HEUCKS            | 6/25/2008  | 1.00 in.  | 0/0             | \$0              |
| NEW SIGHT         | 6/26/2008  | 1.00 in.  | 0/0             | \$0              |
| FAIR OAKS SPGS    | 7/29/2008  | 0.75 in.  | 0/0             | \$0              |
| WOOLWORTH         | 12/9/2008  | 0.75 in.  | 0/0             | \$0              |
| THAYER            | 3/27/2009  | 0.88 in.  | 0/0             | \$0              |
| THAYER            | 4/2/2009   | 1.00 in.  | 0/0             | \$0              |
| JOHNSTONS STATION | 4/2/2009   | 1.75 in.  | 0/0             | \$2,293          |
| FAIR OAKS SPGS    | 5/5/2009   | 0.75 in.  | 0/0             | \$0              |
| HEUCKS            | 5/6/2009   | 0.75 in.  | 0/0             | \$0              |
| EAST LINCOLN      | 5/12/2009  | 0.75 in.  | 0/0             | \$0              |
| FAIR OAKS SPGS    | 10/15/2009 | 0.75 in.  | 0/0             | \$0              |
| CASEYVILLE        | 2/21/2010  | 1.00 in.  | 0/0             | \$0              |
| ENTERPRISE        | 4/24/2010  | 1.00 in.  | 0/0             | \$0              |
| UNION HALL        | 6/2/2010   | 0.75 in.  | 0/0             | \$0              |
| NORFIELD          | 6/2/2010   | 1.00 in.  | 0/0             | \$0              |
| NORFIELD          | 6/2/2010   | 0.75 in.  | 0/0             | \$0              |
| HEUCKS            | 6/15/2010  | 0.75 in.  | 0/0             | \$0              |

| Location       | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|----------------|------------|-----------|-----------------|------------------|
| CASEYVILLE     | 3/29/2011  | 1.00 in.  | 0/0             | \$0              |
| RUTH           | 4/15/2011  | 1.75 in.  | 0/0             | \$0              |
| WILKINSON      | 6/7/2011   | 0.88 in.  | 0/0             | \$0              |
| VAUGHN         | 8/23/2011  | 0.88 in.  | 0/0             | \$0              |
| FAIR OAKS SPGS | 4/2/2012   | 1.75 in.  | 0/0             | \$21,255         |
| UNION HALL     | 5/30/2012  | 0.88 in.  | 0/0             | \$0              |
| UNION HALL     | 5/30/2012  | 0.88 in.  | 0/0             | \$0              |
| CAM            | 3/18/2013  | 1.75 in.  | 0/0             | \$10,505         |
| CAM            | 2/20/2014  | 1.00 in.  | 0/0             | \$0              |
| FAIR OAKS SPGS | 4/29/2014  | 1.00 in.  | 0/0             | \$0              |
| CASEYVILLE     | 12/23/2014 | 1.00 in.  | 0/0             | \$0              |
| CASEYVILLE     | 12/23/2014 | 0.75 in.  | 0/0             | \$0              |
| THAYER         | 12/23/2014 | 1.75 in.  | 0/0             | \$0              |
| EAST LINCOLN   | 5/11/2015  | 1.00 in.  | 0/0             | \$0              |
| CASEYVILLE     | 1/21/2016  | 1.00 in.  | 0/0             | \$0              |
| HEUCKS         | 1/21/2016  | 1.00 in.  | 0/0             | \$0              |
| ARLINGTON      | 3/17/2016  | 2.50 in.  | 0/0             | \$30,805         |
| CASEYVILLE     | 3/17/2016  | 2.00 in.  | 0/0             | \$30,805         |
| NORFIELD       | 3/17/2016  | 1.00 in.  | 0/0             | \$0              |
| CASEYVILLE     | 1/21/2017  | 1.00 in.  | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

### **PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that the probability of future hail occurrences is highly likely (100 percent annual probability). Since hail is an atmospheric hazard, it is assumed that Lincoln County has equal exposure to this hazard. It can be expected that future hail events will continue to cause minor damage to property and vehicles throughout the county.

## **F.2.10 Hurricane and Tropical Storm**

### **LOCATION AND SPATIAL EXTENT**

Hurricanes and tropical storms threaten the entire Atlantic and Gulf seaboard of the United States. While coastal areas are most directly exposed to the brunt of landfalling storms, their impact is often felt hundreds of miles inland and they can affect Lincoln County. All areas in Lincoln County are equally susceptible to hurricane and tropical storms.

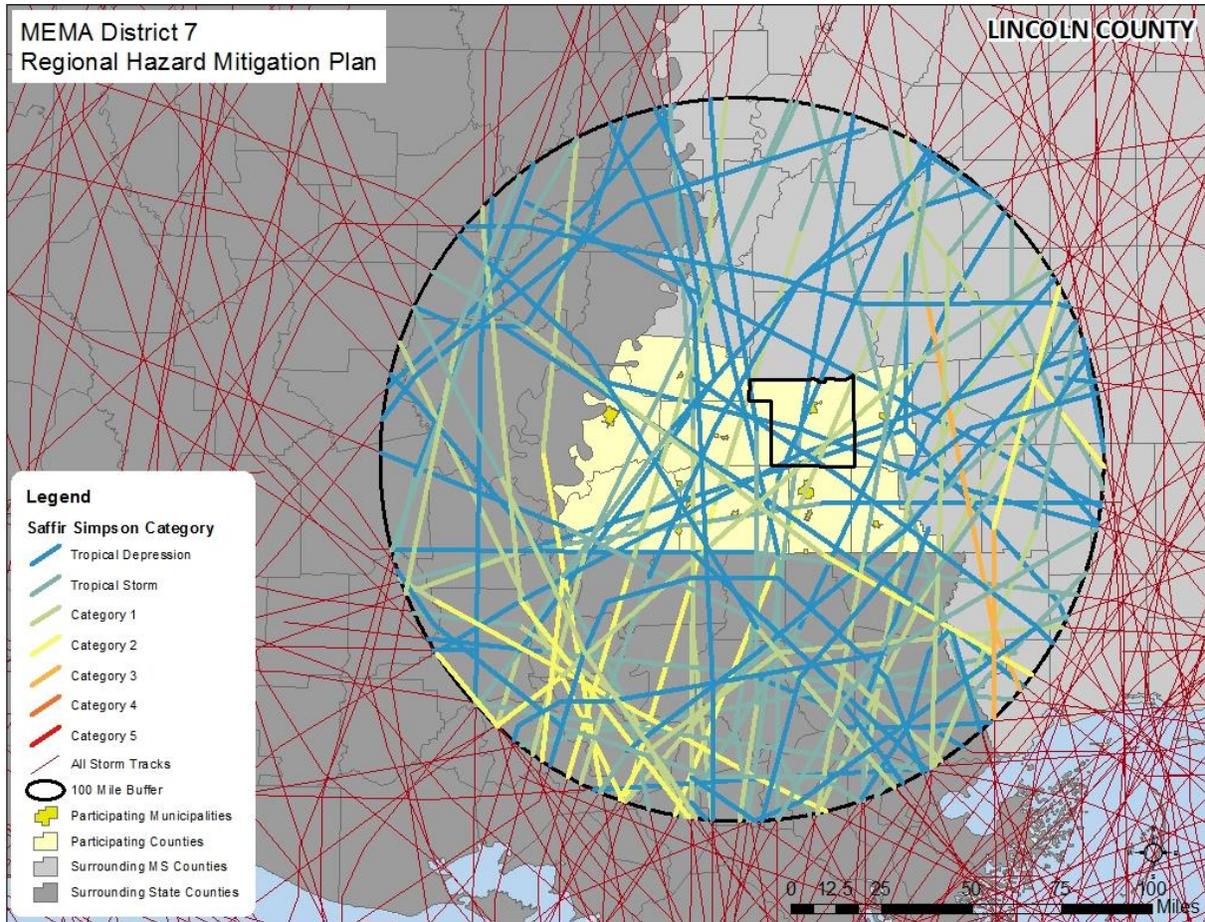
### **HISTORICAL OCCURRENCES**

According to the National Hurricane Center's historical storm track records, 86 hurricane or tropical storm/depression tracks have passed within 100 miles of the MEMA District 7 Region since 1854.<sup>12</sup> This includes: 35 hurricanes, 21 tropical storms, and 30 tropical depressions.

<sup>12</sup> These storm track statistics include tropical depressions, tropical storms, and hurricanes. Lesser events may still cause significant local impact in terms of rainfall and high winds.

A total of 61 tracks passed directly through the region as shown in **Figure F.10**. **Table F.19** provides the date of occurrence, name (if applicable), maximum wind speed (as recorded within 100 miles of the MEMA District 7 Region) and category of the storm based on the Saffir-Simpson Scale for each event.

**FIGURE F.10: HISTORICAL HURRICANE STORM TRACKS WITHIN 100 MILES OF THE MEMA DISTRICT 7 REGION**



Source: National Oceanic and Atmospheric Administration; National Hurricane Center

**TABLE F.19: HISTORICAL STORM TRACKS WITHIN 100 MILES OF THE MEMA 7 DISTRICT REGION (1850–2016)**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/21/1854          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/5/1855           | NOT NAMED  | Not Available              | Tropical Depression |
| 8/11/1856          | UNNAMED    | 85.03                      | Category 2          |
| 10/2/1860          | UNNAMED    | 89.03                      | Category 2          |
| 8/18/1861          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/16/1862          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/30/1863          | UNNAMED    | 42.69                      | Tropical Storm      |

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/5/1869           | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/12/1872          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/18/1875          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/1/1879           | UNNAMED    | 89.03                      | Category 2          |
| 10/7/1879          | UNNAMED    | 58.6                       | Tropical Storm      |
| 10/7/1879          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/3/1881           | NOT NAMED  | Not Available              | Tropical Depression |
| 6/15/1886          | UNNAMED    | 69.67                      | Category 1          |
| 8/20/1888          | UNNAMED    | 81.90                      | Category 1          |
| 8/27/1890          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/7/1893           | UNNAMED    | 78.78                      | Category 1          |
| 8/8/1894           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/20/1898          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/29/1905          | UNNAMED    | 42.69                      | Tropical Storm      |
| 10/9/1905          | UNNAMED    | 42.69                      | Tropical Storm      |
| 8/2/1908           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/21/1909          | UNNAMED    | 92.89                      | Category 2          |
| 8/12/1911          | UNNAMED    | 50.35                      | Tropical Storm      |
| 6/13/1912          | UNNAMED    | 64.34                      | Category 1          |
| 7/17/1912          | UNNAMED    | 0.87                       | Tropical Depression |
| 9/18/1914          | UNNAMED    | 32.60                      | Tropical Depression |
| 9/29/1915          | UNNAMED    | 95.53                      | Category 2          |
| 7/6/1916           | UNNAMED    | 85.03                      | Category 2          |
| 9/22/1920          | UNNAMED    | 87.29                      | Category 2          |
| 10/16/1923         | UNNAMED    | 78.78                      | Category 1          |
| 8/26/1926          | UNNAMED    | 78.78                      | Category 1          |
| 9/21/1926          | UNNAMED    | 58.60                      | Tropical Storm      |
| 7/15/1931          | UNNAMED    | 50.35                      | Tropical Storm      |
| 9/19/1932          | UNNAMED    | 64.34                      | Category 1          |
| 10/16/1932         | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/26/1933          | UNNAMED    | 17.56                      | Tropical Depression |
| 6/16/1934          | UNNAMED    | 87.29                      | Category 2          |
| 7/27/1936          | UNNAMED    | 42.69                      | Tropical Storm      |
| 8/23/1936          | UNNAMED    | 4.99                       | Tropical Depression |
| 10/3/1937          | UNNAMED    | 32.6                       | Tropical Depression |
| 9/24/1940          | UNNAMED    | 32.6                       | Tropical Depression |
| 9/6/1945           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/8/1947           | UNNAMED    | 32.6                       | Tropical Depression |
| 9/19/1947          | UNNAMED    | 91.63                      | Category 2          |
| 9/4/1948           | UNNAMED    | 69.67                      | Category 1          |
| 9/4/1949           | UNNAMED    | 58.6                       | Tropical Storm      |
| 8/1/1955           | BRENDA     | 64.34                      | Category 1          |
| 8/27/1955          | UNNAMED    | 50.35                      | Tropical Storm      |
| 6/13/1956          | UNNAMED    | 58.60                      | Tropical Storm      |
| 9/18/1957          | ESTHER     | 64.34                      | Category 1          |
| 5/31/1959          | ARLENE     | 64.34                      | Category 1          |

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 10/4/1964          | HILDA      | 91.63                      | Category 2          |
| 9/10/1965          | BETSY      | 89.03                      | Category 2          |
| 8/18/1969          | CAMILLE    | 99.88                      | Category 3          |
| 8/9/1971           | UNNAMED    | 4.99                       | Tropical Depression |
| 9/1/1971           | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1971           | FERN       | 4.99                       | Tropical Depression |
| 9/16/1971          | EDITH      | 87.29                      | Category 2          |
| 7/29/1975          | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1977           | BABE       | 58.60                      | Tropical Storm      |
| 7/11/1979          | BOB        | 73.83                      | Category 1          |
| 7/20/1980          | UNNAMED    | 0.87                       | Tropical Depression |
| 8/15/1985          | DANNY      | 78.78                      | Category 1          |
| 9/2/1985           | ELENA      | 92.89                      | Category 2          |
| 10/29/1985         | JUAN       | 73.83                      | Category 1          |
| 8/11/1987          | UNNAMED    | 4.99                       | Tropical Depression |
| 8/9/1988           | BERYL      | 50.35                      | Tropical Storm      |
| 9/10/1988          | FLORENCE   | 69.67                      | Category 1          |
| 8/26/1992          | ANDREW     | 85.03                      | Category 2          |
| 9/20/1998          | HERMINE    | 32.60                      | Tropical Depression |
| 6/11/2001          | ALLISON    | 42.69                      | Tropical Storm      |
| 8/5/2002           | BERTHA     | 32.60                      | Tropical Depression |
| 9/26/2002          | ISIDORE    | 64.34                      | Category 1          |
| 10/3/2002          | LILI       | 69.67                      | Category 1          |
| 6/30/2003          | BILL       | 58.60                      | Tropical Storm      |
| 10/10/2004         | MATTHEW    | 17.56                      | Tropical Depression |
| 8/29/2005          | KATRINA    | 94.63                      | Category 3          |
| 9/13/2007          | HUMBERTO   | 32.60                      | Tropical Depression |
| 8/24/2008          | FAY        | 17.56                      | Tropical Depression |
| 9/1/2008           | GUSTAV     | 87.29                      | Category 2          |
| 7/25/2010          | BONNIE     | 0.87                       | Tropical Depression |
| 8/17/2010          | FIVE       | 4.99                       | Tropical Depression |
| 9/4/2011           | LEE        | 32.60                      | Tropical Depression |
| 8/29/2012          | ISAAC      | 69.67                      | Category 1          |

Source: National Hurricane Center

Federal records indicate that seven disaster declarations were made in 1965 (Hurricane Betsy), 1969 (Hurricane Camille), 2002 (Tropical Storm Isidore), 2004 (Hurricane Ivan), 2005 (Hurricane Katrina), 2008 (Hurricane Gustav), and 2012 (Hurricane Isaac) in Lincoln County.<sup>13</sup> Hurricane and tropical storm events can cause substantial damage in the area due to high winds and flooding.

The National Climatic Data Center also reported five hurricane or tropical storm events in Lincoln County since 2002.<sup>14</sup> These storms are listed in **Table F.20** and are generally representative of storms with the greatest impact on the county over that time period.

<sup>13</sup> A complete listing of historical disaster declarations can be found in Section 4: Hazard Identification.

<sup>14</sup> These hurricane events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported.

**TABLE F.20: HISTORICAL HURRICANE/TROPICAL STORM OCCURRENCES IN LINCOLN COUNTY**

| Date of Occurrence | Storm Name             | Deaths/Injuries | Property Damage (2017) <sup>15</sup> |
|--------------------|------------------------|-----------------|--------------------------------------|
| 9/26/2002          | Tropical Storm Isidore | 0/0             | \$0                                  |
| 8/29/2005          | Hurricane Katrina      | 0/0             | \$124,503,055                        |
| 9/24/2005          | Hurricane Rita         | 0/0             | \$12,300                             |
| 9/1/2008           | Hurricane Gustav       | 0/0             | \$1,117,655                          |
| 8/29/2012          | Hurricane Isaac        | 0/0             | \$1,592,098                          |

Source: National Climatic Data Center

Flooding and high winds from hurricanes and tropical storms can cause damage throughout the county. Anecdotes are available from NCDC for the major storms that have impacted the county as found below:

#### **Hurricane Katrina – August 29, 2005**

The damage from Hurricane Katrina was devastating and widespread. Damage occurred across all of the Jackson forecast area which includes 9 parishes in Northeast Louisiana, 2 counties in Southeast Arkansas and about 2/3 of Central and Southern Mississippi. As widespread as the damage was, the more concentrated and most significant damage occurred across Southeast and East-Central Mississippi. For other areas, especially those west of Natchez to Yazoo City to Grenada line, damage to trees and power lines was significant and scattered across the landscape. As you move toward Central Mississippi and along Interstate 55 the damage and impacts increase. This portion of the state sustained widespread damage to trees and power lines.

#### **Hurricane Gustav – September 1, 2008**

As the center of Gustav crossed much of southern Louisiana, tropical storm force winds extended into southern Mississippi and portions of east central Louisiana. Sustained winds were between 35 and 45 mph with higher gusts between 70 and 100 mph occurred. Tree and power line damage was extensive across these areas which resulted in widespread power outages, some of which lasted for 3 to 5 days. As Gustav slowed across central Louisiana, the outer rainbands continued to rotate across much of southern and central Mississippi. This kept those portions of Mississippi in the region which was favorable for tornadoes. Over 3 days, 26 tornadoes were confirmed, all of which were in the EF0 to EF1 range.

#### **Hurricane Isaac – August 29, 2012**

Isaac moved very slowly to the north and northwest over the course of August 29th, which made for prolonged impacts. Forward motion of about 5 mph lead to tremendous flooding issues for both Louisiana and portions of Mississippi south of I-20. Around noon on August 29th, Isaac was downgraded to a Tropical Storm, but this was not much relief to the many residents who were being inundated with rain and wind. The worst of the wind was felt generally along and south of an axis from Marion County to Adams County. Numerous trees were down in Adams County, leaving many without power for several days. Eighty percent of the roads were blocked in Franklin County due to downed trees.

<sup>15</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

### **PROBABILITY OF FUTURE OCCURRENCES**

Given the inland location of the county, Lincoln County will not be susceptible to many of the sub-hazards that are often associated with hurricanes and tropical storms such as storm surge. Although the probability of experiencing major impacts is somewhat less than coastal areas because of this, hurricanes and tropical storms remain a real threat to Lincoln County due to induced events like flooding and high wind. Based on historical evidence, the probability level of future occurrence is likely (between 10 and 100 percent annual probability). Given the regional nature of the hazard, all areas in the county are equally exposed to this hazard. However, when the county is impacted, the damage could be significant, threatening lives and property throughout the planning area.

### **HURRICANE EVACUATIONS**

As discussed above, the MEMA District 7 Region has been directly impacted by a number of hurricane and tropical storm events historically. However, it should be noted that the region is also susceptible to indirect effects from hurricanes and tropical storms, particularly in the form of evacuations from coastal counties. The counties within MEMA District 7 are located far enough inland that they are often the primary recipients of evacuees from counties that will be (or have been) impacted by major storm events.

For example, during Hurricane Katrina in 2005, thousands of evacuees made their way to counties in southwest Mississippi to take temporary refuge from the storm. Due to the severe and devastating effects of the storm, temporary sheltering within these counties was extended much longer than originally anticipated and in some cases, the evacuees ended up staying for weeks or months. This additional population caused a major strain on resources within these relatively rural counties, as local communities with limited resources had an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people.

Caring for all of these evacuees was especially challenging for counties in the MEMA District 7 Region because most had been impacted themselves by the storm and were attempting to help their own citizens recover from the storm. Undoubtedly, recovering from a major disaster while simultaneously attempting to help evacuees from surrounding counties poses a number of difficulties for emergency management personnel and other local officials.

Based on Hurricane Katrina and other major hurricane events that have impacted the Gulf Coast in the past, it is likely that many of the MEMA District 7 counties will be receiver counties when it comes to evacuees. Many of these evacuees will likely come from locations in Louisiana, including New Orleans. Indeed, the State of Louisiana evacuation plan indicates that one of the primary evacuation routes from the City of New Orleans will direct evacuees north along Interstate 55, sending people through Pike County and Lincoln County (**Figure F.11**). Depending on the severity of the event, officials in Louisiana may even change Interstate 55 over to a contraflow traffic pattern to enable quicker evacuations.



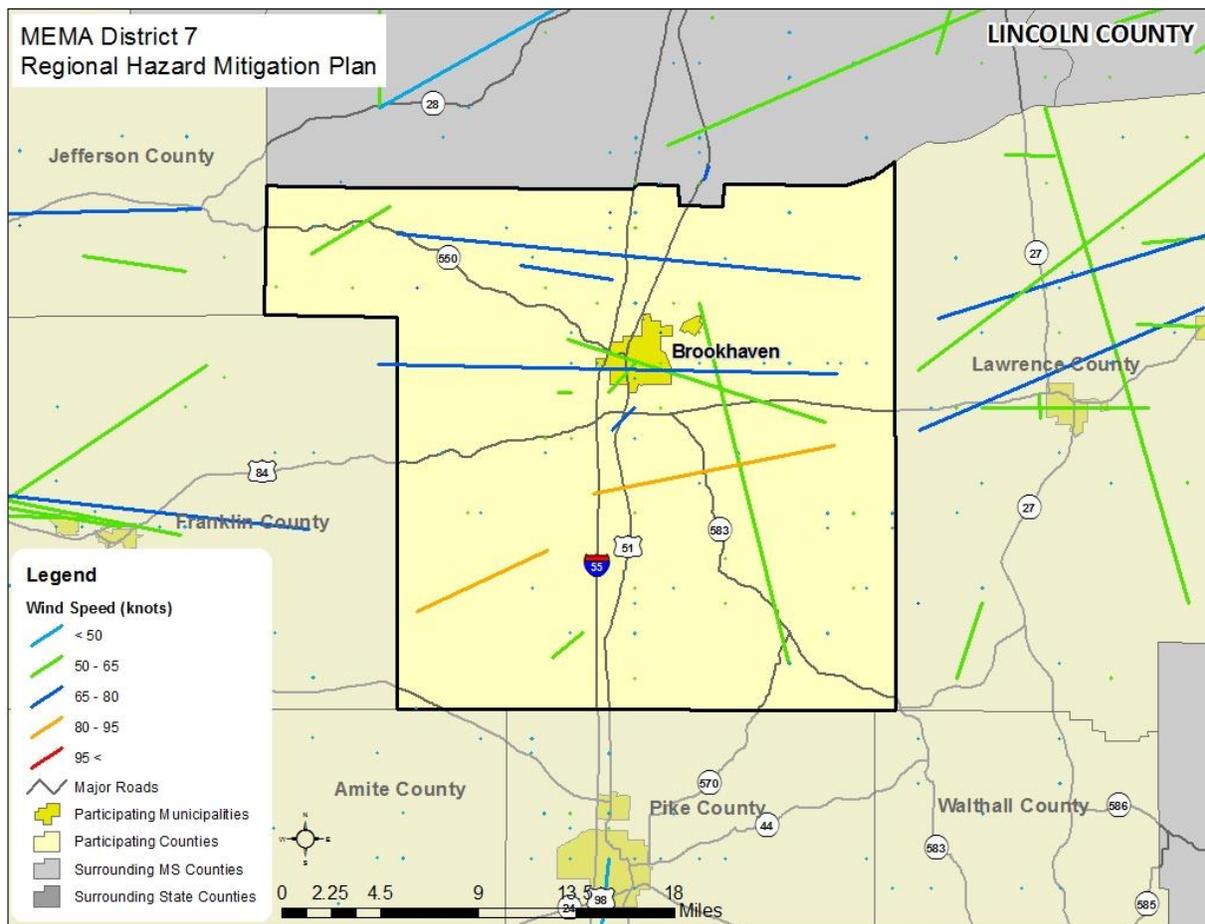
may not be directly impacted by the storm. As in past storms, it is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future storm events.

### F.2.11 Severe Thunderstorm/High Wind

#### LOCATION AND SPATIAL EXTENT

A thunderstorm event is an atmospheric hazard, and thus has no geographic boundaries. It is typically a widespread event that can occur in all regions of the United States. However, thunderstorms are most common in the central and southern states because atmospheric conditions in those regions are favorable for generating these powerful storms. It is assumed that Lincoln County has uniform exposure to an event and the spatial extent of an impact could be large. With that in mind, **Figure F.12** shows the location of wind events that have impacted the county between 1955 and 2015.

**FIGURE F.12: SEVERE THUNDERSTORM TRACKS IN LINCOLN COUNTY**



Source: National Weather Service Storm Prediction Center

**HISTORICAL OCCURRENCES**

Severe storms were at least partially responsible for six disaster declarations in Lincoln County in 1990, 1992, 2001, 2003, 2009, and 2016.<sup>16</sup> According to NCDC, there have been 208 reported thunderstorm and high wind events since 1970 in Lincoln County.<sup>17</sup> These events caused over \$7.6 million (2017 dollars) in damages.<sup>18</sup> There were also reports of five injuries. **Table F.21** summarizes this information. **Table F.22** presents detailed thunderstorm and high wind event reports including date, magnitude, and associated damages for each event.

**TABLE F.21: SUMMARY OF THUNDERSTORM/HIGH WIND OCCURRENCES IN LINCOLN COUNTY**

| Location                    | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-----------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Brookhaven                  | 78                    | 0/2             | \$2,209,887            | \$92,079                   |
| Unincorporated Area         | 130                   | 0/3             | \$5,419,775            | \$115,314                  |
| <b>LINCOLN COUNTY TOTAL</b> | <b>208</b>            | <b>0/5</b>      | <b>\$7,629,662</b>     | <b>\$207,393</b>           |

Source: National Climatic Data Center

**TABLE F.22: HISTORICAL THUNDERSTORM/HIGH WIND OCCURRENCES IN LINCOLN COUNTY**

| Location          | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|-------------------|------------|-------------------|------------|-----------------|------------------|
| <b>Brookhaven</b> |            |                   |            |                 |                  |
| Brookhaven        | 3/22/1993  | Thunderstorm Wind | 0 kts.     | 0/0             | \$85,141         |
| Brookhaven        | 4/15/1994  | Thunderstorm Wind | 0 kts.     | 0/0             | \$829            |
| Brookhaven        | 7/1/1994   | Thunderstorm Wind | 0 kts.     | 0/0             | \$824            |
| Brookhaven        | 11/27/1994 | Thunderstorm Wind | 0 kts.     | 0/0             | \$1,633          |
| Brookhaven        | 3/7/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$8,075          |
| Brookhaven        | 4/11/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$4,829          |
| Brookhaven        | 4/20/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$3,220          |
| BROOKHAVEN        | 3/18/1996  | Thunderstorm Wind | --         | 0/0             | \$3,141          |
| BROOKHAVEN        | 8/9/1996   | Thunderstorm Wind | --         | 0/0             | \$1,555          |
| BROOKHAVEN        | 4/5/1997   | Thunderstorm Wind | --         | 0/0             | \$3,053          |
| BROOKHAVEN        | 6/17/1997  | Thunderstorm Wind | --         | 0/0             | \$30,508         |
| BROOKHAVEN        | 8/31/1997  | Thunderstorm Wind | --         | 0/0             | \$15,207         |
| BROOKHAVEN        | 2/26/1998  | Thunderstorm Wind | --         | 0/0             | \$3,021          |
| BROOKHAVEN        | 1/2/1999   | Thunderstorm Wind | --         | 0/0             | \$37,207         |
| BROOKHAVEN        | 2/27/1999  | Thunderstorm Wind | --         | 0/0             | \$14,865         |
| BROOKHAVEN        | 8/20/1999  | Thunderstorm Wind | --         | 0/0             | \$14,633         |
| BROOKHAVEN        | 8/20/1999  | Thunderstorm Wind | --         | 0/0             | \$7,317          |

<sup>16</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>17</sup> These thunderstorm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017 and these high wind events are only inclusive of those reported by NCDC from 1996 through February 2017. It is likely that additional thunderstorm and high wind events have occurred in Lincoln County. As additional local data becomes available, this hazard profile will be amended.

<sup>18</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**ANNEX F: LINCOLN COUNTY**

| Location                | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|-------------------------|------------|-------------------|------------|-----------------|------------------|
| BROOKHAVEN              | 1/3/2000   | Thunderstorm Wind | --         | 0/0             | \$50,701         |
| BROOKHAVEN              | 3/10/2000  | Thunderstorm Wind | --         | 0/0             | \$4,285          |
| BROOKHAVEN              | 6/17/2000  | Thunderstorm Wind | --         | 0/0             | \$2,837          |
| BROOKHAVEN              | 7/22/2000  | Thunderstorm Wind | --         | 0/0             | \$5,660          |
| BROOKHAVEN              | 8/26/2000  | Thunderstorm Wind | --         | 0/0             | \$1,415          |
| BROOKHAVEN              | 8/31/2000  | Thunderstorm Wind | --         | 0/0             | \$2,830          |
| BROOKHAVEN              | 10/6/2000  | Thunderstorm Wind | --         | 0/0             | \$2,811          |
| BROOKHAVEN              | 11/8/2000  | Thunderstorm Wind | --         | 0/0             | \$1,405          |
| BROOKHAVEN              | 3/12/2001  | Thunderstorm Wind | --         | 0/0             | \$16,653         |
| BROOKHAVEN              | 6/4/2001   | Thunderstorm Wind | --         | 0/0             | \$2,747          |
| BROOKHAVEN              | 7/6/2001   | Thunderstorm Wind | --         | 0/0             | \$20,664         |
| BROOKHAVEN              | 8/11/2001  | Thunderstorm Wind | --         | 0/0             | \$2,755          |
| BROOKHAVEN              | 10/13/2001 | Thunderstorm Wind | --         | 0/0             | \$1,376          |
| BROOKHAVEN              | 11/29/2001 | Thunderstorm Wind | --         | 0/0             | \$13,784         |
| BROOKHAVEN              | 6/20/2002  | Thunderstorm Wind | --         | 0/0             | \$9,515          |
| BROOKHAVEN              | 7/7/2002   | Thunderstorm Wind | 55 kts. ES | 0/0             | \$1,358          |
| BROOKHAVEN              | 7/7/2002   | Thunderstorm Wind | 55 kts. ES | 0/0             | \$4,073          |
| BROOKHAVEN              | 7/7/2002   | Thunderstorm Wind | --         | 0/0             | \$6,789          |
| BROOKHAVEN              | 12/19/2002 | Thunderstorm Wind | 60 kts. EG | 0/0             | \$16,221         |
| BROOKHAVEN              | 12/24/2002 | Thunderstorm Wind | 60 kts. EG | 0/0             | \$0              |
| BROOKHAVEN              | 5/14/2003  | Thunderstorm Wind | 50 kts. ES | 0/0             | \$6,663          |
| BROOKHAVEN              | 6/2/2003   | Thunderstorm Wind | 55 kts. ES | 0/0             | \$66,555         |
| BROOKHAVEN              | 6/2/2003   | Thunderstorm Wind | 50 kts. ES | 0/0             | \$6,656          |
| BROOKHAVEN              | 6/15/2003  | Thunderstorm Wind | 50 kts. ES | 0/0             | \$2,662          |
| BROOKHAVEN              | 6/15/2003  | Thunderstorm Wind | 50 kts. ES | 0/0             | \$2,662          |
| BROOKHAVEN              | 2/5/2004   | Thunderstorm Wind | 53 kts. EG | 0/0             | \$3,940          |
| BROOKHAVEN              | 4/24/2004  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$6,503          |
| BROOKHAVEN              | 6/1/2004   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| BROOKHAVEN              | 6/6/2004   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$38,670         |
| BROOKHAVEN              | 6/21/2004  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$2,578          |
| BROOKHAVEN              | 6/27/2004  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$1,289          |
| BROOKHAVEN              | 7/5/2004   | Thunderstorm Wind | 39 kts. EG | 0/0             | \$129            |
| BROOKHAVEN              | 7/6/2004   | Thunderstorm Wind | 43 kts. EG | 0/0             | \$1,291          |
| BROOKHAVEN              | 12/7/2004  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$83,521         |
| BROOKHAVEN              | 3/26/2005  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$37,950         |
| BROOKHAVEN              | 4/6/2005   | Thunderstorm Wind | 70 kts. EG | 0/1             | \$628,273        |
| BROOKHAVEN              | 4/30/2005  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$6,283          |
| BROOKHAVEN              | 5/20/2005  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$6,289          |
| BROOKHAVEN              | 5/29/2005  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$62,892         |
| BROOKHAVEN MUNI<br>ARPT | 5/29/2005  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$314,460        |
| BROOKHAVEN MUNI<br>ARPT | 6/5/2005   | Thunderstorm Wind | 52 kts. EG | 0/0             | \$31,430         |
| BROOKHAVEN              | 7/2/2005   | Thunderstorm Wind | 50 kts. EG | 0/1             | \$25,028         |
| BROOKHAVEN              | 7/8/2005   | Thunderstorm Wind | 52 kts. EG | 0/0             | \$18,771         |
| BROOKHAVEN              | 8/12/2005  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$6,225          |

**ANNEX F: LINCOLN COUNTY**

| Location                   | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-------------------|------------|-----------------|------------------|
| BROOKHAVEN                 | 11/15/2005 | Thunderstorm Wind | 55 kts. EG | 0/0             | \$24,749         |
| BROOKHAVEN                 | 5/10/2006  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$0              |
| BROOKHAVEN                 | 7/18/2006  | Thunderstorm Wind | 58 kts. EG | 0/0             | \$12,016         |
| BROOKHAVEN                 | 5/3/2007   | Thunderstorm Wind | 61 kts. EG | 0/0             | \$17,638         |
| BROOKHAVEN                 | 12/20/2007 | Thunderstorm Wind | 60 kts. EG | 0/0             | \$69,852         |
| BROOKHAVEN                 | 2/12/2008  | Thunderstorm Wind | 65 kts. EG | 0/0             | \$86,632         |
| BROOKHAVEN                 | 2/17/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$12,706         |
| BROOKHAVEN                 | 4/12/2009  | Thunderstorm Wind | 70 kts. EG | 0/0             | \$17,201         |
| BROOKHAVEN                 | 2/1/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$7,734          |
| BROOKHAVEN                 | 7/13/2011  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$16,235         |
| BROOKHAVEN                 | 4/2/2012   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$53,138         |
| BROOKHAVEN                 | 4/8/2014   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$4,126          |
| BROOKHAVEN                 | 6/13/2014  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$102,593        |
| BROOKHAVEN                 | 6/22/2014  | Thunderstorm Wind | 43 kts. EG | 0/0             | \$10             |
| BROOKHAVEN                 | 12/28/2015 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$4,135          |
| BROOKHAVEN                 | 2/15/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$10,313         |
| BROOKHAVEN                 | 4/30/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$7,154          |
| <b>Unincorporated Area</b> |            |                   |            |                 |                  |
| LINCOLN CO.                | 7/4/1970   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 4/17/1973  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 5/25/1973  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 6/15/1973  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 12/4/1973  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 4/22/1974  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 6/6/1975   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 2/26/1977  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 4/18/1978  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 4/22/1979  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 8/23/1979  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 1/11/1980  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 4/17/1982  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 1/31/1983  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 3/12/1986  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 6/21/1988  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 6/27/1988  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 7/25/1988  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 2/20/1989  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 6/8/1989   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 2/10/1990  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 2/15/1990  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 7/2/1990   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 8/1/1990   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 3/2/1991   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 8/10/1991  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 12/2/1991  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.                | 6/25/1992  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |

**ANNEX F: LINCOLN COUNTY**

| Location       | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------------|------------|-------------------|------------|-----------------|------------------|
| LINCOLN CO.    | 8/10/1992  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| LINCOLN CO.    | 8/26/1992  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| Caseyville     | 12/4/1993  | Thunderstorm Wind | 0 kts.     | 0/0             | \$8,386          |
| LINCOLN CO.    | 1/27/1994  | Thunderstorm Wind | 0 kts.     | 0/0             | \$836,265        |
| Boque Chitto   | 3/9/1994   | Thunderstorm Wind | 0 kts.     | 0/0             | \$831            |
| Bogue Chitto   | 6/10/1994  | Thunderstorm Wind | 0 kts.     | 0/0             | \$826            |
| Caseyville     | 7/1/1994   | Thunderstorm Wind | 0 kts.     | 0/0             | \$824            |
| LINCOLN CO.    | 3/7/1995   | Thunderstorm Wind | 0 kts.     | 0/1             | \$80,754         |
| LINCOLN CO.    | 5/8/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$6,426          |
| Truxton        | 6/8/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$641            |
| Ruth           | 7/28/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$3,207          |
| East Lincoln   | 8/20/1995  | Thunderstorm Wind | 45 kts.    | 0/0             | \$4,798          |
| WEST LINCOLN   | 3/25/1996  | Thunderstorm Wind | 55 kts.    | 0/0             | \$15,705         |
| LINCOLN (ZONE) | 2/13/1997  | High Wind         | 40 kts.    | 0/0             | \$3,064          |
| CASEYVILLE     | 2/21/1997  | Thunderstorm Wind | 65 kts.    | 0/0             | \$0              |
| LINCOLN (ZONE) | 4/26/1997  | High Wind         | --         | 0/0             | \$4,579          |
| LINCOLN (ZONE) | 2/10/1998  | High Wind         | 50 kts.    | 0/0             | \$1,510          |
| RUTH           | 2/10/1998  | Thunderstorm Wind | --         | 0/0             | \$3,021          |
| BOGUE CHITTO   | 6/5/1998   | Thunderstorm Wind | 56 kts.    | 0/0             | \$0              |
| LINCOLN (ZONE) | 9/28/1998  | High Wind         | --         | 0/0             | \$11,957         |
| COUNTYWIDE     | 2/27/1999  | Thunderstorm Wind | --         | 0/0             | \$185,809        |
| COUNTYWIDE     | 3/2/1999   | Thunderstorm Wind | --         | 0/0             | \$37,049         |
| COUNTYWIDE     | 3/8/1999   | Thunderstorm Wind | --         | 0/0             | \$74,098         |
| AUBURN         | 5/23/1999  | Thunderstorm Wind | --         | 0/0             | \$1,471          |
| COUNTYWIDE     | 4/2/2000   | Thunderstorm Wind | --         | 0/0             | \$7,137          |
| BOGUE CHITTO   | 4/3/2000   | Thunderstorm Wind | --         | 0/0             | \$2,855          |
| COUNTYWIDE     | 7/18/2000  | Thunderstorm Wind | --         | 0/0             | \$2,830          |
| RUTH           | 7/21/2000  | Thunderstorm Wind | --         | 0/0             | \$2,830          |
| RUTH           | 8/25/2000  | Thunderstorm Wind | --         | 0/0             | \$4,245          |
| COUNTYWIDE     | 8/25/2000  | Thunderstorm Wind | --         | 0/0             | \$56,603         |
| WEST LINCOLN   | 8/31/2000  | Thunderstorm Wind | --         | 0/0             | \$21,226         |
| LINCOLN (ZONE) | 12/16/2000 | High Wind         | --         | 0/0             | \$11,242         |
| COUNTYWIDE     | 2/16/2001  | Thunderstorm Wind | --         | 0/0             | \$13,909         |
| COUNTYWIDE     | 4/15/2001  | Thunderstorm Wind | --         | 0/0             | \$13,823         |
| COUNTYWIDE     | 6/30/2001  | Thunderstorm Wind | --         | 0/0             | \$1,374          |
| BOGUE CHITTO   | 7/11/2001  | Thunderstorm Wind | --         | 0/0             | \$1,378          |
| AUBURN         | 7/11/2001  | Thunderstorm Wind | --         | 0/0             | \$1,378          |
| BOGUE CHITTO   | 1/24/2002  | Thunderstorm Wind | --         | 0/0             | \$1,381          |
| COUNTYWIDE     | 5/17/2002  | Thunderstorm Wind | --         | 0/0             | \$1,360          |
| COUNTYWIDE     | 7/21/2002  | Thunderstorm Wind | --         | 0/0             | \$2,037          |
| COUNTYWIDE     | 7/21/2002  | Thunderstorm Wind | --         | 0/0             | \$40,731         |
| BOGUE CHITTO   | 7/21/2002  | Thunderstorm Wind | --         | 0/0             | \$9,504          |
| COUNTYWIDE     | 12/24/2002 | Thunderstorm Wind | 60 kts. EG | 0/0             | \$13,517         |
| CASEYVILLE     | 4/6/2003   | Thunderstorm Wind | 70 kts. ES | 0/0             | \$665,190        |
| COUNTYWIDE     | 6/2/2003   | Thunderstorm Wind | 55 kts. ES | 0/0             | \$19,967         |
| CASEYVILLE     | 6/10/2003  | Thunderstorm Wind | 50 kts. ES | 0/0             | \$6,656          |

**ANNEX F: LINCOLN COUNTY**

| Location          | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|-------------------|------------|-------------------|------------|-----------------|------------------|
| CASEYVILLE        | 2/5/2004   | Thunderstorm Wind | 52 kts. EG | 0/0             | \$1,313          |
| ENTERPRISE        | 6/21/2004  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$12,890         |
| BOGUE CHITTO      | 3/22/2005  | Thunderstorm Wind | 82 kts. EG | 0/0             | \$758,998        |
| WEST LINCOLN      | 9/24/2005  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$6,150          |
| LINCOLN (ZONE)    | 3/9/2006   | Strong Wind       | 45 kts. EG | 0/0             | \$48,954         |
| BOGUE CHITTO      | 3/9/2006   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$12,238         |
| ENTERPRISE        | 7/18/2006  | Thunderstorm Wind | 58 kts. EG | 0/0             | \$24,032         |
| RUTH              | 7/19/2006  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| REDSTAR           | 9/23/2006  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$12,051         |
| EAST LINCOLN      | 9/23/2006  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| REDSTAR           | 2/13/2007  | Thunderstorm Wind | 53 kts. EG | 0/0             | \$2,403          |
| FAIR OAKS SPGS    | 5/3/2007   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| CARLOS            | 6/19/2007  | Thunderstorm Wind | 54 kts. EG | 0/0             | \$14,083         |
| BOGUE CHITTO      | 6/19/2007  | Thunderstorm Wind | 65 kts. EG | 0/0             | \$58,681         |
| RUTH              | 8/27/2007  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$11,761         |
| WEST LINCOLN      | 1/8/2008   | Thunderstorm Wind | 43 kts. EG | 0/0             | \$46,338         |
| NORFIELD          | 3/3/2008   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| LINCOLN (ZONE)    | 3/18/2008  | Strong Wind       | 38 kts. EG | 0/0             | \$1,145          |
| VAUGHN            | 4/11/2008  | Thunderstorm Wind | 78 kts. EG | 0/0             | \$227,652        |
| CASEYVILLE        | 8/2/2008   | Thunderstorm Wind | 65 kts. EG | 0/0             | \$111,611        |
| WEST LINCOLN      | 8/2/2008   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| ARLINGTON         | 3/26/2009  | Thunderstorm Wind | 83 kts. EG | 0/0             | \$287,393        |
| THAYER            | 3/26/2009  | Thunderstorm Wind | 83 kts. EG | 0/0             | \$689,742        |
| HEUCKS            | 4/2/2009   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| CASEYVILLE        | 5/3/2009   | Thunderstorm Wind | 68 kts. EG | 0/0             | \$137,209        |
| WILLIAMS          | 5/3/2009   | Thunderstorm Wind | 68 kts. EG | 0/0             | \$137,209        |
| BRISTERVILLE      | 12/24/2009 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,132          |
| CAM               | 8/15/2010  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$14,561         |
| NORFIELD          | 2/1/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| ENTERPRISE        | 2/1/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| JOHNSTONS STATION | 4/4/2011   | Thunderstorm Wind | 60 kts. EG | 0/0             | \$163,084        |
| BRISTERVILLE      | 6/7/2011   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,416          |
| NEW SIGHT         | 1/25/2012  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$6,473          |
| HEUCKS            | 5/30/2012  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$4,256          |
| NEW SIGHT         | 7/5/2012   | Thunderstorm Wind | 65 kts. EG | 0/0             | \$160,096        |
| THAYER            | 12/20/2012 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,325          |
| BOGUE CHITTO      | 1/30/2013  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$15,928         |
| NEW SIGHT         | 4/7/2014   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$5,157          |
| WEST LINCOLN      | 4/8/2014   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,157          |
| NEW SIGHT         | 6/13/2014  | Thunderstorm Wind | 65 kts. EG | 0/0             | \$82,075         |
| WEST LINCOLN      | 12/23/2014 | Thunderstorm Wind | 52 kts. EG | 0/0             | \$2,083          |
| BOGUE CHITTO      | 10/31/2015 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,084          |
| LINCOLN (ZONE)    | 11/17/2015 | Strong Wind       | 40 kts. EG | 0/0             | \$7,212          |
| LINCOLN (ZONE)    | 11/17/2015 | Strong Wind       | 40 kts. EG | 0/0             | \$3,091          |
| WESSON            | 11/17/2015 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,091          |
| LINCOLN (ZONE)    | 12/28/2015 | Strong Wind       | 35 kts. EG | 0/0             | \$5,169          |

| Location     | Date      | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|--------------|-----------|-------------------|------------|-----------------|------------------|
| CASEYVILLE   | 2/15/2016 | Thunderstorm Wind | 83 kts. EG | 0/2             | \$72,188         |
| NEW SIGHT    | 2/15/2016 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,156          |
| NEW SIGHT    | 3/17/2016 | Thunderstorm Wind | 52 kts. EG | 0/0             | \$10,268         |
| VAUGHN       | 4/30/2016 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,110          |
| ARLINGTON    | 7/13/2016 | Thunderstorm Wind | 43 kts. EG | 0/0             | \$2,032          |
| EAST LINCOLN | 8/6/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,046          |
| BRISTERVILLE | 8/6/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,046          |
| COBBS        | 1/2/2017  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$10,069         |
| WILLIAMS     | 1/2/2017  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$30,208         |
| BOGUE CHITTO | 1/2/2017  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,014          |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

†E = estimated; EG = estimated gust; ES = estimated sustained; M = measured; MG = measured gust; MS = measured sustained

Source: National Climatic Data Center

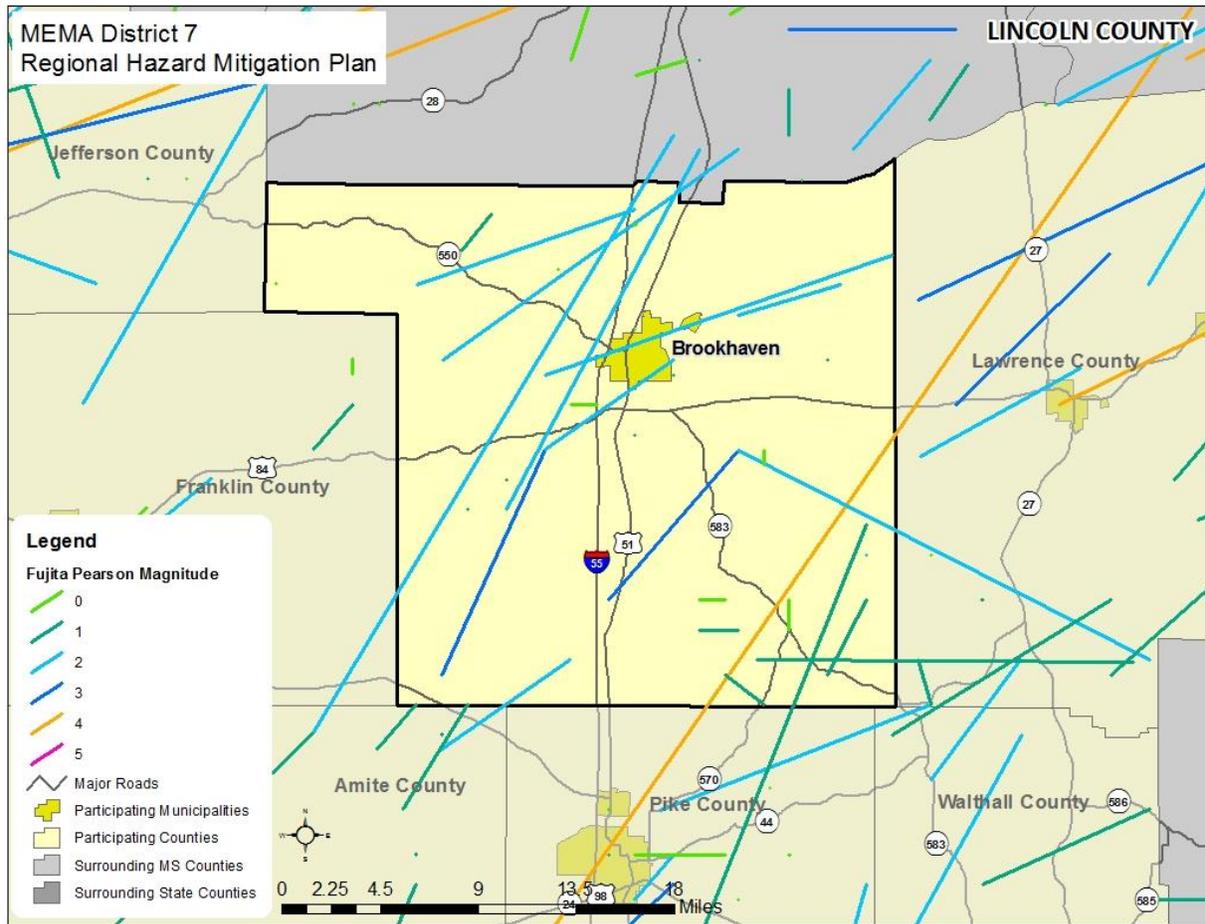
**PROBABILITY OF FUTURE OCCURRENCES**

Given the high number of previous events, it is certain that thunderstorm events, including straight-line wind events, will occur in the future. This results in a probability level of highly likely (100 percent annual probability) for the entire county.

**F.2.12 Tornado**

**LOCATION AND SPATIAL EXTENT**

Tornadoes occur throughout the state of Mississippi, and thus in Lincoln County. Tornadoes typically impact a relatively small area, but damage may be extensive. Event locations are completely random and it is not possible to predict specific areas that are more susceptible to tornado strikes over time. Therefore, it is assumed that Lincoln County is uniformly exposed to this hazard. With that in mind, **Figure F.13** shows tornado track data for many of the major tornado events that have impacted the county between 1950 and 2015. While no definitive pattern emerges from this data, some areas that have been impacted in the past may be potentially more susceptible in the future.

**FIGURE F.13: HISTORICAL TORNADO TRACKS IN LINCOLN COUNTY**

Source: National Weather Service Storm Prediction Center

### **HISTORICAL OCCURRENCES**

Tornadoes were at least partially responsible for seven disaster declarations in Lincoln County in 1973, 1975, 1990, 1992, 2001, 2003, 2009, and 2016.<sup>19</sup> According to the National Climatic Data Center, there have been a total of 48 recorded tornado events in Lincoln County since 1955 (**Table F.23**), resulting in almost \$28.2 million (2017 dollars) in property damages.<sup>20 21</sup> In addition, 5 fatalities and 27 injuries were reported. The magnitude of these tornadoes ranges from F0 to F4, although an F5 event is possible. Detailed information on historic tornado events can be found in **Table F.24**.

<sup>19</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>20</sup> These tornado events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1950 through February 2017. It is likely that additional tornadoes have occurred in Lincoln County. As additional local data becomes available, this hazard profile will be amended.

<sup>21</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE F.23: SUMMARY OF TORNADO OCCURRENCES IN LINCOLN COUNTY**

| Location                    | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-----------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Brookhaven                  | 8                     | 0/0             | \$44,246               | \$2,011                    |
| Unincorporated Area         | 40                    | 5/27            | \$28,119,138           | \$453,534                  |
| <b>LINCOLN COUNTY TOTAL</b> | <b>48</b>             | <b>5/27</b>     | <b>\$28,163,384</b>    | <b>\$455,546</b>           |

Source: National Climatic Data Center

**TABLE F.24: HISTORICAL TORNADO IMPACTS IN LINCOLN COUNTY**

| Location                   | Date       | Magnitude    | Deaths/Injuries | Property Damage* | Details  |
|----------------------------|------------|--------------|-----------------|------------------|--|
| <b>Brookhaven</b>          |            |              |                 |                  |  |
| Brookhaven                 | 10/27/1995 | F0           | 0/0             | \$3,182          | Several trees were blown down by this weak tornado.  |
| Brookhaven                 | 10/27/1995 | F0           | 0/0             | \$0              | This weak tornado touched down only briefly in an open field.  |
| BROOKHAVEN                 | 10/13/2001 | F0           | 0/0             | \$34,401         | A tornado briefly touched down. A few mobile homes were heavily damaged and shifted off their foundations. Also, around twenty-five trees were blown down. A few power lines were also blown down. |
| BROOKHAVEN                 | 5/17/2003  | F0           | 0/0             | \$6,663          | This tornado snapped a few tree branches and downed a couple of trees.   |
| BROOKHAVEN                 | 3/26/2005  | Funnel Cloud | 0/0             | \$0              | --   |
| BROOKHAVEN                 | 4/6/2005   | Funnel Cloud | 0/0             | \$0              | --   |
| BROOKHAVEN                 | 5/10/2006  | Funnel Cloud | 0/0             | \$0              | --   |
| BROOKHAVEN                 | 9/2/2008   | Funnel Cloud | 0/0             | \$0              | Several reports of a funnel cloud on the west side of Brookhaven.  |
| <b>Unincorporated Area</b> |            |              |                 |                  |  |
| LINCOLN CO.                | 4/12/1955  | F2           | 0/0             | \$2,289,551      | --   |
| LINCOLN CO.                | 2/14/1966  | --           | 0/0             | \$0              | --   |
| LINCOLN CO.                | 2/14/1966  | --           | 0/0             | \$0              | --   |
| LINCOLN CO.                | 12/2/1967  | F3           | 0/0             | \$180,327        | --   |
| LINCOLN CO.                | 4/12/1971  | F2           | 0/0             | \$152,446        | --   |
| LINCOLN CO.                | 4/21/1972  | F3           | 0/0             | \$147,304        | --   |
| LINCOLN CO.                | 1/10/1975  | F4           | 5/9             | \$11,733,397     | --   |
| LINCOLN CO.                | 3/29/1976  | F2           | 0/0             | \$10,936         | --   |
| LINCOLN CO.                | 4/17/1978  | F2           | 0/0             | \$95,667         | --   |
| LINCOLN CO.                | 4/8/1980   | F1           | 0/0             | \$754,704        | --   |
| LINCOLN CO.                | 10/27/1980 | F2           | 0/2             | \$72,088         | --   |
| LINCOLN CO.                | 10/28/1985 | F1           | 0/0             | \$56,238         | --   |
| LINCOLN CO.                | 3/12/1986  | F2           | 0/0             | \$561,866        | --   |
| LINCOLN CO.                | 3/12/1986  | F1           | 0/0             | \$56,187         | --   |
| LINCOLN CO.                | 4/12/1986  | F2           | 0/0             | \$5,629,006      | --   |
| LINCOLN CO.                | 3/17/1987  | F1           | 0/0             | \$54,533         | --   |
| LINCOLN CO.                | 11/16/1987 | F2           | 0/2             | \$529,731        | --   |
| LINCOLN CO.                | 12/22/1990 | F1           | 0/0             | \$45,688         | --   |

**ANNEX F: LINCOLN COUNTY**

| Location             | Date       | Magnitude    | Deaths/<br>Injuries | Property<br>Damage* | Details   |
|----------------------|------------|--------------|---------------------|---------------------|---|
| LINCOLN CO.          | 4/20/1992  | F1           | 0/0                 | \$438,215           | --  |
| LINCOLN CO.          | 4/20/1992  | F1           | 0/0                 | \$438,215           | --  |
| LINCOLN CO.          | 8/26/1992  | F1           | 0/0                 | \$43,386            | --  |
| LINCOLN CO.          | 11/21/1992 | F2           | 0/0                 | \$430,500           | --  |
| to 2 E<br>Brookhaven | 1/27/1994  | F2           | 0/7                 | \$836,265           | Within the broad damage path across Lincoln county was a distinct path of convergent damage. Several mobile homes were totally destroyed. One frame house was totally destroyed. A sawmill was totally destroyed. Seven people were injured in the mobile homes. Many trees and power poles and lines were blown down.  |
| Redstar              | 4/15/1994  | F0           | 0/0                 | \$0                 | Ham operator spotted the tornado in an open area. No damage was caused by this tornado.   |
| Ruth                 | 4/22/1995  | F0           | 0/0                 | \$3,220             | This small tornado blew down a couple of trees.   |
| CASEYVILLE           | 4/6/2003   | F2           | 0/6                 | \$1,330,381         | This tornado started 4 miles SE of Caseyville and continued to the NE for 10 miles when it entered Copiah county at 7:46 pm, at the intersection of Interstate 55 and the county line. This tornado caused minor damage to numerous homes with several homes sustaining major damage in the form of having their roofs blown off. This tornado also took down two 500 kilowatt towers. In addition to the structural damage, hundreds of trees were snapped and uprooted. |
| BOGUE CHITTO         | 11/24/2004 | F1           | 0/0                 | \$76,814            | This tornado touched down along Pleasant Hill Road and moved east northeast for 3 miles. A few hundred trees were uprooted and snapped. The worst damage occurred 1 mile either side of Lazy Trail Road.  |
| BOGUE CHITTO         | 1/7/2005   | F1           | 0/0                 | \$76,935            | This tornado downed numerous trees and power lines across Pleasant Hill Road, Shady Grove Road and Willow Road as it tracked northeast for 2 miles. One mobile home was overturned and destroyed. Two other homes sustained damage at the corner of Fox and Windmill Roads.   |
| BOGUE CHITTO         | 3/22/2005  | F0           | 0/0                 | \$44,275            | This weak tornado briefly touched down 3 miles east-southeast of Bogue Chitto and uprooted several trees and damaged a roof to a house.   |
| RUTH                 | 4/6/2005   | Funnel Cloud | 0/0                 | \$0                 | --  |
| RUTH                 | 4/6/2005   | F0           | 0/0                 | \$6,283             | This weak tornado briefly touched down just N of Ruth and downed a few trees.   |
| HEUCKS<br>RETREAT    | 12/20/2007 | EF2          | 0/1                 | \$582,100           | This strong tornado touched down just east of the Brookhaven-Lincoln County Airport and tracked east-northeast for five miles to near the Woolworth Community. The most significant damage occurred just south of Heucks Crossing along Beeson Road where   |

**ANNEX F: LINCOLN COUNTY**

| Location          | Date       | Magnitude    | Deaths/<br>Injuries | Property<br>Damage* | Details  |
|-------------------|------------|--------------|---------------------|---------------------|--|
|                   |            |              |                     |                     | two mobile homes were obliterated. The debris was swept from foundations with large debris, including furniture, and appliances thrown more than 100 yards. Additionally, numerous trees, both pines and hardwoods, were snapped and uprooted along with several power lines down along the path. A shop was also destroyed, camper trailer heavily damaged and two other homes suffered significant roof damage.  |
| NEW SIGHT         | 9/2/2008   | EF0          | 0/0                 | \$0                 | A large tree was blown down off James Road and several large limbs were broken off. Max winds were around 70 mph.  |
| CAM               | 9/2/2008   | Funnel Cloud | 0/0                 | \$0                 |  |
| FAIR OAKS<br>SPGS | 9/2/2008   | EF0          | 0/0                 | \$0                 | This brief tornado uprooted a few trees and snapped some limbs off a few others. The tornado crossed East Lincoln Drive and was then in an open field where it dissipated. Max winds were around 70 mph.   |
| VAUGHN            | 12/31/2010 | EF1          | 0/0                 | \$278,909           | The tornado started along Ellzey Drive, where it snapped some large limbs and took a few shingles off a house. The tornado moved north-northeast, destroying a small outbuilding along Tanpa Trail and downing a couple of trees. The tornado then did its most substantial damage along Jackson Liberty Drive NW, where it pushed a frame house off of its blocks, along with busting windows and causing some shingle damage. A couple of outbuildings were also heavily damaged, and a few trees were snapped and uprooted. The tornado continued north-northeast, sporadically snapping a few pine trees before dissipating near Pleasant Ridge Road NW. Maximum winds were around 90 mph.                               |
| RUTH              | 4/4/2011   | EF1          | 0/0                 | \$1,087,228         | The tornado started by downing trees along Cole Drive west of the Ruth community. The tornado quickly intensified and produced its first area of damage with winds estimated near 100 mph in Ruth. The awning of a gas station was destroyed, the volunteer fire department building had the back wall blown out, a church had the steeple blown off along with extensive shingle damage, and a number of homes suffered roof damage due to trees falling on them or due to direct minor roof damage. The tornado continued to move east across southeast Lincoln county and into southwest Lawrence County to the northwest and north of Jayess, causing tree damage. A few trees here fell on homes, and one fell on an RV |

ANNEX F: LINCOLN COUNTY

| Location  | Date      | Magnitude | Deaths/<br>Injuries | Property<br>Damage* | Details  |
|-----------|-----------|-----------|---------------------|---------------------|--|
|           |           |           |                     |                     | vehicle, completely destroying it. After appearing to weaken northeast of Jayess, the tornado restrengthened after moving east of Mississippi Highway 27. The tornado again caused damaging indicative of winds of 100 mph along Tom Sistrunk Road. Numerous large trees were snapped and uprooted, and several homes had minor to moderate roof damage. The tornado then weakened as it moved east, dissipating just before reaching the border between Lawrence and Marion Counties. Maximum winds were around 100 mph. Total path length across Lincoln and Lawrence Counties was 17 miles. While the damage pattern associated with this tornado had clear tornadic indications with a convergent damage pattern, there was also damage indicative of straight line winds to the west and north of the tornado, primarily from west to north of Ruth. A number of trees were downed in this area, some on power lines. |
| NEW SIGHT | 1/21/2016 | EF0       | 0/0                 | \$10,321            | This weak tornado touched down just north of the Old Red Star community along Old Red Star Rd just to the south of the Copiah/Lincoln county line. A shed was damaged with the roof blown off and a few trees damaged. As the tornado tracked northeast, it crossed Watson Rd and damaged a couple trees. The heaviest damage occurred just west of Lott Smith Rd where dozens of pine trees were snapped and several hard woods were uprooted. A shed was damaged along with a small portion of a roof on a house. Another home had a larger section of the roof torn off. This area was rated EF1. The tornado continued northeast and lifted at Sylvarena Rd and Bayou Pierre. The maximum estimated winds were 100mph. The total track length was 5.4 miles and path width was 200 yards.  |
| ARLINGTON | 2/23/2016 | EF1       | 0/0                 | \$41,251            | The tornado began just west-southwest of Shannon Drive in a wooded area where a few large trees were uprooted and a few tops of trees were snapped. As the tornado crossed Shannon Drive, many large trees were snapped and uprooted with one causing minor roof damage to a home. The tornado then crossed Magnolia Trail where a large limb was snapped and skirting was blown off of a mobile home into a pasture across the road. The tornado continued around 100 yards or so into the pasture where a feed house was damaged and tin   |

| Location   | Date     | Magnitude | Deaths/<br>Injuries | Property<br>Damage* | Details  |
|------------|----------|-----------|---------------------|---------------------|--|
|            |          |           |                     |                     | was strewn around. The tornado lifted soon after in this pasture. Estimated maximum sustained winds were 90 mph.   |
| CASEYVILLE | 1/2/2017 | EF1       | 0/0                 | \$25,173            | This tornado touched down southwest of Norton Assink Road in northwest Lincoln County and tracked northeast into southern Covich County. The heaviest damage was along Jackson-Liberty Road, Old Red Star Road and Shady Grove Lane. Heavy tree damage occurred at this location. Historic Sweetwater Methodist Church was damaged where it was pushed off its foundation. Moderate wall damage occurred due to this. Further northeast along the path, several sheds were damaged and some minor roof damage was noted to a few homes. The tornado crossed Sylvarena Road where more trees were down and a mobile home had the roof blown off along Brownsell Road. The tornado dissipated just to the northeast of there. Maximum estimated winds for the entire tornado path was 110mph, but max winds in Lincoln County was 105mph. Total path length was 6.8 miles and total width was 300 yards. |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.  
 Source: National Climatic Data Center

**PROBABILITY OF FUTURE OCCURRENCES**

According to historical information, tornado events pose a significant threat to Lincoln County. The probability of future tornado occurrences affecting Lincoln County is likely (between 10 and 100 percent annual probability).

**F.2.13 Winter Storm and Freeze**

**LOCATION AND SPATIAL EXTENT**

Nearly the entire continental United States is susceptible to winter storm and freeze events. Some ice and winter storms may be large enough to affect several states, while others might affect limited, localized areas. The degree of exposure typically depends on the normal expected severity of local winter weather. Lincoln County is not accustomed to severe winter weather conditions and seldom receives severe winter weather, even during the winter months. Events tend to be mild in nature; however, this creates a situation where even relatively small accumulations of snow, ice, or other wintery precipitation can lead to losses and damage due to the fact that these events are not commonplace. Given the atmospheric nature of the hazard, the entire county has uniform exposure to a winter storm.

**HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, there have been a total of nine recorded winter storm events in Lincoln County since 1996 (**Table F.25**).<sup>22</sup> These events resulted in over \$2.0 million (2017 dollars) in damages.<sup>23</sup> Detailed information on the recorded winter storm events can be found in **Table F.26**.

**TABLE F.25: SUMMARY OF WINTER STORM EVENTS IN LINCOLN COUNTY**

| Location       | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|----------------|-----------------------|-----------------|------------------------|----------------------------|
| Lincoln County | 9                     | 0/0             | \$2,039,234            | \$97,106                   |

Source: National Climatic Data Center

**TABLE F.26: HISTORICAL WINTER STORM IMPACTS IN LINCOLN COUNTY**

| Location                   | Date       | Type           | Deaths/Injuries | Property Damage* |
|----------------------------|------------|----------------|-----------------|------------------|
| <b>Brookhaven</b>          |            |                |                 |                  |
| None reported              | --         | --             | --              | --               |
| <b>Unincorporated Area</b> |            |                |                 |                  |
| LINCOLN (ZONE)             | 2/1/1996   | Ice Storm      | 0/0             | \$157,859        |
| LINCOLN (ZONE)             | 1/19/2008  | Heavy Snow     | 0/0             | \$0              |
| LINCOLN (ZONE)             | 12/11/2008 | Heavy Snow     | 0/0             | \$11,631         |
| LINCOLN (ZONE)             | 12/4/2009  | Heavy Snow     | 0/0             | \$0              |
| LINCOLN (ZONE)             | 12/4/2009  | Heavy Snow     | 0/0             | \$0              |
| LINCOLN (ZONE)             | 2/11/2010  | Heavy Snow     | 0/0             | \$902,548        |
| LINCOLN (ZONE)             | 1/9/2011   | Ice Storm      | 0/0             | \$83,276         |
| LINCOLN (ZONE)             | 2/3/2011   | Ice Storm      | 0/0             | \$883,919        |
| LINCOLN (ZONE)             | 1/6/2017   | Winter Weather | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

There have been several severe winter weather events in Lincoln County. The text below describes two of the major events and associated impacts on the county. Similar impacts can be expected with severe winter weather.

**February 2010**

Heavy snow affected a large portion of the region, especially locations across central and southern Mississippi, on Thursday night and Friday, February 11th and 12th. The heavy snow was a result of a low pressure system that tracked eastward across the northern Gulf of Mexico, and a vigorous upper level disturbance that moved across the region while a cold air mass was in place. Light precipitation overspread the region late Thursday afternoon into the evening before becoming heavy Thursday night into early Friday morning. The snow tapered off from west to east during the midday hours Friday.

<sup>22</sup> These ice and winter storm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional winter storm conditions have affected Lincoln County.

<sup>23</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

### **February 2011**

An ice storm developed across the area on February 3rd into the early morning hours of the 4th. While this icing event was not devastating, the impact to travel was a major issue across the region. Thousands of accidents occurred from slick roads. As a result of the accidents, three fatalities occurred along with a handful of injuries. Overall, most areas received 0.25 to 0.5 inches of ice accumulation from freezing rain. Additionally, some areas had a mix of precipitation with sleet accumulating. Some snow did occur, but those were just across select areas and the accumulation was mainly one inch or less.

Winter storms throughout the planning area have several negative externalities including hypothermia, cost of snow and debris cleanup, business and government service interruption, traffic accidents, and power outages. Furthermore, citizens may resort to using inappropriate heating devices that could to fire or an accumulation of toxic fumes.

### ***PROBABILITY OF FUTURE OCCURRENCES***

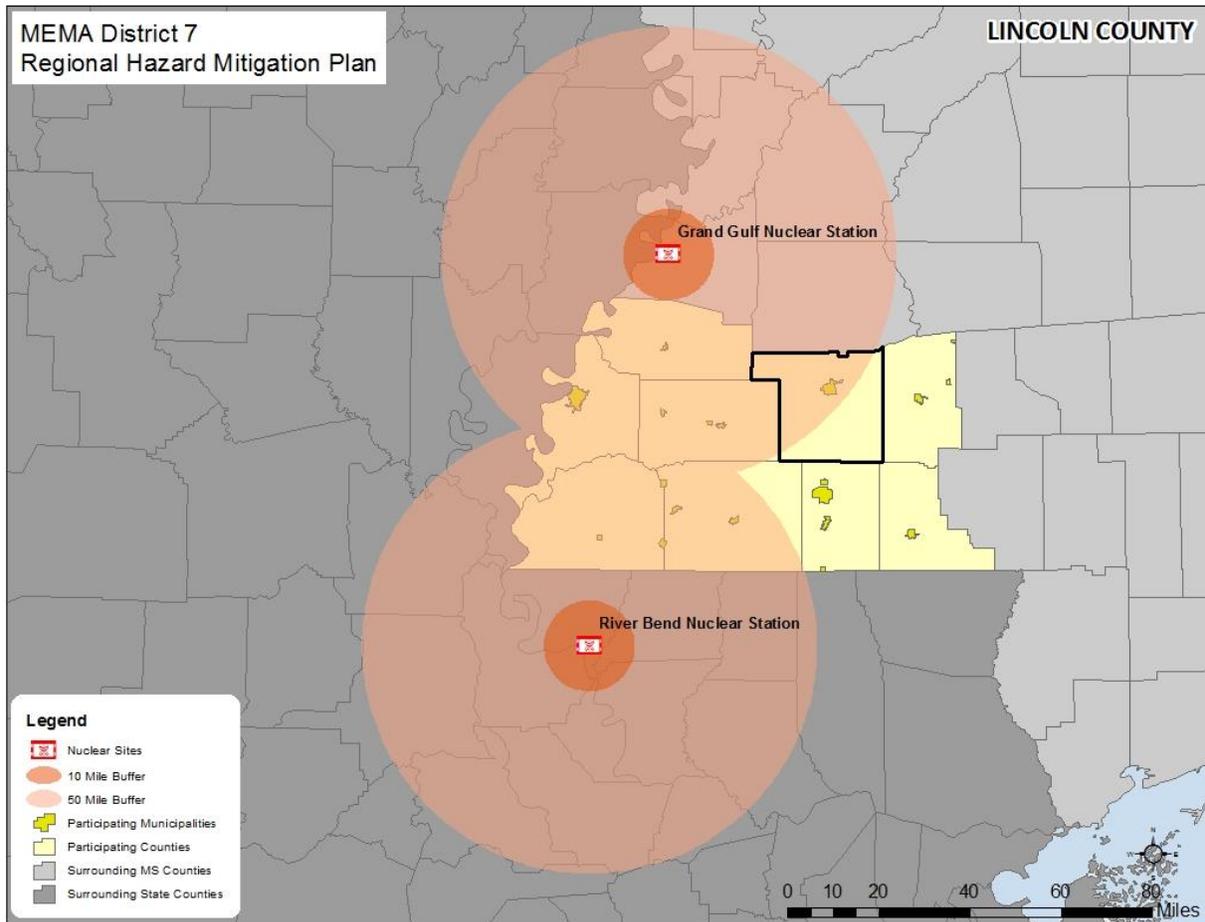
Winter storm events will continue to occur in Lincoln County. Based on historical information, the probability is likely (between 10 and 100 percent annual probability).

## ***HUMAN-CAUSED HAZARDS***

### **F.2.14 Radiological Event**

#### ***LOCATION AND SPATIAL EXTENT***

The Grand Gulf Nuclear Station and River Bend Nuclear Station are both located within a 50-mile radius of the MEMA District 7 Region. The Nuclear Regulatory Commission defines two emergency planning zones around nuclear plants. Areas located within 10 miles of the station are considered to be within the zone of highest risk to a nuclear incident and this radius is the designated evacuation radius recommended by the Nuclear Regulatory Commission. Within the 10-mile zone, the primary concern is exposure to and inhalation of radioactive contamination. No part of Lincoln County is located in the 10-mile radius of a nuclear station. The most concerning effects in the secondary 50-mile zone are related to ingestion of food and liquids that may have been contaminated. Approximately half of Lincoln County is located within this 50-mile radius. The 50-mile zone is still considered to be at risk from a nuclear incident, though the impacts may be less severe than in the 10-mile zone (**Figure F.14**).

**FIGURE F.14: NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN LINCOLN COUNTY**

Source: International Atomic Energy Agency

### **HISTORICAL OCCURRENCES**

Although there have been no major nuclear events at either the Grand Gulf or River Bend Nuclear Stations, there is some possibility that one could occur as there have been incidents in the past in the United States at other facilities and at facilities around the world. Additionally, a list of minor events/notifications was acquired from reports collected by the Nuclear Regulatory Commission (NRC). The NRC classifies events using the scale found in **Table F.27**. A list of events at Grand Gulf Nuclear Station can be found in **Table F.28** and a list of events at River Bend Nuclear Station can be found in **Table F.29**. It is noteworthy that all of the events were minor in magnitude and many were insignificant enough that they did not register on the classification scale.

**TABLE F.27: NUCLEAR REGULATORY COMMISSION EMERGENCY CLASSIFICATION SCALE FOR EVENTS OCCURRING AT NUCLEAR POWER PLANTS**

| Classification                       | Description   |
|--------------------------------------|---|
| Notification of Unusual Event (NOUE) | Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. [Note: This term is sometimes shortened to Unusual Event (UE). The terms Notification of Unusual Event, NOUE and Unusual Event are used interchangeably.]  |
| Alert                                | Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) protective action guides (PAGs)  |
| Site Area Emergency                  | Site Area Emergency (SAE) – Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile action that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary. |
| General Emergency                    | Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile action that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.  |

Source: Nuclear Regulatory Commission

**TABLE F.28: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT GRAND GULF NUCLEAR STATION**

| Date      | Retrieved From*                  | Classification | Plant             | Description  |
|-----------|----------------------------------|----------------|-------------------|--|
| 8/29/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST         |
| 10/1/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF NUCLEAR STATION SECURITY OFFICER LOCKOUT                  |
| 9/29/2016 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF EXTENDED PLANT SHUTDOWN TO ADDRESS OPERATIONS PERFORMANCE |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lersearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

**TABLE F.29: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT  
RIVER BEND NUCLEAR STATION**

| Date       | Retrieved From*                  | Classification                               | Plant             | Description   |
|------------|----------------------------------|--|-------------------|---|
| 11/26/1985 | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | ECCS Initiation: Improper restoration of a level transmitter causes HPSC injection    |
| 11/27/1985 | Licensee Event Report            | Alert  | River Bend Unit 1 | Failure to Perform Surveillance Tests   |
| 3/5/1992   | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | REACTOR SCRAM CAUSED BY A GENERATOR TRIP DUE TO HIGH WINDS CAUSING TRANSFORMER DAMAGE |
| 9/15/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE IVAN  |
| 10/4/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | Shutdown Greater than 72 Hours  |
| 9/23/2005  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | NRC ENTERS MONITORING MODE DUE TO HURRICANE RITA                                      |
| 5/23/2007  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REACTOR SHUTDOWN DUE TO UNEXPECTED CHANGE IN RECIRCULATION FLOW                       |
| 9/2/2008   | Preliminary Notification Reports | Notification of Unusual Event/Not Applicable | River Bend Unit 1 | NRC RESPONSE TO HURRICANE GUSTAV  |
| 5/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | AUGMENTED INSPECTION TEAM ONSITE AT RIVER BEND STATION                                |
| 8/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST                          |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lsearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

### **PROBABILITY OF FUTURE OCCURRENCES**

A nuclear event is a very rare occurrence in the United States due to the intense regulation of the industry. There have been minor incidents in the past, but it is considered unlikely (less than 1 percent annual probability).

### **RADIOLOGICAL EVACUATIONS**

Similar to the hurricane evacuations discussed above, in many ways the MEMA District 7 Region would potentially be impacted to a greater degree by evacuations caused by a radiological event than by the event itself. Since the region is not directly located within the 10-mile evacuation area but neighboring counties are located within this zone, it is highly likely that populations from those neighboring counties will be evacuated to the counties within the MEMA District 7 Region.

Due to the severe and long-term effects of a major radiological event, temporary sheltering will be an initial concern, but the greater challenge may be in the long-term. As has happened with historical radiological accidents in other locations, the danger in the impacted area will likely extend for a very long period after the event and evacuees may be unable to return to their homes for months or years. This additional influx of population will cause a major strain on resources within these relatively rural counties in the short-term, as local communities with limited resources will have an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people. In the long-term, there may be challenges for local officials as existing infrastructure will likely be inadequate to handle larger populations.

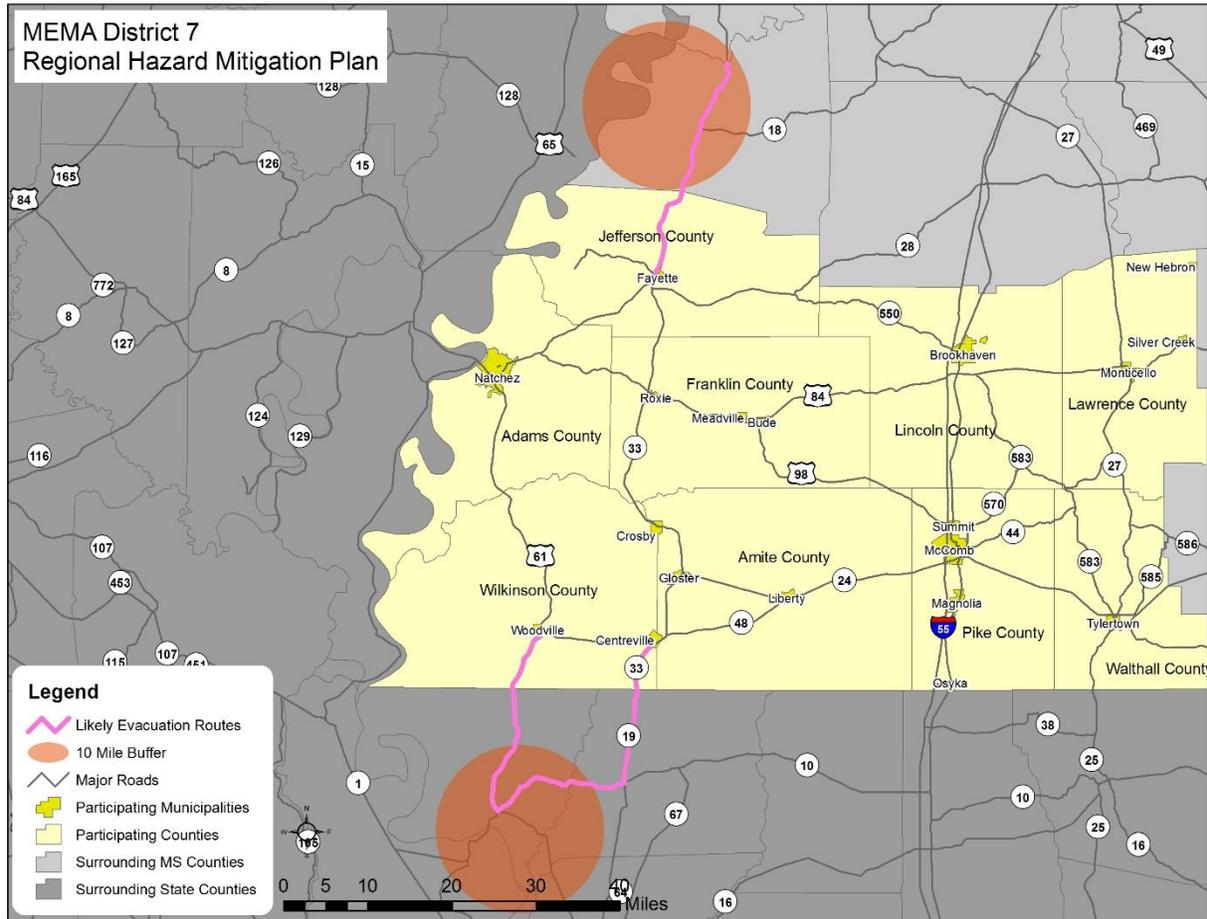
Although there have not been any major radiological events in the region historically, hurricane evacuations (discussed above) provide a similar scenario in terms of what the region might expect. However, one additional concern that officials will need to consider in a radiological event is that evacuees may be contaminated by radioactivity. According to the Centers for Disease Control, radioactive contamination can occur when radioactive materials are released into the environment and become deposited into the air, water, surfaces, soil, plants, buildings, people or animals. This contamination can then be spread when people touch other people, surfaces, or objects. Therefore, when people evacuate a contaminated zone, they pose a potential risk of spreading the contamination to others if they are not properly treated. Local officials in MEMA District 7 may need to be prepared to set up decontamination centers along major evacuation routes to ensure that the contamination is not spread. It is also important for citizens to understand the steps they can take to reduce the risk of spreading contamination such as evacuating quickly after an event and following decontamination instructions as directed by local officials.<sup>24</sup>

Based on the locations of the 10-mile evacuation areas near the region, many of these evacuees will likely come from Claiborne County to the north and West Feliciana and East Feliciana Parishes to the south. The main roads for these evacuees will probably be U.S. Highway 61 and Mississippi State Highway 33 since these are the primary and most direct roads into and out of the aforementioned evacuation counties and into MEMA District 7 (**Figure F.15**). Depending on the severity of the event, officials may even change these roads over to a contraflow traffic pattern to enable quicker evacuations.

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<sup>24</sup> Centers for Disease Control and Prevention. *Emergency Preparedness and Response: Contamination vs. Exposure*. Retrieved on September 1, 2017 from <https://emergency.cdc.gov/radiation/contamination.asp>

**FIGURE F.15: LIKELY EVACUATION ROUTES FOR A RADIOLOGICAL EVENT IN THE MEMA DISTRICT 7 REGION**



Source: International Atomic Energy Agency

As a result of the potential for an influx of evacuees during a radiological event, it is critical for local officials in MEMA District 7 to prepare for evacuations. It is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future events.

### F.2.15 Conclusions on Hazard Risk

The hazard profiles presented in this subsection were developed using best available data and result in what may be considered principally a qualitative assessment as recommended by FEMA in its “How-to” guidance document titled *Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA Publication 386-2). It relies heavily on historical and anecdotal data, stakeholder input, and professional and experienced judgment regarding observed and/or anticipated hazard impacts. It also carefully considers the findings in other relevant plans, studies, and technical reports.

**HAZARD EXTENT**

**Table F.30** describes the extent of each natural hazard identified for Lincoln County. The extent of a hazard is defined as its severity or magnitude, as it relates to the planning area.

**TABLE F.30: EXTENT OF LINCOLN COUNTY HAZARDS**

| Flood-related Hazards  |   |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                       |  |  |  |  |  |  |  |                              |           |       |        |    |    |    |    |                           |           |       |        |    |    |    |    |                          |           |       |     |    |    |    |    |
|--|---|-------|-----------------------------------|----------------------------|------------------------|---------------------------------|---------------------------------|--|---------------------------|------|-----------------------------------|----------------------------|------------------|--|--|--|-------------------------|------------------------|---------------------------------|---------------------------------|-----------------------|--|--|--|--|--|--|--|------------------------------|-----------|-------|--------|----|----|----|----|---------------------------|-----------|-------|--------|----|----|----|----|--------------------------|-----------|-------|-----|----|----|----|----|
| Dam and Levee Failure  | Dam Failure extent is defined using the Mississippi Department of Environmental Quality classifications which include Low, Significant, and High. Two dams are classified as high-hazard in Lincoln County.   |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                       |  |  |  |  |  |  |  |                              |           |       |        |    |    |    |    |                           |           |       |        |    |    |    |    |                          |           |       |     |    |    |    |    |
| Erosion  | The extent of erosion can be defined by the measurable rate of erosion that occurs. There are no official erosion rate records in Lincoln County but local estimates are around 0.25 to 0.50 feet per year. Some areas of erosion have been identified by local coordinators.   |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                       |  |  |  |  |  |  |  |                              |           |       |        |    |    |    |    |                           |           |       |        |    |    |    |    |                          |           |       |     |    |    |    |    |
| Flood  | Flood extent can be measured by the amount of land and property in the floodplain as well as flood height and velocity. The amount of land in the floodplain accounts for 10.4 percent of the total land area in Lincoln County.  |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                       |  |  |  |  |  |  |  |                              |           |       |        |    |    |    |    |                           |           |       |        |    |    |    |    |                          |           |       |     |    |    |    |    |
|  | Flood depth and velocity are recorded via United States Geological Survey stream gages throughout the region. While a gage does not exist for each participating jurisdiction, there is one at or near many areas. The greatest peak discharge recorded for the county was on Big Creek at Bogue Chitto. Water reached a discharge of 13,700 cubic feet per second (recorded on October 4, 1964). The highest stream gage height was also on Big Creek at Bogue Chitto with a height that was recorded at 27.40 feet (recorded on October 4, 1964). Additional peak discharge readings, historic crest heights, and the corresponding flood categories (where available) are in the table below.  |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                       |  |  |  |  |  |  |  |                              |           |       |        |    |    |    |    |                           |           |       |        |    |    |    |    |                          |           |       |     |    |    |    |    |
|  | <table border="1"> <thead> <tr> <th rowspan="2">Location/<br/>Jurisdiction</th> <th rowspan="2">Date</th> <th rowspan="2">Maximum<br/>Historic<br/>Crest (ft)</th> <th rowspan="2">Peak<br/>Discharge<br/>(cfs)</th> <th colspan="4">Flood Categories</th> </tr> <tr> <th>Action<br/>Stage<br/>(ft)</th> <th>Flood<br/>Stage<br/>(ft)</th> <th>Moderate<br/>Flood<br/>Stage (ft)</th> <th>Major<br/>Flood<br/>Stage<br/>(ft)</th> </tr> </thead> <tbody> <tr> <td colspan="8"><b>Lincoln County</b></td> </tr> <tr> <td>Bogue Chitto near Brookhaven</td> <td>10/4/1964</td> <td>19.33</td> <td>9,000*</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>Big Creek at Bogue Chitto</td> <td>10/4/1964</td> <td>27.40</td> <td>13,700</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>Dry Draw near Brookhaven</td> <td>4/12/1955</td> <td>10.18</td> <td>460</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> </tbody> </table> |       |                                   |                            |                        |                                 |                                 |  | Location/<br>Jurisdiction | Date | Maximum<br>Historic<br>Crest (ft) | Peak<br>Discharge<br>(cfs) | Flood Categories |  |  |  | Action<br>Stage<br>(ft) | Flood<br>Stage<br>(ft) | Moderate<br>Flood<br>Stage (ft) | Major<br>Flood<br>Stage<br>(ft) | <b>Lincoln County</b> |  |  |  |  |  |  |  | Bogue Chitto near Brookhaven | 10/4/1964 | 19.33 | 9,000* | NA | NA | NA | NA | Big Creek at Bogue Chitto | 10/4/1964 | 27.40 | 13,700 | NA | NA | NA | NA | Dry Draw near Brookhaven | 4/12/1955 | 10.18 | 460 | NA | NA | NA | NA |
|  | Location/<br>Jurisdiction   | Date  | Maximum<br>Historic<br>Crest (ft) | Peak<br>Discharge<br>(cfs) | Flood Categories       |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                       |  |  |  |  |  |  |  |                              |           |       |        |    |    |    |    |                           |           |       |        |    |    |    |    |                          |           |       |     |    |    |    |    |
| Action<br>Stage<br>(ft)  |   |       |                                   |                            | Flood<br>Stage<br>(ft) | Moderate<br>Flood<br>Stage (ft) | Major<br>Flood<br>Stage<br>(ft) |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                       |  |  |  |  |  |  |  |                              |           |       |        |    |    |    |    |                           |           |       |        |    |    |    |    |                          |           |       |     |    |    |    |    |
| <b>Lincoln County</b>  |   |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                       |  |  |  |  |  |  |  |                              |           |       |        |    |    |    |    |                           |           |       |        |    |    |    |    |                          |           |       |     |    |    |    |    |
| Bogue Chitto near Brookhaven   | 10/4/1964   | 19.33 | 9,000*                            | NA                         | NA                     | NA                              | NA                              |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                       |  |  |  |  |  |  |  |                              |           |       |        |    |    |    |    |                           |           |       |        |    |    |    |    |                          |           |       |     |    |    |    |    |
| Big Creek at Bogue Chitto  | 10/4/1964   | 27.40 | 13,700                            | NA                         | NA                     | NA                              | NA                              |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                       |  |  |  |  |  |  |  |                              |           |       |        |    |    |    |    |                           |           |       |        |    |    |    |    |                          |           |       |     |    |    |    |    |
| Dry Draw near Brookhaven   | 4/12/1955   | 10.18 | 460                               | NA                         | NA                     | NA                              | NA                              |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                       |  |  |  |  |  |  |  |                              |           |       |        |    |    |    |    |                           |           |       |        |    |    |    |    |                          |           |       |     |    |    |    |    |
| NA= Data not available for this particular gage<br>*Occurred on a different date than Maximum Historic Crest |   |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                       |  |  |  |  |  |  |  |                              |           |       |        |    |    |    |    |                           |           |       |        |    |    |    |    |                          |           |       |     |    |    |    |    |
| Fire-related Hazards   |   |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                       |  |  |  |  |  |  |  |                              |           |       |        |    |    |    |    |                           |           |       |        |    |    |    |    |                          |           |       |     |    |    |    |    |
| Drought  | Drought extent is defined by the U.S. Drought Monitor Classifications which include Abnormally Dry, Moderate Drought, Severe Drought, Extreme Drought, and Exceptional Drought. According to the U.S. Drought Monitor Classifications, the most severe drought condition is Exceptional. Lincoln County has received this ranking once over the 17-year reporting period.   |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                       |  |  |  |  |  |  |  |                              |           |       |        |    |    |    |    |                           |           |       |        |    |    |    |    |                          |           |       |     |    |    |    |    |

|                                |  |
|--------------------------------|--|
| Lightning                      | According to the Vaisala’s flash density map, Lincoln County is located in an area that experiences 12 to 20 lightning flashes per square mile per year. It should be noted that future lightning occurrences may exceed these figures.  |
| Wildfire                       | Wildfire data was provided by the Mississippi Forestry Commission and is reported annually by county from 2007-2016. The greatest number of fires to occur in Lincoln County in any year was 87 in 2011. The greatest number of acres to burn in the county in a single year occurred in 2007 when 1,632 acres were burned. Although this data lists the extent that has occurred, larger and more frequent wildfires are possible throughout the county.          |
| <b>Geologic Hazards</b>        |  |
| Earthquake                     | Earthquake extent can be measured by the Richter Scale or the Modified Mercalli Intensity (MMI) scale. According to data provided by the National Centers for Environmental Information, the greatest earthquake to impact Lincoln County had a MMI of II (feeble) but no Richter magnitude was available (reported on September 1, 1886).   |
| <b>Wind-related Hazards</b>    |  |
| Extreme Heat                   | The extent of extreme heat can be measured by the record high temperature recorded. Official long term temperature records are not kept for any areas in Lincoln County. However, the highest recorded temperature in the region was 106°F in 2007 with heat index values recorded above 115°F.  |
| Hailstorm                      | Hail extent can be defined by the size of the hail stone. The largest hail stone reported in Lincoln County was 2.75 inches (last reported on April 11, 2008). It should be noted that future events may exceed this.  |
| Hurricane and Tropical Storm   | Hurricane extent is defined by the Saffir-Simpson Scale which classifies hurricanes into Category 1 through Category 5. The greatest classification of hurricane to impact the MEMA District 7 Region was a Category 3 storm. This occurred in 1969 with Hurricane Camille and in 2005 with Hurricane Katrina. The storm track of both storms passed just to the east of the region, but due to the size of these storms, their impact was felt across the region. |
| Severe Thunderstorm/ High Wind | Thunderstorm extent is defined by the number of thunder events and wind speeds reported. According to a 67-year history from the National Climatic Data Center, the strongest recorded wind event in Lincoln County was last reported on February 5, 2016 at 83 knots (approximately 96 mph). It should be noted that future events may exceed these historical occurrences.   |
| Tornado                        | Tornado hazard extent is measured by tornado occurrences in the US provided by FEMA as well as the Fujita/Enhanced Fujita Scale. The greatest magnitude reported in Lincoln County was an F4 (reported on January 10, 1975).   |
| Winter Storm and Freeze        | The extent of winter storms can be measured by the amount of snowfall received (in inches). Official long term snow records are not kept for any areas in Lincoln County. However, reports from NCDC of the greatest snowfall in the county has been 4 to 10 inches (reported on December 11, 2008).   |
| <b>Human-caused Hazards</b>    |  |
| Radiological Event             | Although there is no history of a nuclear accident at either the Grand Gulf Nuclear Station or River Bend Nuclear Station, other events across the globe and in the United States in particular indicate that an event is possible. Since several national and international events were Level 7 events on the INES, the potential for a Level 7 event at these stations is possible.  |

**PRIORITY RISK INDEX RESULTS**

In order to draw some meaningful planning conclusions on hazard risk for Lincoln County, the results of the hazard profiling process were used to generate countywide hazard classifications according to a

“Priority Risk Index” (PRI). More information on the PRI and how it was calculated can be found in Section 5.17.2.

**Table F.31** summarizes the degree of risk assigned to each category for all initially identified hazards based on the application of the PRI. Assigned risk levels were based on the detailed hazard profiles developed for this subsection, as well as input from the Regional Hazard Mitigation Council. The results were then used in calculating PRI values and making final determinations for the risk assessment.

**TABLE F.31: SUMMARY OF PRI RESULTS FOR LINCOLN COUNTY**

| Hazard                        | Category/Degree of Risk |              |                |                    |                    | PRI Score  |
|-------------------------------|-------------------------|--------------|----------------|--------------------|--------------------|------------|
|                               | Probability             | Impact       | Spatial Extent | Warning Time       | Duration           |            |
| <b>Flood-related Hazards</b>  |                         |              |                |                    |                    |            |
| Dam Failure and Levee Failure | Possible                | Critical     | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>2.6</b> |
| Erosion                       | Possible                | Minor        | Small          | More than 24 hours | More than 1 week   | <b>1.8</b> |
| Flood                         | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 24 hours | <b>3.2</b> |
| <b>Fire-related Hazards</b>   |                         |              |                |                    |                    |            |
| Drought                       | Possible                | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.5</b> |
| Lightning                     | Highly Likely           | Limited      | Small          | 6 to 12 hours      | Less than 6 hours  | <b>2.6</b> |
| Wildfire                      | Highly Likely           | Limited      | Moderate       | Less than 6 hours  | Less than 1 week   | <b>3.1</b> |
| <b>Geologic Hazards</b>       |                         |              |                |                    |                    |            |
| Earthquake                    | Unlikely                | Minor        | Small          | Less than 6 hours  | Less than 6 hours  | <b>1.5</b> |
| <b>Wind-related Hazards</b>   |                         |              |                |                    |                    |            |
| Extreme Heat                  | Likely                  | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.8</b> |
| Hailstorm                     | Highly Likely           | Limited      | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>2.8</b> |
| Hurricane and Tropical Storm  | Likely                  | Catastrophic | Large          | More than 24 hours | Less than 1 week   | <b>3.3</b> |
| Severe Thunderstorm/High Wind | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>3.1</b> |
| Tornado                       | Likely                  | Catastrophic | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>3.2</b> |
| Winter Storm and Freeze       | Likely                  | Minor        | Moderate       | More than 24 hours | Less than 1 week   | <b>2.2</b> |
| <b>Human-caused Hazards</b>   |                         |              |                |                    |                    |            |
| Radiological Event            | Unlikely                | Limited      | Moderate       | More than 24 hours | Less than 1 week   | <b>1.9</b> |

## F.2.16 Final Determinations on Hazard Risk

The conclusions drawn from the hazard profiling process for Lincoln County, including the PRI results and input from the Regional Hazard Mitigation Council, resulted in the classification of risk for each identified hazard according to three categories: High Risk, Moderate Risk, and Low Risk (**Table F.32**). For purposes of these classifications, risk is expressed in relative terms according to the estimated impact that a hazard will have on human life and property throughout all of Lincoln County. A more quantitative analysis to estimate potential dollar losses for each hazard has been performed separately, and is described in Section 6: *Vulnerability Assessment* and below in Section F.3. It should be noted that although some hazards are classified below as posing low risk, their occurrence of varying or unprecedented magnitudes

is still possible in some cases and their assigned classification will continue to be evaluated during future plan updates. In most cases, the hazards of greatest concern did not change much since the last plan update, indicating that the priorities remained relatively stable and there were few changes in priorities.

**TABLE F.32: CONCLUSIONS ON HAZARD RISK FOR LINCOLN COUNTY**

|                      |   |
|----------------------|---|
| <b>HIGH RISK</b>     | Hurricane and Tropical Storm<br>Tornado<br>Flood<br>Wildfire<br>Severe Thunderstorm/High Wind |
| <b>MODERATE RISK</b> | Extreme Heat<br>Hailstorm<br>Dam and Levee Failure<br>Lightning<br>Drought                    |
| <b>LOW RISK</b>      | Winter Storm and Freeze<br>Radiological Event<br>Erosion<br>Earthquake                        |

### F.3 LINCOLN COUNTY VULNERABILITY ASSESSMENT

This subsection identifies and quantifies the vulnerability of Lincoln County to the significant hazards previously identified. This includes identifying and characterizing an inventory of assets in the county and assessing the potential impact and expected amount of damages caused to these assets by each identified hazard event. More information on the methodology and data sources used to conduct this assessment can be found in Section 6: *Vulnerability Assessment*.

#### F.3.1 Asset Inventory

**Table F.33** lists the estimated number of improved properties and the total value of improvements for Lincoln County and its participating jurisdictions (study area of vulnerability assessment). Because digital parcel data was not available for most communities, data obtained from Hazus-MH 4.0 inventory was utilized to complete the analysis.

**TABLE F.33: IMPROVED PROPERTY IN LINCOLN COUNTY**

| Location            | Counts of Improved Property | Total Value of Improvements |
|---------------------|-----------------------------|-----------------------------|
| Brookhaven          | 4,644                       | \$1,333,728                 |
| Unincorporated Area | 11,144                      | \$3,177,339,272             |

| Location                    | Counts of Improved Property | Total Value of Improvements |
|-----------------------------|-----------------------------|-----------------------------|
| <b>LINCOLN COUNTY TOTAL</b> | <b>15,788</b>               | <b>\$3,178,673,000</b>      |

Source: Hazus-MH 4.0

**Table F.34** lists the fire stations, police stations, medical care facilities, emergency operation centers, schools, government/public buildings, transportation infrastructure, and private facilities located in Lincoln County according to previous plan data and Hazus-MH 4.0 data that was reviewed and updated by local officials.

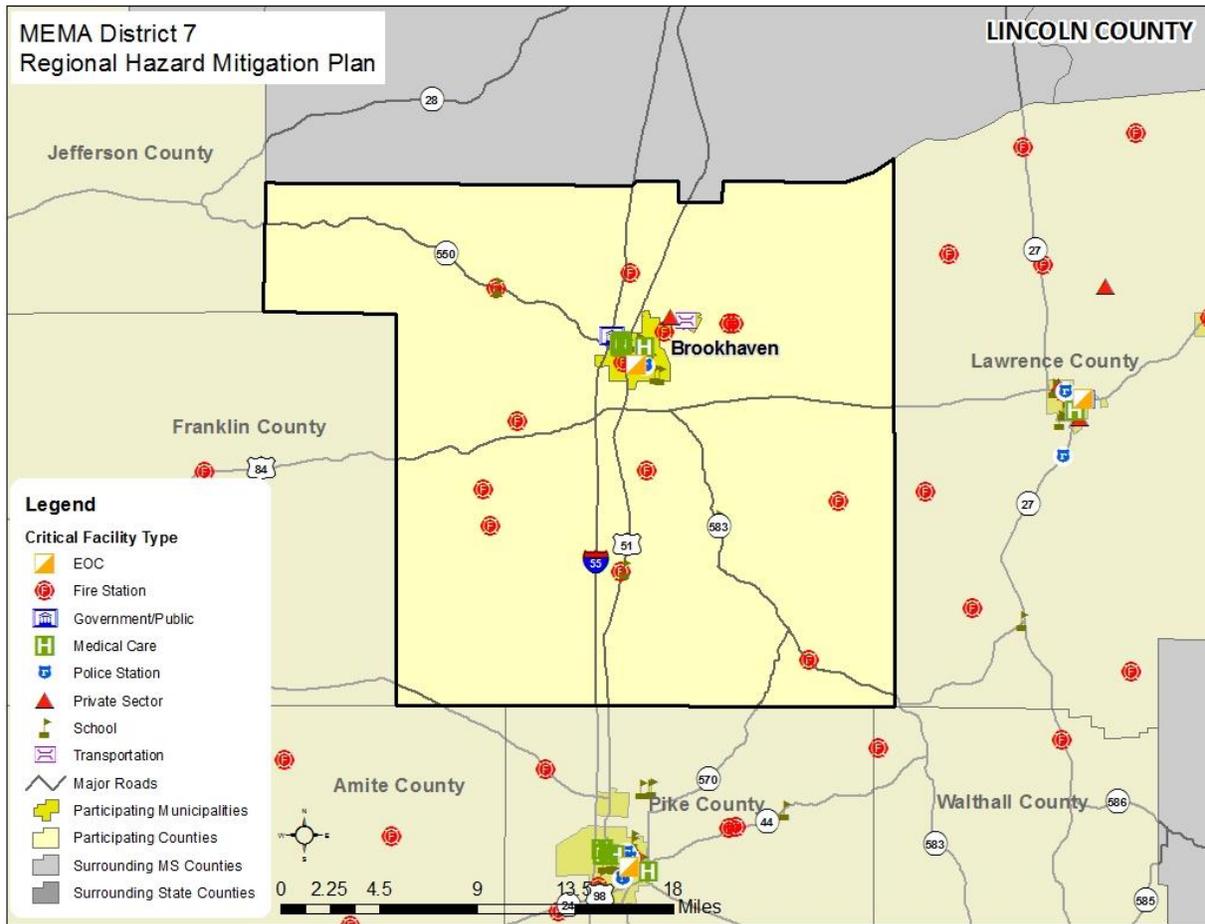
In addition, **Figure F.16** shows the locations of critical facilities in Lincoln County. **Table F.45**, at the end of this subsection, shows a complete list of the critical facilities by name, as well as the hazards that affect each facility. As noted previously, this list is not all-inclusive and only includes information provided through Hazus which was updated, as best as possible, with local knowledge.

**TABLE F.34: CRITICAL FACILITY INVENTORY IN LINCOLN COUNTY**

| Location                    | Fire Stations | Police Stations | Medical Care | EOC      | Schools   | Gov't/<br>Public | Trans    | Private Sector |
|-----------------------------|---------------|-----------------|--------------|----------|-----------|------------------|----------|----------------|
| Brookhaven                  | 4             | 2               | 6            | 1        | 10        | 1                | 1        | 1              |
| Unincorporated Area         | 10            | 0               | 0            | 0        | 4         | 0                | 0        | 0              |
| <b>LINCOLN COUNTY TOTAL</b> | <b>14</b>     | <b>2</b>        | <b>6</b>     | <b>1</b> | <b>14</b> | <b>1</b>         | <b>1</b> | <b>1</b>       |

Source: Hazus-MH 4.0; Local Officials

**FIGURE F.16: CRITICAL FACILITY LOCATIONS IN LINCOLN COUNTY**



Source: Hazus-MH 4.0; Local Officials

### F.3.2 Social Vulnerability

In addition to identifying those assets potentially at risk to identified hazards, it is important to identify and assess those particular segments of the resident population in Lincoln County that are potentially at risk to these hazards.

**Table F.35** lists the population by jurisdiction according to U.S. Census, American Community Survey 2015 population estimates. The total population in Lincoln County according to Census data was 34,765 persons. Additional population estimates are presented above in Section F.1.

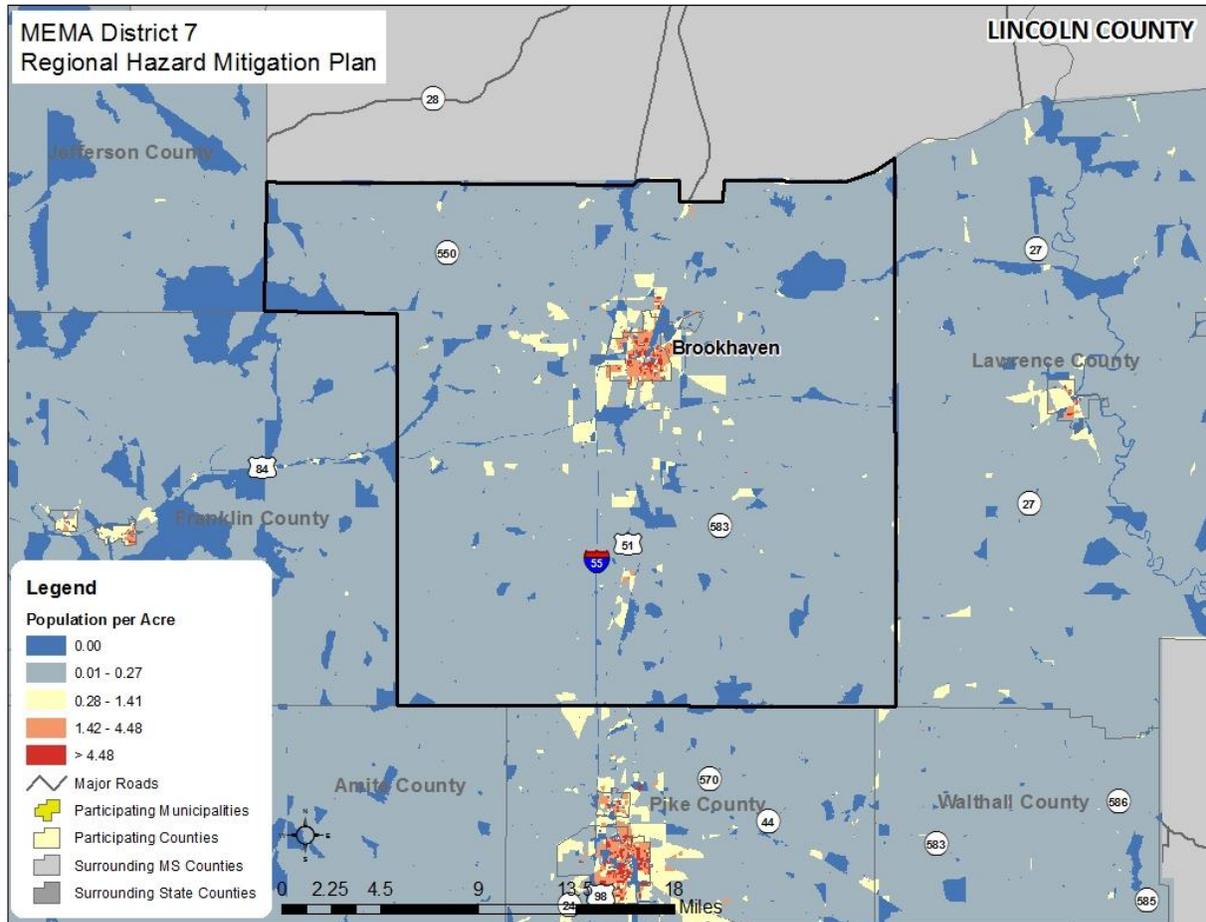
**TABLE F.35: TOTAL POPULATION IN LINCOLN COUNTY**

| Location                    | Total 2015 Population |
|-----------------------------|-----------------------|
| Brookhaven                  | 12,465                |
| Unincorporated Area         | 22,300                |
| <b>LINCOLN COUNTY TOTAL</b> | <b>34,765</b>         |

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

In addition, **Figure F.17** illustrates the population density per acre by census block as it was reported by the U.S. Census Bureau in 2010. As can be seen in the figure, the population is spread out with concentrations in municipal areas such as Brookhaven.

**FIGURE F.17: POPULATION DENSITY IN LINCOLN COUNTY**



Source: United States Census Bureau, 2010 Census

### F.3.3 Development Trends and Changes in Vulnerability

Since the previous hazard mitigation plan was approved, Lincoln County has experienced limited growth and development. **Table F.36** shows the number of building units constructed since 2010 according to the U.S. Census American Community Survey.

**TABLE F.36: BUILDING COUNTS FOR LINCOLN COUNTY**

| Location                    | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|-----------------------------|----------------------------|---------------------------|----------------------------------|
| Brookhaven                  | 5158                       | 127                       | 2.46%                            |
| Unincorporated Area         | 10,113                     | 355                       | 3.51%                            |
| <b>LINCOLN COUNTY TOTAL</b> | <b>15,271</b>              | <b>482</b>                | <b>3.16%</b>                     |

| Location | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|----------|----------------------------|---------------------------|----------------------------------|
|----------|----------------------------|---------------------------|----------------------------------|

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

Table F.37 shows population growth estimates for the county from 2010 to 2015 based on the U.S. Census American Community Survey.

**TABLE F.37: POPULATION GROWTH FOR LINCOLN COUNTY**

| Location                    | Population Estimates |               |               |               |               |               | % Change 2010-2015 |
|-----------------------------|----------------------|---------------|---------------|---------------|---------------|---------------|--------------------|
|                             | 2010                 | 2011          | 2012          | 2013          | 2014          | 2015          |                    |
| Brookhaven                  | 12,618               | 12,581        | 12,549        | 12,538        | 12,499        | 12,465        | -1.21%             |
| Unincorporated Area         | 22,004               | 22,170        | 22,301        | 22,332        | 22,325        | 22,300        | 1.35%              |
| <b>LINCOLN COUNTY TOTAL</b> | <b>34,622</b>        | <b>34,751</b> | <b>34,850</b> | <b>34,870</b> | <b>34,824</b> | <b>34,765</b> | <b>0.41%</b>       |

Source: United States Census Bureau, 2006-2010, 2007-2011, 2008-2012, 2009-2013, and 2010-2014, and 2011-2015 American Community Survey 5-Year Estimates

Based on the data above, there has been a low rate of residential development and population growth in the county since 2010. However, it is notable that the unincorporated area has experienced a slightly higher rate of growth and development compared to the rest of the county, resulting in an increased number of people and structures that are vulnerable to the potential impacts of the identified hazards. Therefore, development and population growth has impacted the county’s vulnerability since the previous local hazard mitigation plan was approved and there has been a slight increase in the overall vulnerability as well as a larger increase in certain areas and communities.

It is also important to note that as development increases in the future, greater populations and more structures and infrastructure will be exposed to potential hazards if development occurs in the floodplains or other high risk areas.

### F.3.4 Vulnerability Assessment Results

As noted in Section 6: *Vulnerability Assessment*, only hazards with a specific geographic boundary, available modeling tool, or sufficient historical data allow for further analysis. Those results, specific to Lincoln County, are presented here. All other hazards are assumed to impact the entire planning region (drought, extreme heat, hailstorm, lightning, severe thunderstorm/high wind, tornado, and winter storm) or, due to lack of data, analysis would not lead to credible results (erosion). The total county exposure, and thus risk to these hazards, was presented in **Table F.33**.

The hazards to be further analyzed in this subsection include: dam/levee failure, flood, wildfire, earthquake, hurricane and tropical storm winds, and radiological event.

The annualized loss estimate for all hazards is presented near the end of this subsection in **Table F.44**.

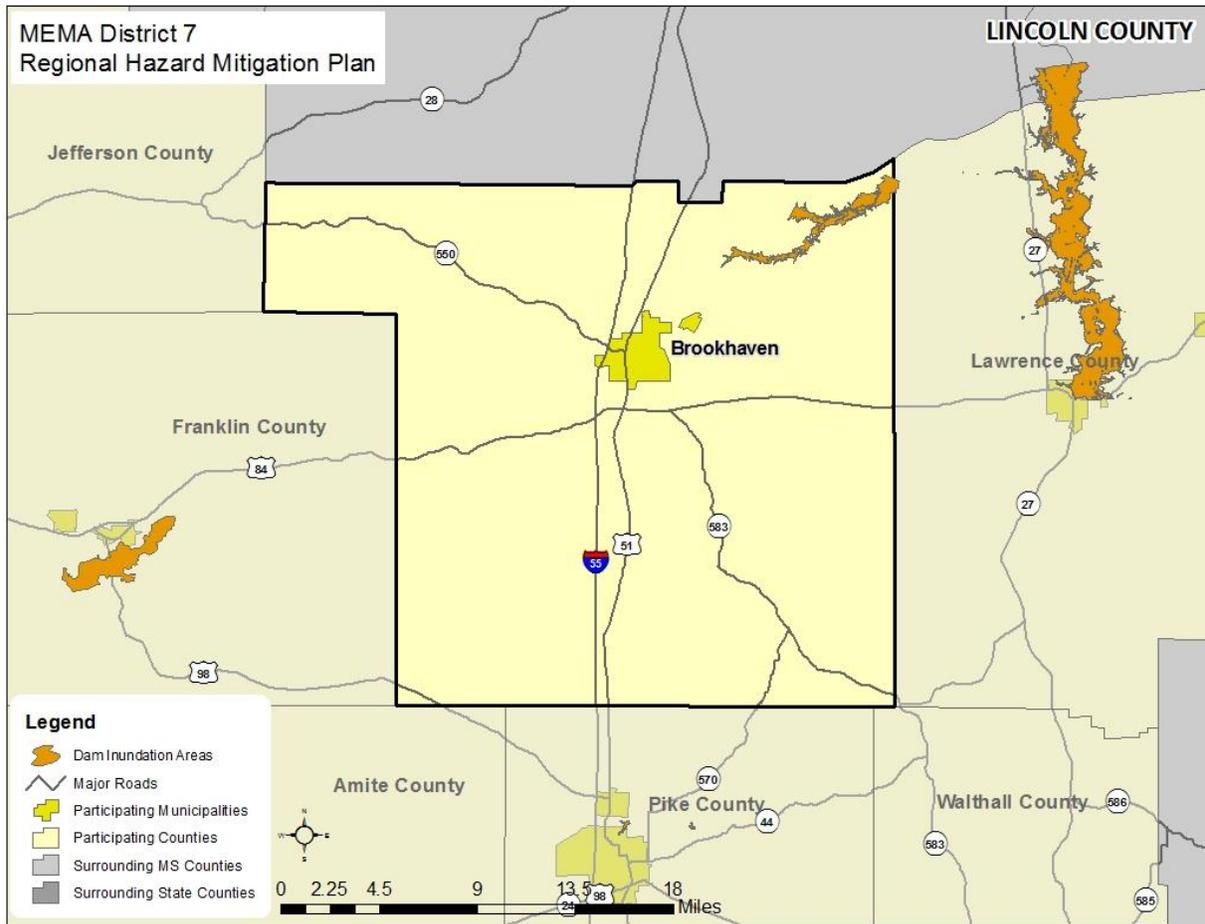
### **DAM/LEVEE FAILURE**

In order to assess risk to a dam or levee failure, a GIS-based analysis was used to estimate exposure to one of the areas delineated by the Mississippi Department of Environmental Quality as a potential inundation area in the event of a failure. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified inundation area. As mentioned previously, this type of inundation mapping has not been completed for every dam/levee in the region, so the results of this analysis likely underestimate the overall vulnerability to a dam or levee failure. However, the analysis is still useful as a sort of baseline minimum of property that is potentially at-risk. The identified inundation areas can be found in **Figure F.18**.

In general, building footprint and parcel data were used in this analysis. However, in some communities, due to a lack of digital parcel data, it was determined that analysis using the inventory from Hazus-MH 4.0 would be used to supplement the building/parcel data. It should be noted that this data will merely be an estimation and may not reflect actual counts or values located in dam inundation areas. Indeed, in almost all cases, this data likely overestimates the amount of property in the identified risk zones.

**Table F.38** presents the potential at-risk property. Both the number of buildings and the approximate improved value are presented.

**FIGURE F.18: DAM INUNDATION AREAS IN LINCOLN COUNTY**



Source: Mississippi Department of Environmental Quality

**TABLE F.38: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE DAM/LEVEE FAILURE HAZARD**

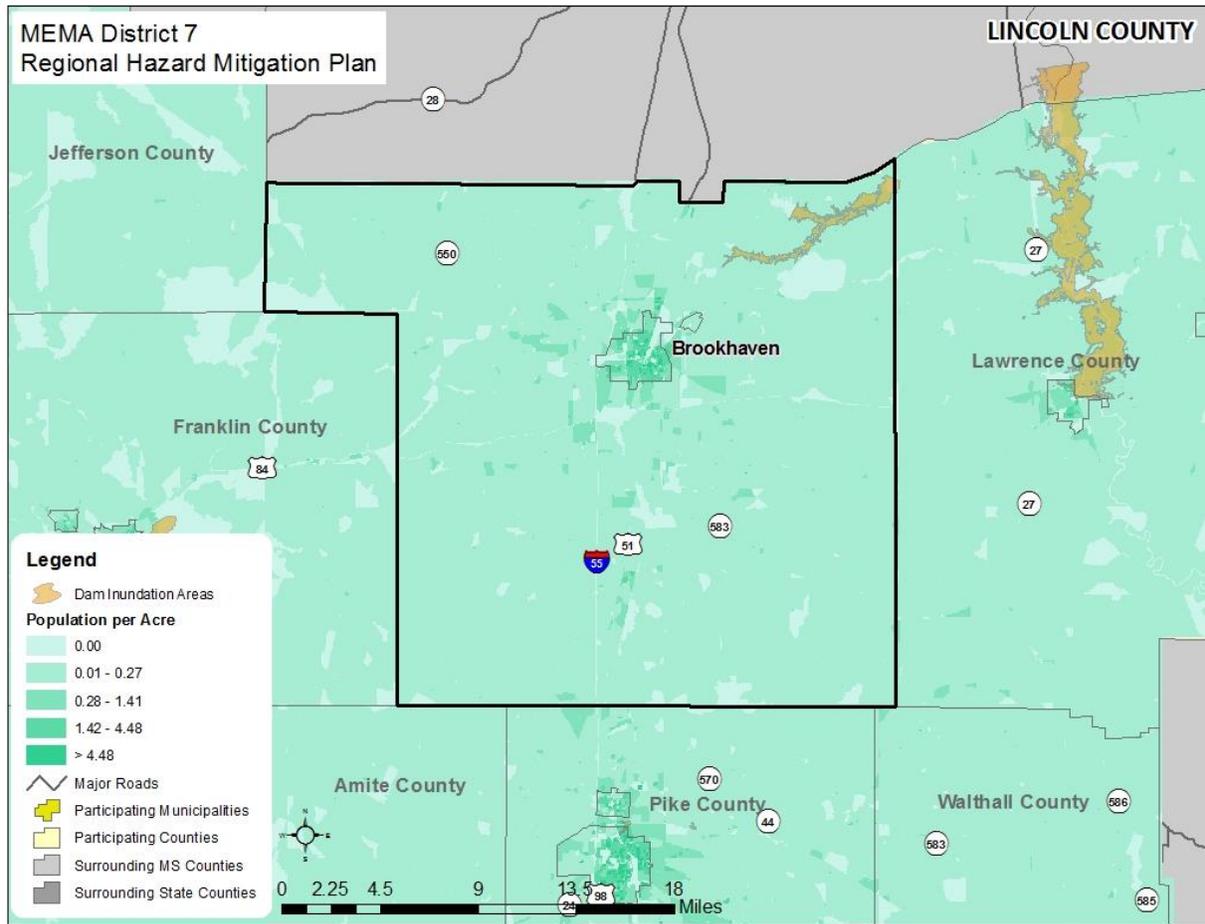
| Location                    | Dam Inundation Area            |                        |
|-----------------------------|--------------------------------|------------------------|
|                             | Approx. Number of Improvements | Approx. Improved Value |
| Brookhaven                  | 0                              | 0                      |
| Unincorporated Area         | 166                            | \$27,488,000           |
| <b>LINCOLN COUNTY TOTAL</b> | <b>166</b>                     | <b>\$27,488,000</b>    |

Source: Mississippi Department of Environmental Quality; Hazus 4.0

**Social Vulnerability**

Figure F.19 is presented to gain a better understanding of at-risk population by evaluating census block level population data against dam inundation areas. There are several areas of concern in the county, although it should be noted that most of the population of the county is not at risk to a dam/levee failure.

**FIGURE F.19: POPULATION DENSITY NEAR DAM INUNDATION AREAS IN LINCOLN COUNTY**



Source: Mississippi Department of Environmental Quality; United States Census Bureau, 2010 Census

**Critical Facilities**

There are no critical facilities located within the identified dam inundation areas. Although there are no facilities located in the identified areas, this does not indicate that there is no risk to a dam/levee failure, especially considering not all dams have delineated inundation areas. A list of specific critical facilities and their associated risk can be found in **Table F.45** at the end of this section.

In conclusion, a dam/levee failure has the potential to impact many existing and future buildings, facilities, and populations in Lincoln County, though structures located near or in the dam inundation areas are at highest risk. Specific vulnerabilities for Lincoln County assets will be greatly dependent on their individual design and the mitigation measures in place where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates if data becomes available.

**FLOOD**

Historical evidence indicates that Lincoln County is susceptible to flood events. A total of 36 flood events have been reported by the National Climatic Data Center resulting in \$7.3 million (2017 dollars) in property damage. On an annualized level, these damages amounted to \$468,178 for Lincoln County.

In order to assess flood risk, a GIS-based analysis was used to estimate exposure to flood events using Digital Flood Insurance Rate Map (DFIRM) data in combination with improved property records for the county. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified floodplain. Due to a lack of digital parcel data in most counties, it was determined that an analysis using the inventory from Hazus-MH 4.0 would be used, though it should be noted that the data will merely be an estimation and may not reflect actual counts or values located in the floodplain. Indeed, in almost all cases, this analysis likely overestimates the amount of property at risk. **Table F.39** presents the potential at-risk property. Both the number of parcels and the approximate value are presented.

**TABLE F.39: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE FLOOD HAZARD<sup>25</sup>**

| Location                    | 1.0-percent ACF                |                                | 0.2-percent ACF                |                                |
|-----------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|                             | Approx. Number of Improvements |
| Brookhaven                  | 1,586                          | \$441,689,000                  | 0                              | \$0                            |
| Unincorporated Area         | 5,783                          | \$939,076,000                  | 0                              | \$0                            |
| <b>LINCOLN COUNTY TOTAL</b> | <b>7,369</b>                   | <b>\$1,380,765,000</b>         | <b>0</b>                       | <b>\$0</b>                     |

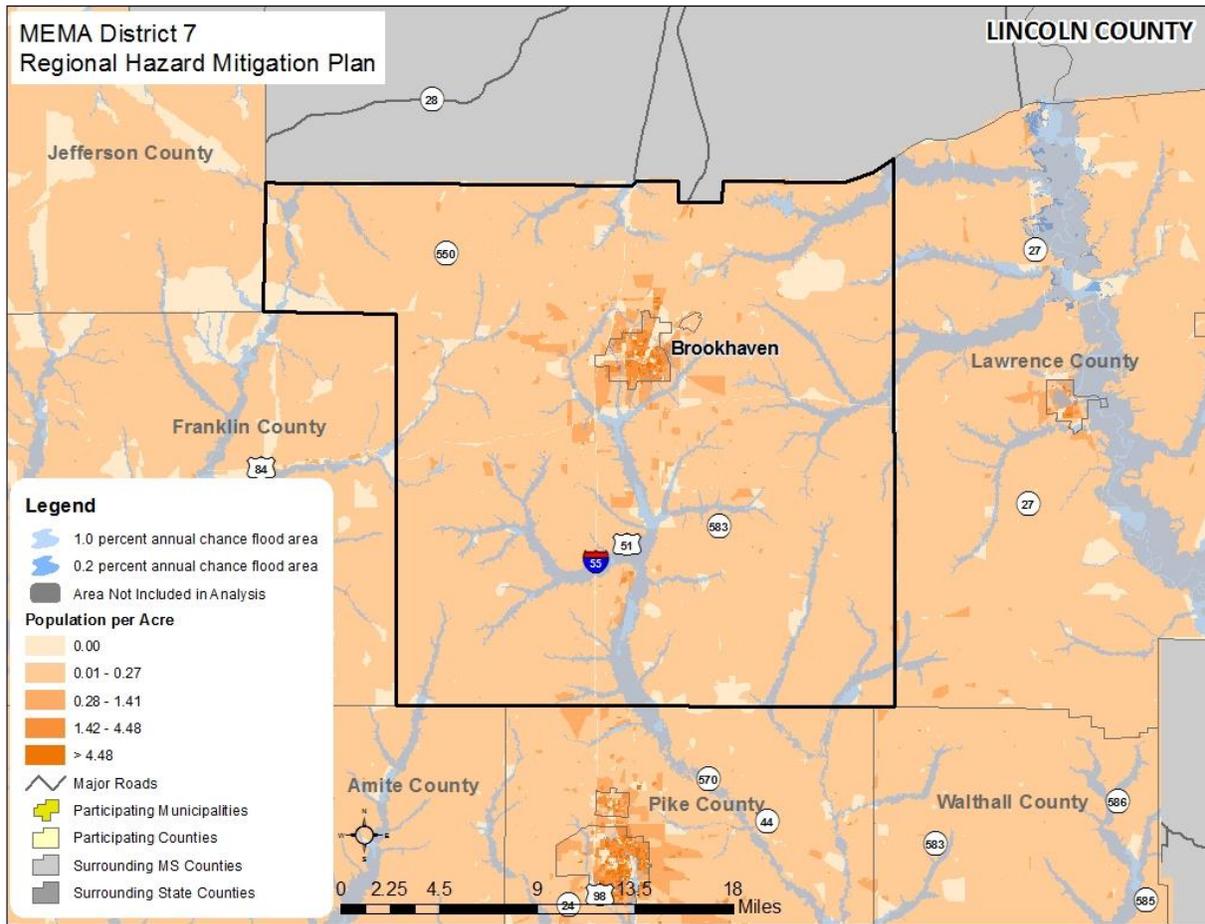
Source: Federal Emergency Management Agency DFIRM; Hazus MH 4.0

**Social Vulnerability**

**Figure F.20** is presented to gain a better understanding of at-risk population by evaluating census block level population data against mapped floodplains. There are areas of concern in several of the population centers. Therefore, further investigation in these areas may be warranted.

<sup>25</sup> As noted in Section 6.4, no building-specific data, such as building footprints, was available to determine buildings at risk. As a result of this data limitation, at-risk census block building counts and values of the structures were used.

**FIGURE F.20 : POPULATION DENSITY NEAR FLOODPLAINS IN LINCOLN COUNTY**



Source: Federal Emergency Management Agency DFIRM; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are no critical facilities located in the floodplain. (Please note, as previously indicated, this analysis does not consider building elevation, which may negate risk.) A list of specific critical facilities and their associated risk can be found in **Table F.45** at the end of this subsection.

In conclusion, a flood has the potential to impact many existing and future buildings, facilities, and populations in Lincoln County, though some areas are at a higher risk than others. All types of structures in a floodplain are at-risk, though elevated structures will have a reduced risk. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. Furthermore, areas subject to repetitive flooding should be analyzed for potential mitigation actions.

**WILDFIRE**

Although historical evidence indicates that Lincoln County is susceptible to wildfire events, there are few reports which include information on historic dollar losses. Therefore, it is difficult to calculate a reliable

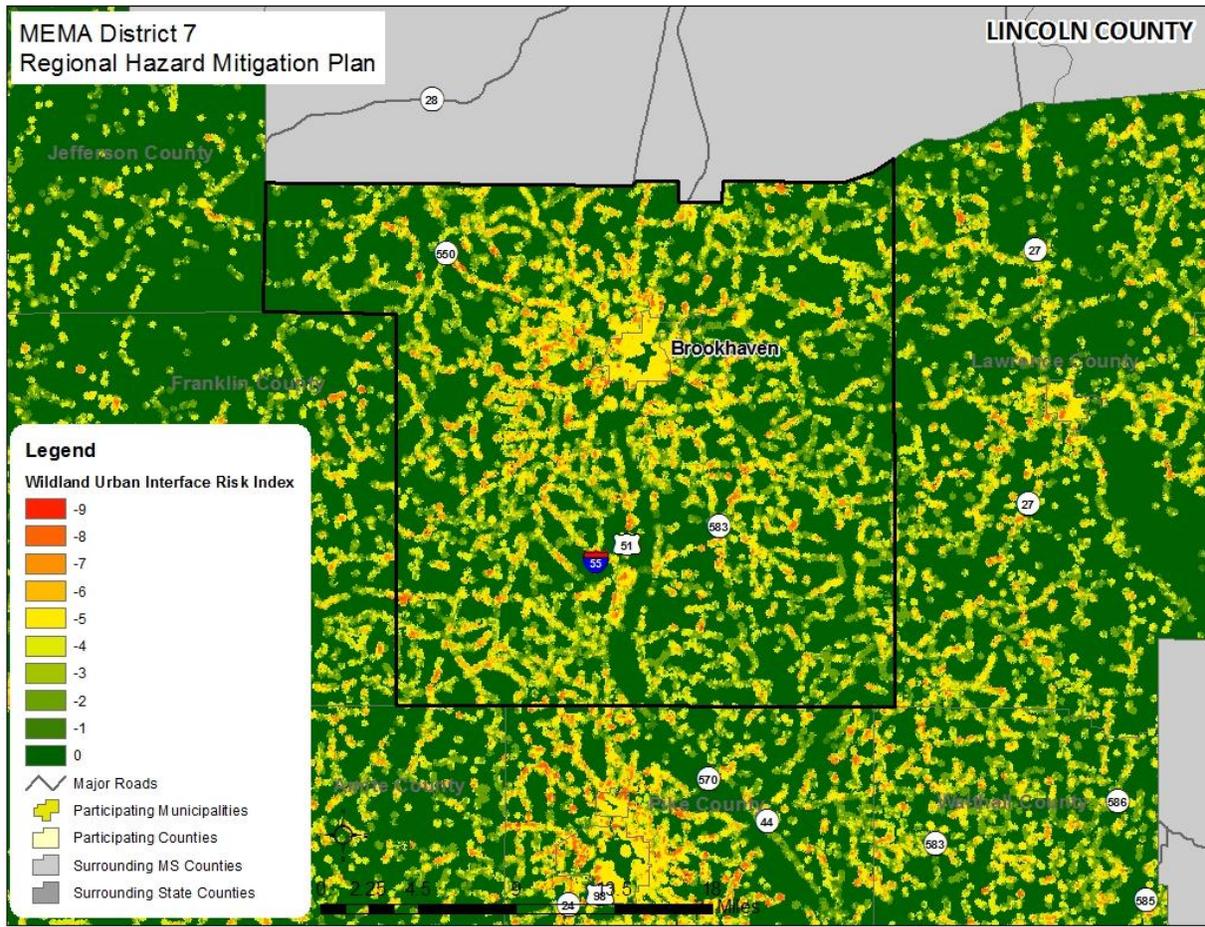
annualized loss figure. Annualized loss is considered negligible though it should be noted that a single event could result in significant damages throughout the county.

To estimate exposure to wildfire, building data was obtained from Hazus-MH 4.0 which includes information that has been aggregated at the census block level and which has been deemed useful for analyzing wildfire vulnerability. However, it should be noted that the accuracy of Hazus data is somewhat lower than that of parcel data. For the critical facility analysis, areas of concern were intersected with critical facility locations.

**Figure F.21** shows the Wildland Urban Interface Risk Index (WUIRI) data, which is a data layer that shows a rating of the potential impact of a wildfire on people and their homes. The key input, Wildland Urban Interface (WUI), reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the WUI and rural areas is key information for defining potential wildfire impacts to people and homes. Initially provided as raster data, it was converted to a polygon to allow for analysis. The Wildland Urban Interface Risk Index data ranges from 0 to -9 with lower values being most severe (as noted previously, this is only a measure of relative risk). **Figure F.22** shows the areas of analysis where any grid cell is less than -4. Areas with a value below -4 were chosen to be displayed as areas of risk because this showed the upper echelon of the scale and the areas at highest risk.

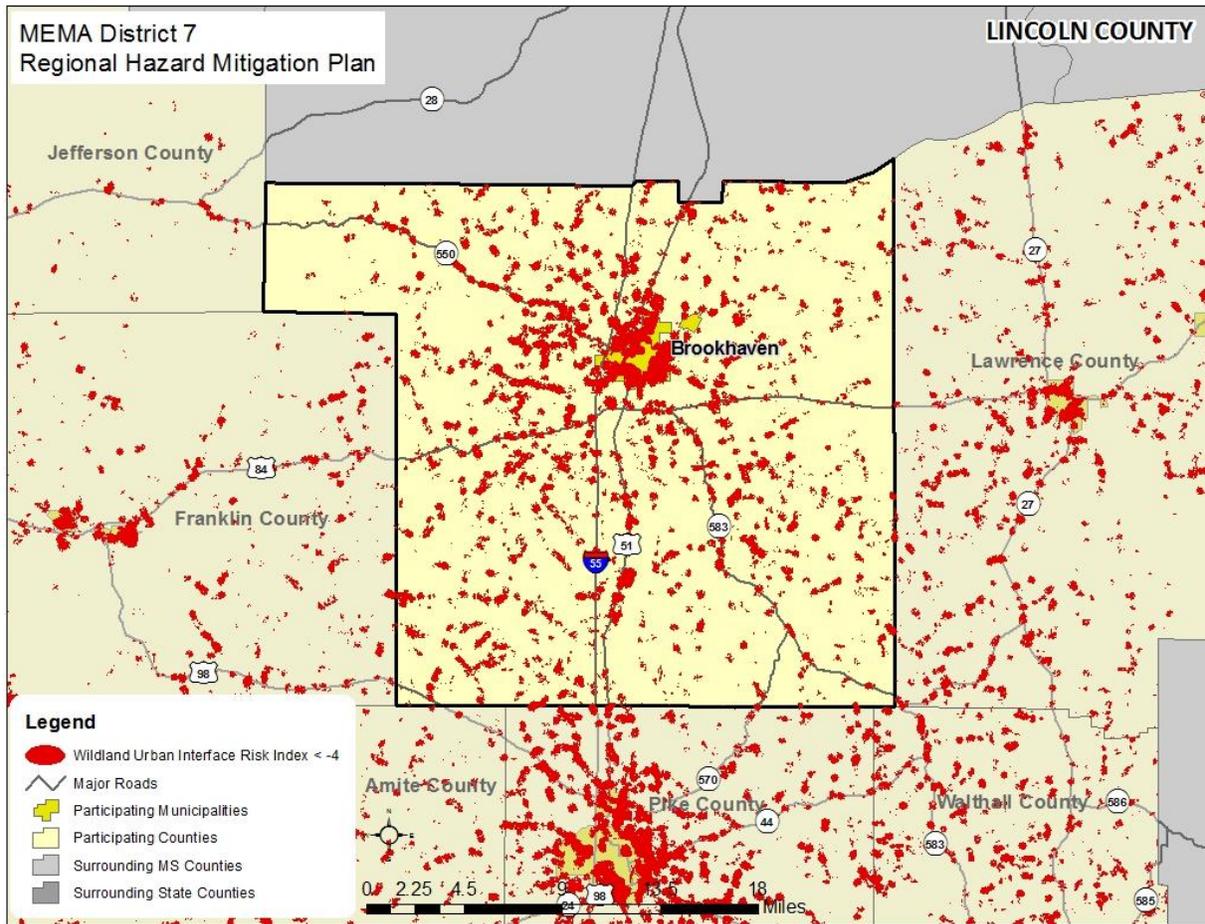
**Table F.40** shows the results of the analysis.

FIGURE F.21: WUI RISK INDEX AREAS IN LINCOLN COUNTY



Source: Southern Wildfire Risk Assessment Data

**FIGURE F.22: WILDFIRE RISK AREAS IN LINCOLN COUNTY**



Source: Southern Wildfire Risk Assessment Data

**TABLE F.40: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO WILDFIRE RISK AREAS<sup>26</sup>**

| Location                    | Wildfire Risk Area             |                        |
|-----------------------------|--------------------------------|------------------------|
|                             | Approx. Number of Improvements | Approx. Improved Value |
| Brookhaven                  | 4,223                          | \$1,083,421,000        |
| Unincorporated Area         | 10,997                         | \$1,820,233,000        |
| <b>LINCOLN COUNTY TOTAL</b> | <b>15,220</b>                  | <b>\$2,903,654,000</b> |

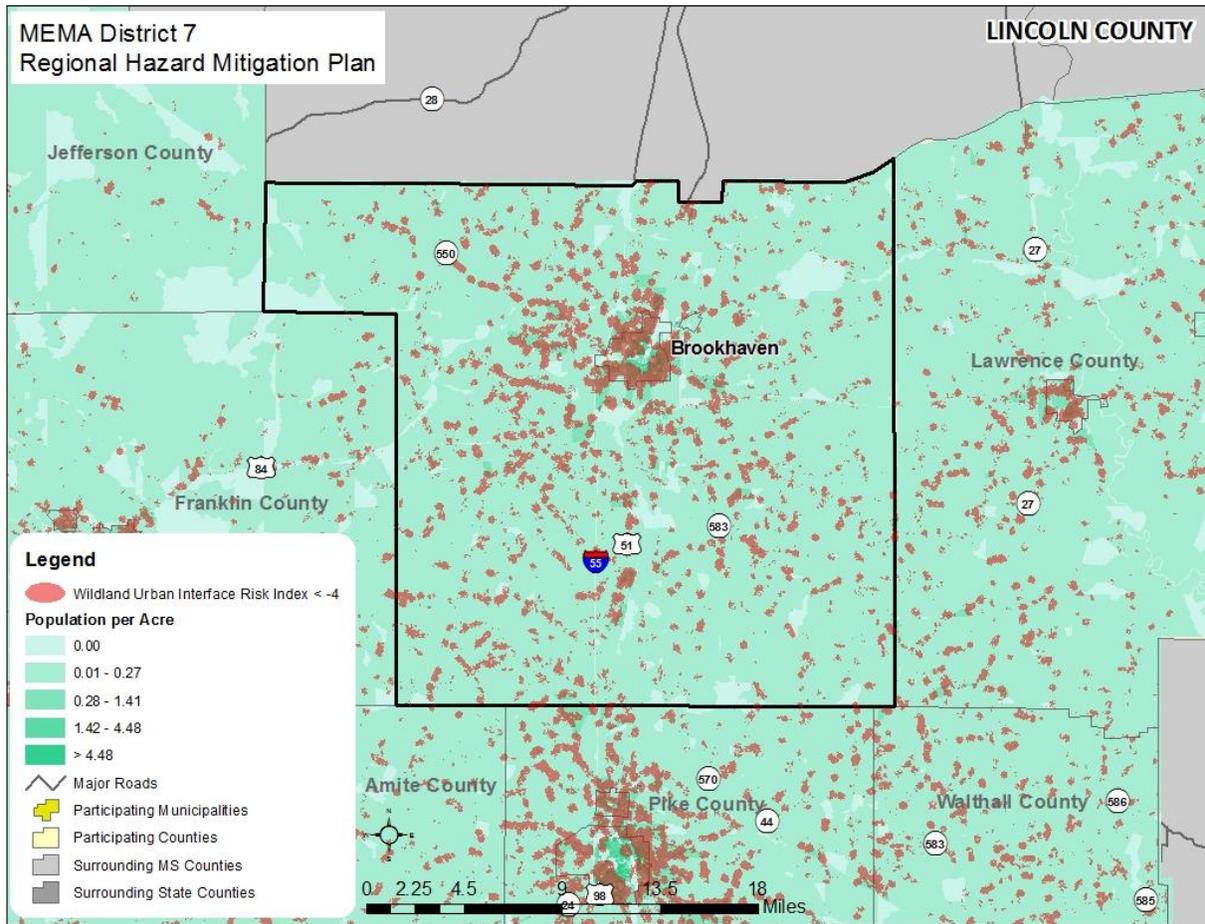
Source: Southern Wildfire Risk Assessment; Hazus-MH 4.0

**Social Vulnerability**

Given some level of susceptibility across the entire county, it is assumed that the total population is at risk to the wildfire hazard. **Figure F.23** shows an overlay of the wildfire risk areas identified above with the population density by census block. This shows that many of the areas of higher population concentration are susceptible to wildfire because of their proximity to the wildland urban interface.

<sup>26</sup> Parcel/Building Footprint data was not available for Lincoln County. Therefore, building counts and values were pulled from Hazus-MH at the census block level and approximate improved value was calculated.

**FIGURE F.23: WILDFIRE RISK AREAS IN LINCOLN COUNTY**



Source: Southern Wildfire Risk Assessment Data; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are 21 critical facilities located in wildfire areas of concern, including 7 fire stations, 5 medical care facilities, 2 police stations, 6 schools, and 1 transportation infrastructure. It should be noted, that several factors could impact the spread of a wildfire putting all facilities at risk. A list of specific critical facilities and their associated risk can be found in **Table F.45** at the end of this subsection.

In conclusion, a wildfire event has the potential to impact many existing and future buildings, critical facilities, and populations in Lincoln County.

**EARTHQUAKE**

As the Hazus-MH model suggests below, and historical occurrences confirm, any significant earthquake activity in the area is likely to inflict minor damage to the county. Hazus-MH 4.0 estimates a total annualized loss of \$25,000 which includes structural and non-structural damage to buildings, contents, and inventory throughout the county.

For the earthquake hazard vulnerability assessment, a probabilistic scenario was created to estimate the average annualized loss<sup>27</sup> for the county. The results of the analysis are generated at the census tract level within Hazus-MH and then aggregated to the county level. Since the scenario is annualized, no building counts are provided. Losses reported included losses due to structure failure, building loss, contents damage, and inventory loss. They do not include losses to business interruption, lost income, or relocation. **Table F.41** summarizes the findings with results rounded to the nearest thousand.

**TABLE F.41: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR EARTHQUAKE HAZARD**

| Location       | Structural Damage | Non-Structural Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|----------------|-------------------|-----------------------|-----------------|----------------|-----------------------|
| Lincoln County | \$7,000           | \$14,000              | \$4,000         | \$0            | \$25,000              |

Source: Hazus-MH 4.0

**Social Vulnerability**

It can be assumed that all existing and future populations are at risk to the earthquake hazard.

**Critical Facilities**

The Hazus-MH probabilistic analysis did not indicate that any critical facilities would sustain measurable damage in an earthquake event. However, all critical facilities should be considered at-risk to minor to moderate damage should an event occur. A list of specific critical facilities and their associated risk can be found in **Table F.45** at the end of this subsection.

In conclusion, an earthquake has the potential to impact all existing and future buildings, facilities, and populations in Lincoln County. Specific vulnerabilities for these assets will be greatly dependent on their individual design and the mitigation measures in place. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. The Hazus-MH scenario indicates that minimal to moderate damage is expected from an earthquake occurrence. While Lincoln County may not experience a catastrophic earthquake, localized damage is possible with a moderate to larger scale occurrence.

**HURRICANE AND TROPICAL STORM**

Historical evidence indicates that Lincoln County has significant risk to the hurricane and tropical storm hazard. There have been five disaster declarations due to hurricanes as noted in pervious sections. Several tracks have come near or traversed through the county, as shown and discussed in Section F.2.10. Hazus-MH 4.0 estimates a total annualized loss of \$656,000 which includes buildings, contents, and inventory throughout the county.

Hurricanes and tropical storms can cause damage through numerous additional hazards such as flooding, erosion, tornadoes, and high winds, thus it is difficult to estimate total potential losses from these cumulative effects. The current Hazus-MH hurricane model only analyzes hurricane winds and is not capable of modeling and estimating cumulative losses from all hazards associated with hurricanes; therefore, only hurricane winds are analyzed in this section. It can be assumed that all existing and future buildings and populations are at risk to the hurricane and tropical storm hazard. Hazus-MH 4.0 was used

<sup>27</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

to determine average annualized losses<sup>28</sup> for the county as shown below in **Table F.42**. Only losses to buildings, inventory, and contents are included in the results.

**TABLE F.42: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR HURRICANE WIND HAZARD**

| Location       | Building Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|----------------|-----------------|-----------------|----------------|-----------------------|
| Lincoln County | \$497,000       | \$158,000       | \$1,000        | \$656,000             |

Source: Hazus-MH 4.0

**Social Vulnerability**

Given some equal susceptibility across the entire county, it is assumed that the total population, both current and future, is at risk to the hurricane and tropical storm hazard.

**Critical Facilities**

Given equal vulnerability across Lincoln County, all critical facilities are considered to be at risk. Some buildings may perform better than others in the face of such an event due to construction and age, among other factors. Determining individual building response is beyond the scope of this plan. However, this plan will consider mitigation action for especially vulnerable structures and/or critical facilities to mitigate against the effects of the hurricane hazard. A list of specific critical facilities can be found in **Table F.45** at the end of this subsection.

In conclusion, a hurricane event has the potential to impact many existing and future buildings, critical facilities, and populations in Lincoln County.

**RADIOLOGICAL EVENT**

The location of Grand Gulf and River Bend Nuclear Stations north and south of the region, respectively, demonstrate that the county is at some risk to the effects of a nuclear accident. Although there have not been any major events at these plants in the past, there have been major events at other nuclear stations around the country. Additionally, smaller scale incidents at both these nuclear stations have occurred.

In order to assess nuclear risk, a GIS-based analysis was used to estimate exposure during a nuclear event within each of the risk zones described in Section F.2.14. The determination of assessed value at-risk (exposure) was calculated using GIS analysis by summing the total values for those properties that were confirmed to be located within one of the risk zones. **Table F.43** presents potential at-risk properties in the 50-mile buffer zone (no property was located in the 10-mile buffer zone). The number of buildings, parcels, and the approximate value are presented.

**TABLE F.43: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO A NUCLEAR ACCIDENT**

| Location            | 50-mile Nuclear Buffer Area    |                        |
|---------------------|--------------------------------|------------------------|
|                     | Approx. Number of Improvements | Approx. Improved Value |
| Brookhaven          | 4,644                          | \$1,333,728,000        |
| Unincorporated Area | 7,571                          | \$1,288,941,000        |

<sup>28</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

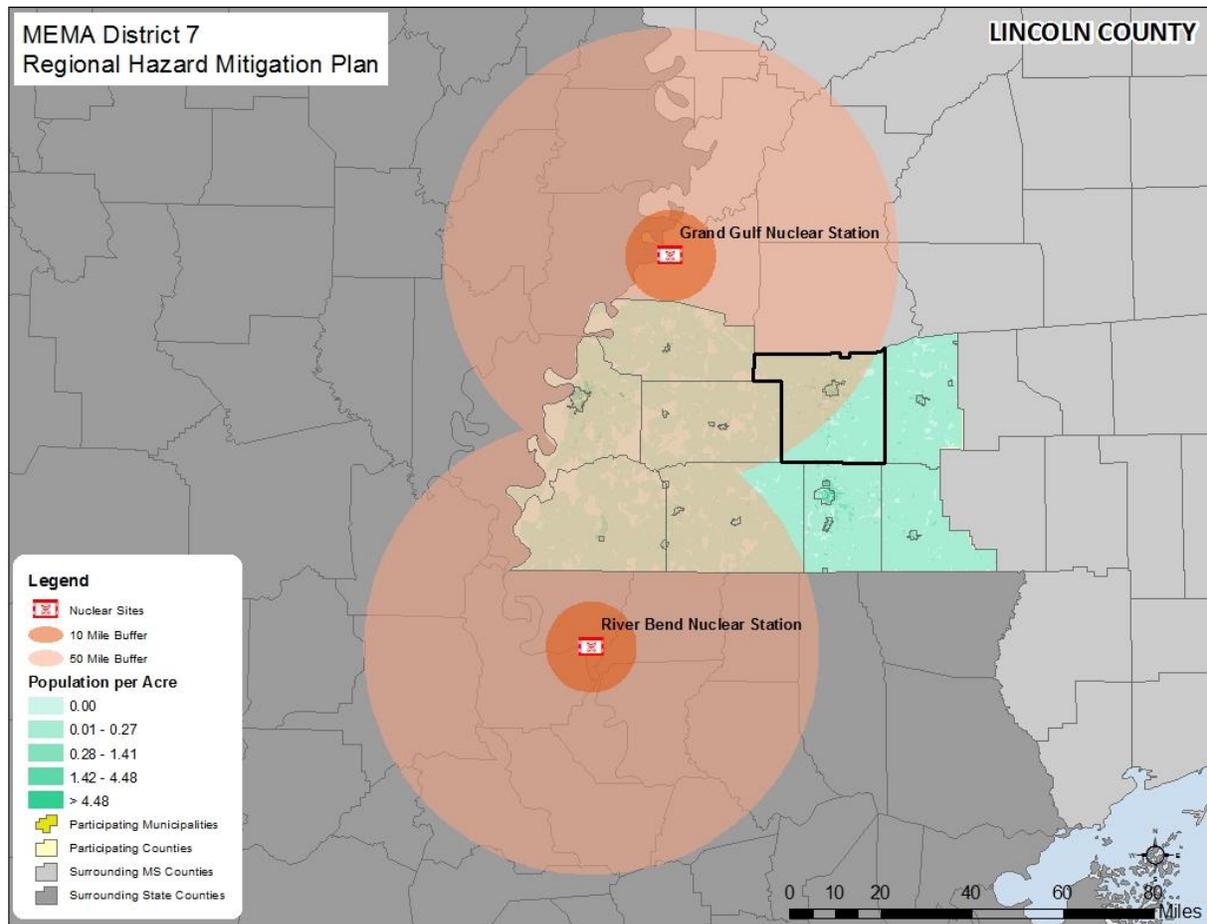
| Location             | 50-mile Nuclear Buffer Area    |                        |
|----------------------|--------------------------------|------------------------|
|                      | Approx. Number of Improvements | Approx. Improved Value |
| LINCOLN COUNTY TOTAL | 12,215                         | \$2,622,669,000        |

Source: International Atomic Energy Agency; Hazus-MH 4.0

**Social Vulnerability**

Since the northwestern half of the county is within the 50-mile buffer area, this segment of the population is considered to be at high risk to a radiological event. However, other populations in the county may also be at some risk. This risk can be seen in **Figure F.24**.

**FIGURE F.24: POPULATION DENSITY NEAR NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN LINCOLN COUNTY**



Source: International Atomic Energy Agency; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are 35 critical facilities located in the 50-mile nuclear buffer area, including 1 EOC, 11 fire stations, 1 government/public building, 6 medical care facilities, 2 police stations, 1 private sector building, 12 schools, and 1 transportation infrastructure. No critical

facilities are located in the 10-mile buffer area. A list of specific critical facilities and their associated risk can be found in **Table F.45** at the end of this section.

In conclusion, a nuclear accident has the potential to impact existing and future buildings, facilities, and populations in Lincoln County.

**CONCLUSIONS ON HAZARD VULNERABILITY**

**Table F.44** presents a summary of annualized loss for each hazard in Lincoln County. Due to the reporting of hazard damages primarily at the county level, it was difficult to determine an accurate annualized loss estimate for each municipality. Therefore, an annualized loss was determined through the damage reported through historical occurrences at the county level. These values should be used as an additional planning tool or measure risk for determining hazard mitigation strategies throughout the county.

**TABLE F.44: ANNUALIZED LOSS FOR LINCOLN COUNTY**

| Event                         | Lincoln County |
|-------------------------------|----------------|
| <b>Flood-related Hazards</b>  |                |
| Dam and Levee Failure         | Negligible     |
| Erosion                       | Negligible     |
| Flood                         | \$468,178      |
| <b>Fire-related Hazards</b>   |                |
| Drought                       | \$5,336        |
| Lightning                     | \$21,898       |
| Wildfire                      | Negligible     |
| <b>Geologic Hazards</b>       |                |
| Earthquake*                   | \$7,000        |
| <b>Wind-related Hazards</b>   |                |
| Extreme Heat                  | Negligible     |
| Hailstorm                     | \$109,718      |
| Hurricane & Tropical Storm    | \$8,481,674    |
| Severe Thunderstorm/High Wind | \$207,393      |
| Tornado                       | \$455,546      |
| Winter Storm & Freeze         | \$97,106       |
| <b>Human-caused Hazards</b>   |                |
| Radiological Event            | Negligible     |

\*No historic losses for earthquake were recorded, so Hazus estimates for annualized loss were used.

Note: In this table, the term “Negligible” is used to indicate that no records of dollar losses for the particular hazard were recorded. This could be the case either because there were no events that caused dollar damage or because documentation of that particular type of event is not well kept.

As noted previously, all existing and future buildings and populations (including critical facilities) are vulnerable to atmospheric hazards including drought, lightning, extreme heat, hailstorm, hurricane and tropical storm, severe thunderstorm/high wind, tornado, and winter storm and freeze. Some buildings may be more vulnerable to these hazards based on other factors such as construction and building type. **Table F.45** shows the critical facilities vulnerable to the hazards analyzed in this section. The table lists those assets that are determined to be exposed to each of the identified hazards (marked with an “X”).

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**TABLE F.45: AT-RISK CRITICAL FACILITIES IN LINCOLN COUNTY**

| FACILITY NAME                            | FACILITY TYPE     | FLOOD-RELATED         |         |                | FIRE-RELATED   |         |           | GEO      | WIND-RELATED |              |           |                              |                                   |         | HUM                     |                                 |                                 |
|--|-------------------|-----------------------|---------|----------------|----------------|---------|-----------|----------|--------------|--------------|-----------|------------------------------|-----------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|  |                   | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought | Lightning | Wildfire | Earthquake   | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Lightning | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| <b>Lincoln County</b>                    |                   |                       |         |                |                |         |           |          |              |              |           |                              |                                   |         |                         |                                 |                                 |
| Lincoln County EOC                       | EOC               |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Bogue Chitto Volunteer Fire Department   | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |
| Brookhaven Central Fire Department       | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Brookhaven Fire Department #2            | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Brookhaven Fire Department #3            | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| East Lincoln VFD                         | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |
| Heuck's Retreat Community Volunteer Fire | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Heucks Retreat VFD                       | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Hog Chain VFD                            | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Loyd Star Volunteer Fire Department      | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| New Sight VFD                            | Fire Station      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Ruth VFD                                 | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |
| Zetus Volunteer Fire Department #1       | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Zetus Volunteer Fire Department #2       | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Zetus Volunteer Fire Department #3       | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Mississippi Juvenile Detention Center    | Government/Public |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Brook Manor Nursing Home                 | Medical Care      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| County Brook Living Center               | Medical Care      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |

| FACILITY NAME                     | FACILITY TYPE  | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                                   |         |                         | HUM                             |                                 |
|-----------------------------------|----------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-----------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|                                   |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Lightning | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Haven Hall Healthcare Center      | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Kings Daughters Hospital          | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Lincoln County Residential Center | Medical Care   |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Silver Cross Home                 | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Brookhaven Police Dept            | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Lincoln County Sheriff            | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Brookhaven Industrial Park        | Private Sector |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Alexander Jr High School          | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Bogue Chita School                | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |
| Brookhaven Elementary School      | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Brookhaven High School            | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Brookhaven School District        | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Brookhaven Technical Cener        | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Enterprise School                 | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |
| Lincoln County School District    | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Lipsey School                     | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Loyd Star School                  | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Martin Elementary School          | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| MS School for the Arts            | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Mullins School                    | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |

| FACILITY NAME                     | FACILITY TYPE  | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                                   |         |                         | HUM                             |                                 |
|-----------------------------------|----------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-----------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|                                   |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Lightning | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| West Lincoln School               | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Brookhaven-Lincoln County Airport | Transportation |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |

## F.4 LINCOLN COUNTY CAPABILITY ASSESSMENT

This subsection discusses the capability of Lincoln County to implement hazard mitigation activities. More information on the purpose and methodology used to conduct the assessment can be found in Section 7: *Capability Assessment*.

### F.4.1 Planning and Regulatory Capability

**Table F.46** provides a summary of the relevant local plans, ordinances, and programs already in place or under development for Lincoln County. A checkmark (✓) indicates that the given item is currently in place and being implemented. An asterisk (\*) indicates that the given item is currently being developed for future implementation. A dagger (†) indicates that the given item is administered for that municipality by the county. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the MEMA District 7 Regional Hazard Mitigation Plan.

**TABLE F.46: RELEVANT PLANS, ORDINANCES, AND PROGRAMS**

| Planning Tool/Regulatory Tool                                   | Lincoln County |   | Brookhaven |   |
|---|----------------|---|------------|---|
|   | ✓              | † | ✓          | † |
| Hazard Mitigation Plan  | ✓              |   |            |   |
| Threat and Hazard Identification and Risk Assessment (THIRA)    |                |   |            |   |
| Comprehensive Land Use Plan                                     |                |   | ✓          |   |
| Floodplain Management Plan/Flood Mitigation Plan                |                |   | ✓          |   |
| Open Space Management Plan (Parks & Rec/Greenway Plan)          |                |   |            |   |
| Stormwater Management Plan/Ordinance                            |                |   | ✓          |   |
| Natural Resource Protection Plan                                |                |   |            |   |
| Flood Response Plan   |                |   |            |   |
| Emergency Operations Plan                                       | ✓              |   | †          |   |
| Emergency Management Accreditation Program (EMAP Accreditation) | ✓              |   | †          |   |
| Continuity of Operations Plan                                   | ✓              |   | †          |   |
| Evacuation Plan   |                |   |            |   |
| Disaster Recovery Plan  |                |   |            |   |
| Capital Improvements Plan                                       |                |   |            |   |
| Economic Development Plan                                       | ✓              |   | †          |   |
| Historic Preservation Plan                                      |                |   |            |   |
| Flood Damage Prevention Ordinance                               |                |   | ✓          |   |
| Zoning Ordinance  |                |   | ✓          |   |
| Subdivision Ordinance   | ✓              |   | ✓          |   |
| Unified Development Ordinance                                   |                |   |            |   |
| Post-Disaster Redevelopment/ Reconstruction Plan/ Ordinance     |                |   |            |   |
| Building Code   |                |   | ✓          |   |
| Fire Code   |                |   | ✓          |   |
| National Flood Insurance Program (NFIP)                         |                |   | ✓          |   |
| NFIP Community Rating System (CRS Program)                      |                |   |            |   |

A more detailed discussion on the county’s planning and regulatory capabilities follows.

### EMERGENCY MANAGEMENT

#### Hazard Mitigation Plan

Lincoln County has previously adopted a hazard mitigation plan. The City of Brookhaven was also included in this plan.

#### Emergency Operations Plan

Lincoln County maintains an emergency operations plan through its Emergency Management Agency. The City of Brookhaven is also covered by this plan.

**Continuity of Operations Plan**

Lincoln County and the City of Brookhaven have adopted a continuity of operations plan.

**Emergency Management Accreditation Program (EMAP)**

Lincoln County and the City of Brookhaven have earned EMAP accreditation.

**GENERAL PLANNING**

**Comprehensive Land Use Plan**

Lincoln County has not adopted a county comprehensive land use plan. However, the City of Brookhaven has adopted a city comprehensive plan.

**Zoning Ordinance**

The City of Brookhaven is the only jurisdiction in Lincoln County that has adopted a zoning ordinance.

**Subdivision Ordinance**

Lincoln County and the City of Brookhaven have both adopted a subdivision ordinance.

**Building Codes, Permitting, and Inspections**

The City of Brookhaven is the only jurisdiction in Lincoln County that has adopted a building code.

**FLOODPLAIN MANAGEMENT**

Table F.47 provides NFIP policy and claim information for each participating jurisdiction in Lincoln County.

**TABLE F.47: NFIP POLICY AND CLAIM INFORMATION**

| Jurisdiction     | Date Joined NFIP | Current Effective Map Date | NFIP Policies in Force | Insurance in Force | Closed Claims | Total Payments to Date |
|------------------|------------------|----------------------------|------------------------|--------------------|---------------|------------------------|
| LINCOLN COUNTY†* | --               | --                         | --                     | --                 | --            | --                     |
| Brookhaven       | 07/18/77         | 02/03/10                   | 68                     | \$13,466,000       | 12            | \$50,445               |

†Includes unincorporated areas of county only

\*Community does not participate in the NFIP

Source: NFIP Community Status information as of 8/17/2017; NFIP claims and policy information as of 4/30/2017

All jurisdictions listed above that are participants in the NFIP will continue to comply with all required provisions of the program and will work to adequately comply in the future utilizing a number of strategies. For example, the jurisdictions will coordinate with MEMA and FEMA to develop maps and regulations related to special flood hazard areas within their jurisdictional boundaries and, through a consistent monitoring process, will design and improve their floodplain management program in a way that reduces the risk of flooding to people and property.

As noted above, all jurisdictions are not participants in the NFIP. Lincoln County does not participate in the NFIP due to a lack of capacity or resources to properly administer and maintain the program.

**Flood Damage Prevention Ordinance**

All communities participating in the NFIP are required to adopt a local flood damage prevention ordinance. The City of Brookhaven participates in the NFIP and has adopted flood damage prevention regulations.

**Floodplain Management Plan**

The City of Brookhaven is the only jurisdiction in Lincoln County that has adopted a floodplain management plan to help prevent damages associated with flooding and flood loss.

**Stormwater Management Plan**

Lincoln County does not have a stormwater management plan or ordinance in place. However, the City of Brookhaven has adopted a local stormwater pollution prevention ordinance.

**F.4.2 Administrative and Technical Capability**

**Table F.48** provides a summary of the capability assessment results for Lincoln County with regard to relevant staff and personnel resources. A checkmark (✓) indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill. A dagger (†) indicates a county-level staff member(s) provides the specified knowledge or skill to that municipality.

**TABLE F.48: RELEVANT STAFF/PERSONNEL RESOURCES**

| Staff/Personnel Resource | Planners with knowledge of land development/land management practices | Engineers or professionals trained in construction practices related to buildings and/or infrastructure | Planners or engineers with an understanding of natural and/or human-caused hazards | Emergency Manager | Floodplain Manager | Land Surveyors | Scientists familiar with the hazards of the community | Staff with education or expertise to assess the community's vulnerability to hazards | Personnel skilled in GIS and/or Hazus | Resource development staff or grant writers |
|--------------------------|---|---|--|-------------------|--------------------|----------------|---|--|---------------------------------------|---|
| LINCOLN COUNTY           |   | ✓   | ✓  | ✓                 |                    | ✓              | ✓   | ✓  | ✓                                     |   |
| Brookhaven               |   | ✓   | ✓  | †                 | ✓                  |                | †   | †  | †                                     |   |

Credit for having a floodplain manager was given to those jurisdictions that have a flood damage prevention ordinance, and therefore an appointed floodplain administrator, regardless of whether the appointee was dedicated solely to floodplain management. Credit was given for having a scientist familiar with the hazards of the community if a jurisdiction has a Cooperative Extension Service or Soil and Water Conservation Department. Credit was also given for having staff with education or expertise to assess the community's vulnerability to hazards if a staff member from the jurisdiction was a participant on the existing hazard mitigation plan's planning committee.

### F.4.3 Fiscal Capability

**Table F.49** provides a summary of the results for Lincoln County with regard to relevant fiscal resources. A checkmark (✓) indicates that the given fiscal resource has previously been used to implement hazard mitigation actions. A dagger (†) indicates that the given fiscal resource is locally available for hazard mitigation purposes (including match funds for state and federal mitigation grant funds).

**TABLE F.49: RELEVANT FISCAL RESOURCES**

| Fiscal Tool/Resource | Capital Improvement Programming | Community Development Block Grants (CDBG) | Special Purpose Taxes (or taxing districts) | Gas/Electric Utility Fees | Water/Sewer Fees | Stormwater Utility Fees | Development Impact Fees | General Obligation, Revenue, and/or Special Tax Bonds | Partnering Arrangements or Intergovernmental Agreements | Other: FEMA Hazard Mitigation Grants, Homeland Security Grants, USDA Rural Development Agency Grants, and US Economic Development Administration Grants |
|----------------------|---------------------------------|---|---|---------------------------|------------------|-------------------------|-------------------------|---|---|---|
| LINCOLN COUNTY       |                                 | †   |   |                           |                  |                         |                         |   |   | †   |
| Brookhaven           |                                 | †   |   |                           | †                |                         |                         |   |   | †   |

### F.4.4 Political Capability

During the months immediately following a disaster, local public opinion in Lincoln County is more likely to shift in support of hazard mitigation efforts.

**Table F.50** provides a summary of the results for Lincoln County with regard to political capability. A checkmark (✓) indicates the expected degree of political support by local elected officials in terms of adopting/funding information.

**TABLE F.50: LOCAL POLITICAL SUPPORT**

| Political Support | Limited | Moderate | High |
|-------------------|---------|----------|------|
| LINCOLN COUNTY    | ✓       |          |      |
| Brookhaven        |         |          | ✓    |

### F.4.5 Conclusions on Local Capability

**Table F.51** shows the results of the capability assessment using the designed scoring methodology described in Section 7: *Capability Assessment*. The capability score is based solely on the information

found in existing hazard mitigation plans and readily available on the jurisdictions’ government websites. This information was reviewed by all jurisdictions and each jurisdiction provided feedback on the information included in the capability assessment. Local government input was vital to identifying capabilities. According to the assessment, the average local capability score for the county and its jurisdictions is 31.0, which falls into the moderate capability ranking.

**TABLE F.51: CAPABILITY ASSESSMENT RESULTS**

| Jurisdiction   | Overall Capability Score | Overall Capability Rating |
|----------------|--------------------------|---------------------------|
| LINCOLN COUNTY | 24                       | Limited                   |
| Brookhaven     | 38                       | Moderate                  |

## F.5 LINCOLN COUNTY MITIGATION STRATEGY

This subsection provides the blueprint for Lincoln County to follow in order to become less vulnerable to its identified hazards. It is based on general consensus of the Regional Hazard Mitigation Council and the findings and conclusions of the capability assessment and risk assessment. Additional Information can be found in Section 8: *Mitigation Strategy* and Section 9: *Mitigation Action Plan*.

### F.5.1 Mitigation Goals

Lincoln County developed six mitigation goals in coordination with the other participating MEMA District 7 Region jurisdictions. The regional mitigation goals are presented in **Table F.52**.

**TABLE F.52: MEMA DISTRICT 7 REGIONAL MITIGATION GOALS**

|         | Goal   |
|---------|--|
| Goal #1 | Increase the overall public awareness of natural hazards that face the region.   |
| Goal #2 | Retrofit of critical facilities and/or critical infrastructure to lower the risk of damage from natural hazards.   |
| Goal #3 | General improvement of regional or local mitigation planning and capability.   |
| Goal #4 | Support State Identified Mitigation Initiatives such as saferooms and storm shelters, severe weather warning systems for universities and colleges, and severe weather notification systems for local communities. |
| Goal #5 | Reduce loss of life, damage and loss of property and infrastructure, economic costs, including response, recovery and disruption of economic activity.   |
| Goal #6 | Foster cooperation among all levels of governments and the private sector with respect to improving, updating, and implementing the hazard mitigation plan.  |

### F.5.2 Mitigation Action Plan

The mitigation actions proposed by Lincoln County and the City of Brookhaven are listed in the following individual Mitigation Action Plans.

## Lincoln County Mitigation Action Plan

| Action #          | Description   | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department                                 | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|-------------------|---|---------------------------|-------------------|---|---|-------------------------|---|
| <b>Prevention</b> |   |                           |                   |   |   |                         |   |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning –</b><br>The Lincoln County Board of Supervisors/City of Brookhaven should have a Comprehensive Plan developed to guide long term recovery and development. | Hurricane or other hazard | High              | Lincoln County Board of Supervisors/ City of Brookhaven | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Lincoln County Board of Supervisors/City of Brookhaven recognize that comprehensive land use planning yields many benefits for both the county and city. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. Although Brookhaven has adopted a Comprehensive Plan, the county has not developed a Comprehensive Plan. Therefore, this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-2      | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

| Action #                           | Description  | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---|-------------------|---|---|-------------------------|--|
| <b>Property Protection</b>         |  |   |                   |   |   |                         |  |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Lincoln County Board of Supervisors/City of Brookhaven Board of Aldermen and Mayor should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Lincoln County Board of Supervisors/ City of Brookhaven Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Lincoln County Board of Supervisors/City of Brookhaven Board of Aldermen and Mayor recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/city government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |
| <b>Natural Resource Protection</b> |  |   |                   |   |   |                         |  |
| NRP-1                              |  |   |                   |   |   |                         |  |

| Action #                   | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department             | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------------------------|---|---------------------|-------------------|-------------------------------------|--|-------------------------|--|
| <b>Structural Projects</b> |   |                     |                   |                                     |  |                         |  |
| SP-1                       | <b>Drainage Improvements in Bogue Chitto Community</b> – To eliminate damage to current and future structures, Lincoln County plans to initiate drainage improvements and possibly buyout or relocate homeowners in the floodway. | Flood               | High              | Lincoln County Board of Supervisors | FEMA Hazard Mitigation Grant, Community Development Block Grant, Lincoln County General Fund | 2022                    | Flash flooding within the Bogue Chitto community has caused flooding of roadways, property and structures. This flooding causes damage to the structures and roadways and can prevent access to emergency vehicles during times of distress. Lincoln County will continue to seek funding to complete drainage improvements, so this action will remain in the plan. |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2022                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. Once the county installs a new siren and gets funding for the 361 shelter, they will then proceed with requesting “storm ready” status, so this action will remain in the plan. This action was combined with ES-9 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                    | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|--|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Lincoln County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The jurisdiction has replaced some existing old generators but continues to pursue generator funding for other facilities that currently lack generators, so this action will remain in the plan.</p> |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department             | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|-------------------------------------|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Upgrade all emergency services communications to the 700 MHz system. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Lincoln County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Lincoln County continues to improve emergency communications and will upgrade all emergency services communications to the 700 MHz system as funding allows (rather than purchasing a satellite phone system), so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department             | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|--|-------------------|-------------------------------------|---|-------------------------|---|
| ES-4     | <b>Upgrade Disaster Distribution Centers</b> – Upgrade each VFD with additional restroom facilities. | Hurricane or other hazard requiring distribution of food, water, ice, etc. | High              | Lincoln County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | Large scale distribution of food, water, ice, and other commodities to the general population after a major disaster presents logistical problems for any jurisdiction. Lincoln County chose to overcome these problems during the Hurricane Katrina disaster by using Volunteer Fire Departments (VFD) as primary distribution points from which citizens could pick up needed supplies. With many more persons manning the VFDs fulltime each day and many citizens coming and going, the sanitary facilities at each site were woefully inadequate. Since upgrades to VFDs have not been completed in Lincoln County, this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department             | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|-------------------------------------|---|-------------------------|---|
| ES-5     | <b>Upgrade VFD Communications –</b><br>Upgrade VFD Communications to the 700 MHz system. | Hurricane           | High              | Lincoln County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Lincoln County Volunteer Fire Departments (VFD) have a separate conventional communications system that also serves as a backup for the county EMS and Sheriffs Office. Their current system uses an antenna mounted on a water tower that is 60 feet short of the recommended effective height. This leads to more drop out of signal due to terrain shadowing, which hampers the VFDs effectiveness. Field units find themselves having to drive to the nearest hill to communicate with dispatchers thereby delaying their arrival at a fire or other emergency. Also, intermittent communications could lead to longer response times if injuries to the firefighters themselves occurred. Rather than building a new tower for housing communications antennas, Lincoln County will upgrade the VFD communications system to the 700 MHz system, so this action will remain in the plan. |

**ANNEX F: LINCOLN COUNTY**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-6     | <b>Renovate Emergency Operations Center</b> – The EOC has secured another building located four miles to the north in the Industrial Park. This building should be renovated to provide a more modern, safe location for the EOC.   | Hurricane or Tornado   | High              | Lincoln County Board of Supervisors/ City of Brookhaven Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | The Lincoln County EOC is currently housed in an adequate building, and renovations are not needed at this time. This action no longer applies and will be removed from the plan.  |
| ES-7     | <b>Construct New Emergency Shelter</b> – The county/city should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions. | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Lincoln County Board of Supervisors/ City of Brookhaven Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Lincoln County Board of Supervisors/City of Brookhaven Board of Aldermen and Mayor recognize the need to have modern, safe emergency shelters for county/city residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and the basement of the county/city Government building is used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. The jurisdiction currently has an application with MEMA for funding of a 361 shelter to be placed within the City of Brookhaven, so this action will remain in the plan. |

**ANNEX F: LINCOLN COUNTY**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|---|---|-------------------------|--|
| ES-8     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system.   | Tornado             | High              | Lincoln County Board of Supervisors     | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/City General Fund | 2022                    | Many citizens in Lincoln County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. The jurisdiction is currently working on a siren grant through MEMA for the City of Brookhaven, so this action will remain in the plan. |
| ES-9     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |

| Action #                              | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department             | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|--|---------------------|-------------------|-------------------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |  |                     |                   |                                     |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.                           | Earthquake          | Moderate          | Lincoln County Board of Supervisors | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative.  | Flood               | High              | MEMA Mitigation Bureau              | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). The jurisdiction currently has an application in for the National Flood Insurance Program, so this action will remain in the plan.   |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Dam Failure         | High              | MDEQ, Dam Safety Division           | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Lincoln County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

### City of Brookhaven Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as cities develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as cities develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |

| Action #                   | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department            | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------------------------|--|---------------------|-------------------|------------------------------------|---|-------------------------|---|
| <b>Structural Projects</b> |  |                     |                   |                                    |   |                         |   |
| SP-1                       | <p><b>Improve Surface Drainage</b> – The City of Brookhaven plans to:</p> <ul style="list-style-type: none"> <li>Remove and replace undersized culverts at Minnesota, Evelyn, Center and St. George Streets.</li> <li>Remove the existing undersized and undermined concrete ditch between Minnesota Street and its terminus, just south of St. George Street.</li> <li>Excavate channel and reconstruct concrete ditch between Minnesota and St. George Street.</li> <li>Purchase two small tracts of vacant land for the creation of green space.</li> <li>Channel cross section restoration between St. George and Washington Streets.</li> </ul> | Flood               | High              | City of Brookhaven, Lincoln County | FEMA Hazard Mitigation Grant (75%), MEMA (25%) and City of Brookhaven (5%) General Fund | 2022                    | Flash flooding within the City of Brookhaven has caused flooding of roadways and property. This flooding causes damage to the roadways and can prevent access to emergency vehicles during times of distress. Structures have also flooded. The MEMA and City of Brookhaven funding are linked to this grant application. The City of Brookhaven will continue working to complete these surface drainage improvements, so this action will remain in the plan. |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                               | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>City of Brookhaven Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Police Station and all three fire stations have new generators. The city will continue to seek funding for generators for other critical facilities (city hall, city owned buildings, etc.), so this action will remain in the plan.</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                        | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|--|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Upgrade all emergency services communications to the 700 MHz system.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | City of Brookhaven Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The City of Brookhaven continues to improve emergency communications and will upgrade all emergency services communications to the 700 MHz system as funding allows (rather than purchasing a satellite phone system), so this action will remain in the plan. |
| ES-4     | <b>New Police Department Building</b> – The City of Brookhaven would like to renovate and repair an existing building to serve as a new PD Building. This would free up space in the current building for the SO and geographically separate these vital agencies to reduce the probability of both being adversely affected by a disaster. | Hurricane or tornado  | High              | City of Brookhaven Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | Completed               | The police department did renovate this building on Hwy 61 South and is currently located there.  |

**ANNEX F: LINCOLN COUNTY**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|--|---|-------------------------|--|
| ES-5     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the city to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the city where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the citywide system.   | Tornado             | High              | City of Brookhaven/<br>Lincoln County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/City General Fund | 2022                    | In the event of inclement weather, it is essential that residents of the City of Brookhaven receive timely warnings. The jurisdiction is currently working on a siren grant through MEMA for the City of Brookhaven, so this action will remain in the plan. |
| ES-6     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency                    | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |

| Action #                              | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                        | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|--|--|-------------------|--|---|-------------------------|--|
| ES-7                                  | <b>Safe Rooms and Community Shelters</b> – The city should construct and/or encourage construction of safe rooms and community shelters.   | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | City of Brookhaven Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |
| <b>Public Education and Awareness</b> |  |  |                   |  |   |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts. | Earthquake   | Moderate          | City of Brookhaven                             | N/A   | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative.                              | Flood  | High              | MEMA Mitigation Bureau                         | N/A   | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.   | Dam Failure         | High              | MDEQ, Dam Safety Division                                     | N/A                             | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.  |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The City of Brookhaven will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

# ANNEX G

## PIKE COUNTY

This annex includes jurisdiction-specific information for Pike County and its participating municipalities. It consists of the following five subsections:

- G.1 Pike County Community Profile
  - G.2 Pike County Risk Assessment
  - G.3 Pike County Vulnerability Assessment
  - G.4 Pike County Capability Assessment
  - G.5 Pike County Mitigation Strategy
- 

### G.1 PIKE COUNTY COMMUNITY PROFILE

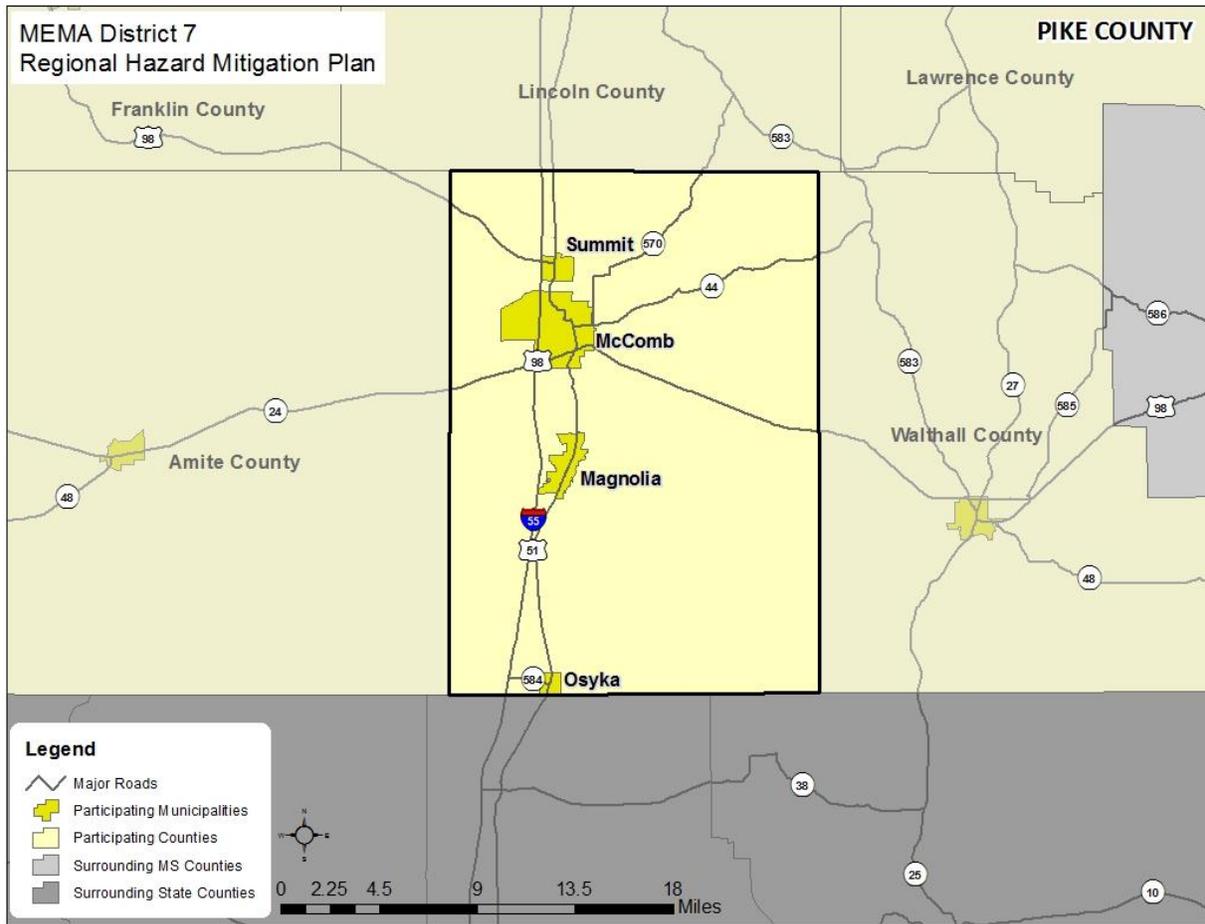
#### G.1.1 Geography and the Environment

Pike County is located in southwestern Mississippi. It comprises two cities and two towns, City of Magnolia, City of McComb, Town of Osyka, and Town of Summit, as well as many small unincorporated communities. An orientation map is provided as **Figure G.1**.

The county is located to the east of the Mississippi River supplying diverse recreational activities. The total area of the county is 411 square miles, 2 square miles of which is water area.

Pike County enjoys four distinct seasons but the climate in the region is generally hot and humid compared to the rest of the United States given its latitude and relative proximity to the Gulf Coast. Precipitation is generally highest in winter months when the temperatures are moderately lower, but the likelihood of precipitation remains relatively constant throughout the year. Summers in the region can become fairly hot with average highs in the nineties and lows in the seventies. The region is also often susceptible to turbulent weather when warm, wet air from the Gulf of Mexico is pushed up into the region to mix with cooler air coming down from across the continent which can result in severe weather conditions. This is particularly true in the spring when seasons are changing and diverse weather patterns interact.

**FIGURE G.1: PIKE COUNTY ORIENTATION MAP**



### G.1.2 Population and Demographics

According to the 2015 American Community Survey, Pike County has a population of 40,075 people. The county has seen an increase in population between 2000 and 2015, and the population density is 98 people per square mile. Population counts from the U.S. Census Bureau for 2000 and 2010 and from the American Community Survey for 2015 for the county and participating jurisdictions are presented in **Table G.1**.

**TABLE G.1: POPULATION COUNTS FOR PIKE COUNTY**

| Jurisdiction       | 2000 Census Population | 2010 Census Population | 2015 American Community Survey Estimate | % Change 2000-2015 |
|--------------------|------------------------|------------------------|---|--------------------|
| <b>Pike County</b> | <b>38,940</b>          | <b>40,404</b>          | <b>40,075</b>                           | <b>2.9%</b>        |
| Magnolia           | 2,071                  | 2,420                  | 2,021                                   | -2.4%              |
| McComb             | 13,337                 | 12,790                 | 12,723                                  | -4.6%              |
| Osyka              | 481                    | 440                    | 425                                     | -11.6%             |
| Summit             | 1,428                  | 1,705                  | 2,307                                   | 61.6%              |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

Based on the 2010 Census, the median age of residents of Pike County is 36.9 years. The racial characteristics of the county are presented in **Table G.2**. Blacks or African Americans make up the majority of the population in the county, accounting for almost 53 percent of the population.

**TABLE G.2: DEMOGRAPHICS OF PIKE COUNTY**

| Jurisdiction       | White, Percent | Black or African American, Percent | American Indian or Alaska Native, Percent | Asian, Percent | Native Hawaiian or Other Pacific Islander, Percent | Other Race, Percent | Two or More Races, percent | Persons of Hispanic Origin, Percent* |
|--------------------|----------------|------------------------------------|---|----------------|--|---------------------|----------------------------|--------------------------------------|
| <b>Pike County</b> | <b>45.6%</b>   | <b>52.5%</b>                       | <b>0.4%</b>                               | <b>0.4%</b>    | <b>0.0%</b>  | <b>0.6%</b>         | <b>0.5%</b>                | <b>1.4%</b>                          |
| Magnolia           | 28.2%          | 70.8%                              | 0.0%                                      | 0.2%           | 0.0%   | 0.0%                | 0.8%                       | 0.3%                                 |
| McComb             | 27.8%          | 70.3%                              | 0.4%                                      | 0.6%           | 0.0%   | 0.6%                | 0.3%                       | 1.5%                                 |
| Osyka              | 45.2%          | 43.5%                              | 0.0%                                      | 0.9%           | 0.0%   | 0.0%                | 10.4%                      | 1.2%                                 |
| Summit             | 14.7%          | 81.9%                              | 0.0%                                      | 3.4%           | 0.0%   | 0.0%                | 0.0%                       | 2.3%                                 |

\*Hispanics may be of any race, so also are included in applicable race categories

Source: 2011-2015 American Community Survey 5-Year Estimates

### G.1.3 Housing

According to the 2010 U.S. Census, there are 17,861 housing units in Pike County, the majority of which are single family homes or mobile homes. Housing information for the county and four municipalities is presented in **Table G.3**. As shown in the table, the incorporated municipalities have a slightly lower percentage of seasonal housing units compared to the unincorporated county.

**TABLE G.3: HOUSING CHARACTERISTICS OF PIKE COUNTY**

| Jurisdiction       | Housing Units (2000) | Housing Units (2010) | Seasonal Units, Percent (2010) | Median Home Value (2011-2015) |
|--------------------|----------------------|----------------------|--------------------------------|-------------------------------|
| <b>Pike County</b> | <b>16,720</b>        | <b>17,861</b>        | <b>3.0%</b>                    | <b>\$83,300</b>               |
| Magnolia           | 898                  | 1,010                | 1.4%                           | \$77,800                      |
| McComb             | 5,931                | 5,825                | 1.3%                           | \$84,000                      |
| Osyka              | 234                  | 232                  | 4.3%                           | \$107,400                     |
| Summit             | 658                  | 790                  | 1.3%                           | \$84,500                      |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

### G.1.4 Infrastructure

#### TRANSPORTATION

In Pike County, Interstate 55 and U.S. Highway 51 provide access to the north and south and U.S. Highway 98 and Mississippi Highway 48 provide access to the east and west.

McComb-Pike County Airport and Southwest Regional Medical Center Heliport are both general aviation airports located in Pike County.

A major freight rail line operates within Pike County. Canadian National Railway is a Class I railway that operates and runs north to south in the county. Business and industries rely on this line along with various other major highway routes as distribution of merchandises.

### **UTILITIES**

Electrical power in Pike County is provided by Entergy Mississippi Inc., Magnolia Electric Power Association, and South Mississippi Electric Power Association.

Water and sewer service is provided by participating jurisdictions and/or community based associations, but unincorporated areas often rely on septic systems and wells in Pike County.

### **COMMUNITY FACILITIES**

There are a number of buildings and community facilities located throughout Pike County. According to the data collected for the vulnerability assessment (Section 6.4.1), there are 11 fire stations, 7 police stations, and 19 schools located within the county.

There are also 9 hospitals and medical care facilities located in Pike County. These include Southwest Mississippi Regional Medical Center, a 160-bed short term acute facility located in McComb, and Beecham Memorial Hospital, a 37-bed short term acute facility located in Magnolia.

One educational institution is found in Pike County. Southwest Mississippi Community College is a two-year community college located in Summit.

Museums based around the history and culture of the region are prevalent throughout the area. For example, in McComb, the Railroad Depot Museum contains one of the best preserved collections of railroad history in the country.

The Mississippi River, which runs to the east of the county, has played an integral part in the history of the county. The river acted as a major conduit for trade in the 19<sup>th</sup> century as plantations produced large quantities of cotton that could be easily shipped down to ports such as New Orleans. Today, the river is still an important part of the local economy as products are shipped worldwide out of the Natchez port. Apart from the Mississippi River there are multiple water based refuges, activities, and recreational features focused on local water bodies in the region. For instance, fishing is a major draw for visitors to Percy Quin State Park located in Pike County. This park contains Lake Tangipahoa which has experienced a boom in recreational tourism since it was re-opened in 2016 after Hurricane Isaac forced it to shut down in 2012. There are also numerous other small lakes, creeks, and other water bodies throughout the region that offer the outstanding outdoor recreational opportunities for which the region is known.

## **G.1.5 Land Use**

Pike County has a blend of old and new development that contributes to physical, cultural, and economic attributes throughout the region. There are four incorporated municipalities located in the county. These areas are where the county's population is generally concentrated. The incorporated areas are also where many of the businesses, commercial uses, and institutional uses are located. Land uses in the balance of the county generally consist of rural residential development, agricultural uses, and recreational areas.

There are multiple county- and regional-based agencies that serve to coordinate growth and promote economic development. Local land use and associated regulations are further discussed in *Section 7: Capability Assessment*.

## **G.1.6 Employment and Industry**

According to the U.S. Census Bureau's American Community Survey (ACS), in 2015, Pike County had an average annual employment of 30,450 workers and an average unemployment rate of 9.5 percent (compared to 10.3 percent for the state). In 2015, the Educational services, and health care and social assistance industry employed 21.1 percent of the workforce. Manufacturing was the next largest industry, employing 17.3 percent of workers, and Retail trade (13.0%). The average annual median household in 2015 for Pike County was \$31,677 compared to \$39,665 in the state of Mississippi.

## **G.2 PIKE COUNTY RISK ASSESSMENT**

This subsection includes hazard profiles for each of the significant hazards identified in Section 4: *Hazard Identification* as they pertain to Pike County. Each hazard profile includes a description of the hazard's location and extent, notable historical occurrences, and the probability of future occurrences. Additional information can be found in Section 5: *Hazard Profiles*.

### ***FLOOD-RELATED HAZARDS***

#### **G.2.1 Dam and Levee Failure**

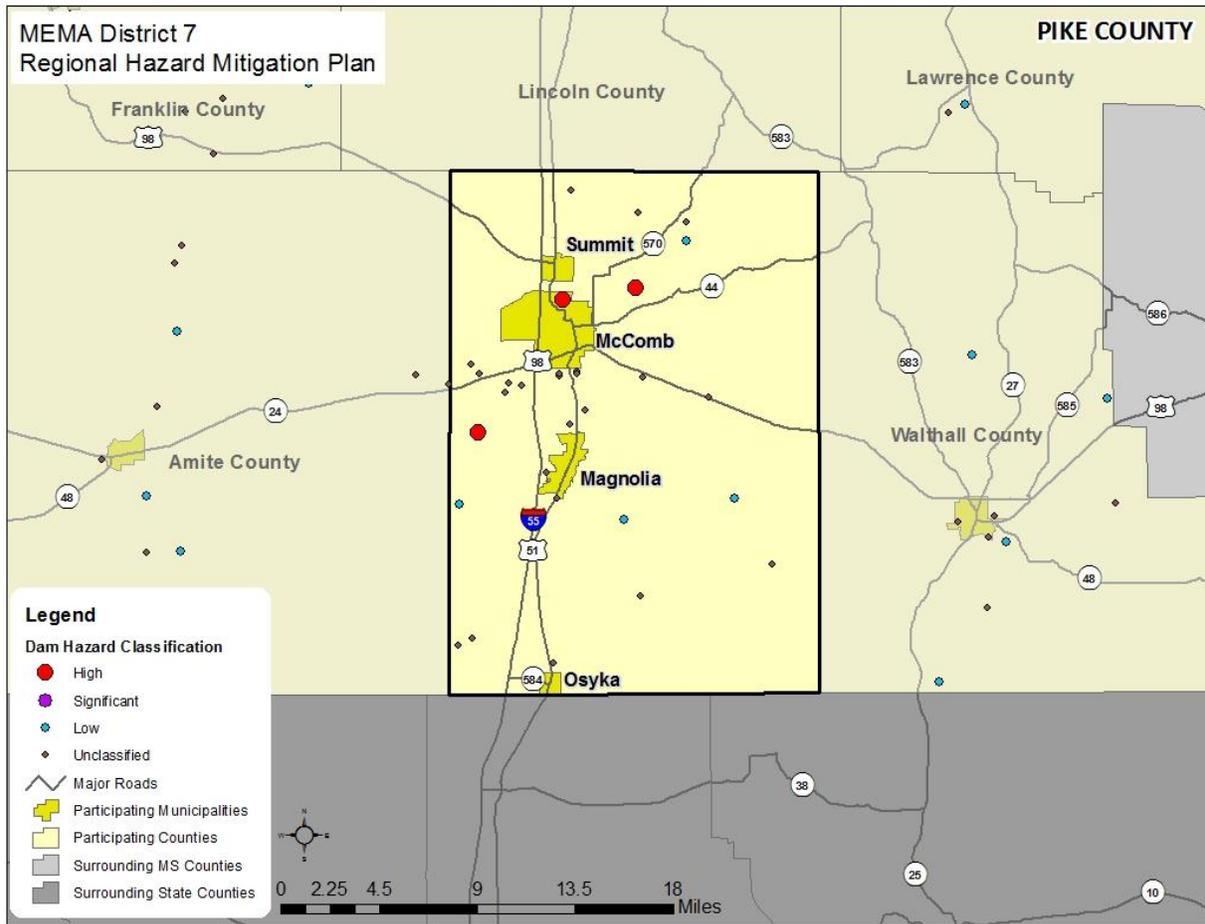
##### ***LOCATION AND SPATIAL EXTENT***

According to the Mississippi Department of Environmental Quality, there are three high hazard dams in Pike County.<sup>1</sup> **Figure G.2** and **Figure G.3** show the location of these high hazard dams as well as mapped inundation areas, and **Table G.4** lists them by name.

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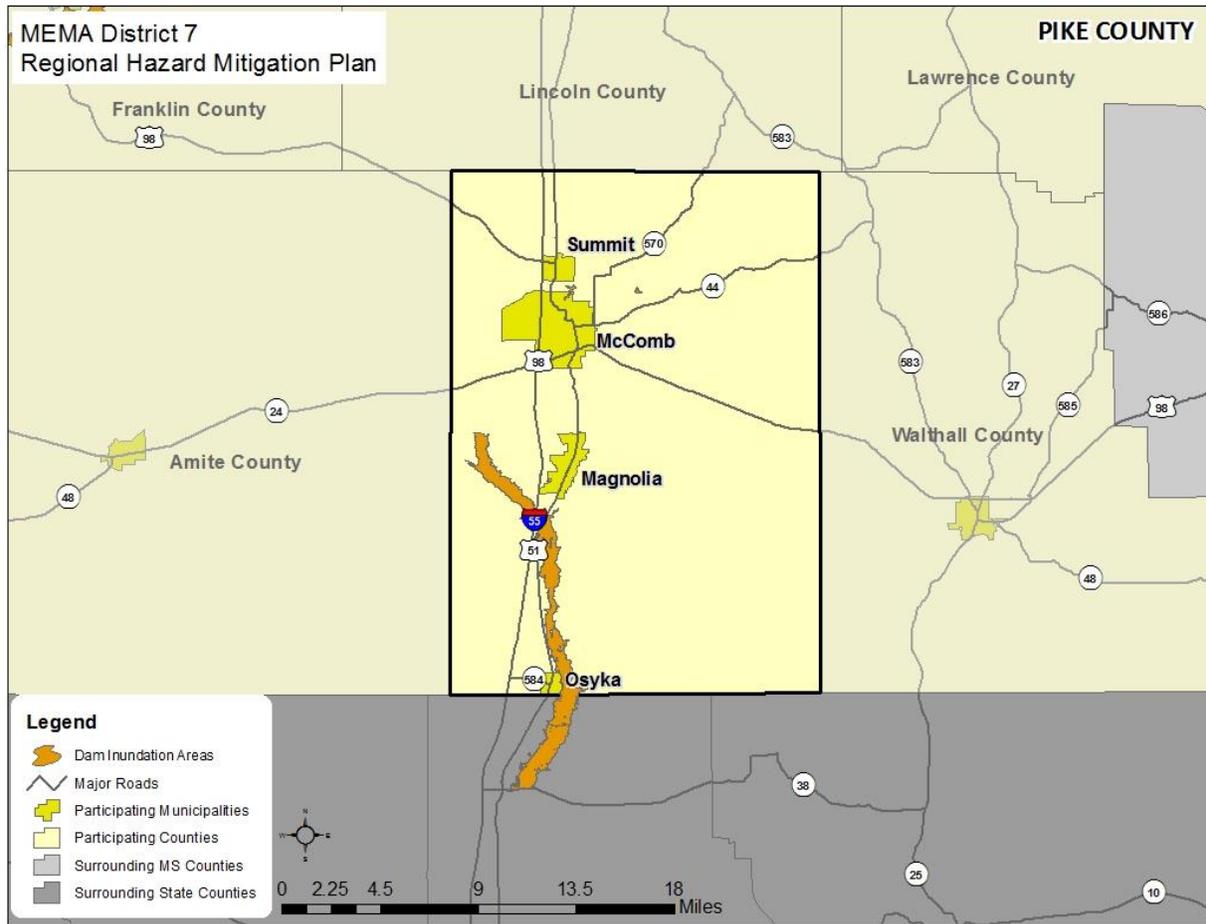
<sup>1</sup> The list of high hazard dams obtained from the Mississippi Department of Environmental Quality was reviewed and amended by local officials to the best of their knowledge.

FIGURE G.2: PIKE COUNTY HIGH HAZARD DAM LOCATIONS



Source: Mississippi Department of Environmental Quality

**FIGURE G.3: PIKE COUNTY DAM INUNDATION AREAS**



Source: Mississippi Department of Environmental Quality

**TABLE G.4: PIKE COUNTY HIGH HAZARD DAMS**

| Dam Name                   | Hazard Potential | Max Storage (ac/ft) | Dam Height (ft) |
|----------------------------|------------------|---------------------|-----------------|
| <b>Pike County</b>         |                  |                     |                 |
| ICGRR RESERVOIR MCCOMB DAM | High             | 936                 | 26.0            |
| PERCY QUIN STATE PARK DAM  | High             | 16,800              | 34.0            |
| C.V. GLENNIS LAKE DAM      | High             | 94                  | 20.0            |

Source: Mississippi Department of Environmental Quality

**HISTORICAL OCCURRENCES**

According to the Mississippi State Hazard Mitigation Plan, there have been two dam failures reported in Pike County. Although major damage was not reported with these events, several breach scenarios in the region could be catastrophic.

Table G.5 below provides a brief description of the two reported dam failures.

**TABLE G.5: PIKE COUNTY DAM FAILURES (1982-2012)**

| Date           | County | Structure Name     | Cause of Failure   |
|----------------|--------|--------------------|--|
| September 2002 | Pike   | Lake Dixie Springs | Overtopping  |
| August 2012    | Pike   | Percy Quinn        | Large slides developed with seepage. Did not lead to uncontrolled release of pool. |

Source: Mississippi Department of Environmental Quality

### **PROBABILITY OF FUTURE OCCURRENCES**

Given the current dam inventory and historic data, a dam breach is possible (between 1 and 10 percent annual probability) in the future. As has been demonstrated in the past, regular monitoring is necessary to prevent these events.

## **G.2.2 Erosion**

### **LOCATION AND SPATIAL EXTENT**

Erosion in Pike County is typically caused by flash flooding events. Unlike coastal areas, areas of concern for erosion in Pike County are primarily rivers/streams and reservoirs. Generally, vegetation also helps to prevent erosion in the area, but in recent years, erosion has become a growing threat to many of the participating counties and jurisdictions.

At this time, there is no regional or state-level data available on localized areas of erosion so it is a challenge to identify particularly prone areas on a wider geographic scale. However, a few areas of concern were reported by members of the hazard mitigation council and other local sources. Locations along the Mississippi River are known to be especially at-risk, but there are locations in many areas within the region where erosion is prominent.

### **HISTORICAL OCCURRENCES**

Several sources were vetted to identify areas of erosion in Pike County. This includes searching local newspapers, interviewing local officials, and reviewing previous hazard mitigation plans. The locations identified above are representative of areas where erosion has taken place in the past.

These incidents have caused major problems as bridges have become damaged in many instances and made unsafe for emergency services vehicles to cross during and after storm events. This delays response times and critical life-safety support. In addition, the shutdown of roads has hurt local communities economically as trade and commerce are temporarily shut down as bridges are repaired. It has also caused disruption to daily activities for local school boards who must re-route buses around affected areas, causing additional fuel resources to be expended and increasing drive times for students.

### **PROBABILITY OF FUTURE OCCURRENCES**

Erosion remains a natural, dynamic, and continuous process for Pike County, and it will continue to occur. The annual probability level assigned for erosion is possible (between 1 and 10 percent annually).

## G.2.3 Flood

### **LOCATION AND SPATIAL EXTENT**

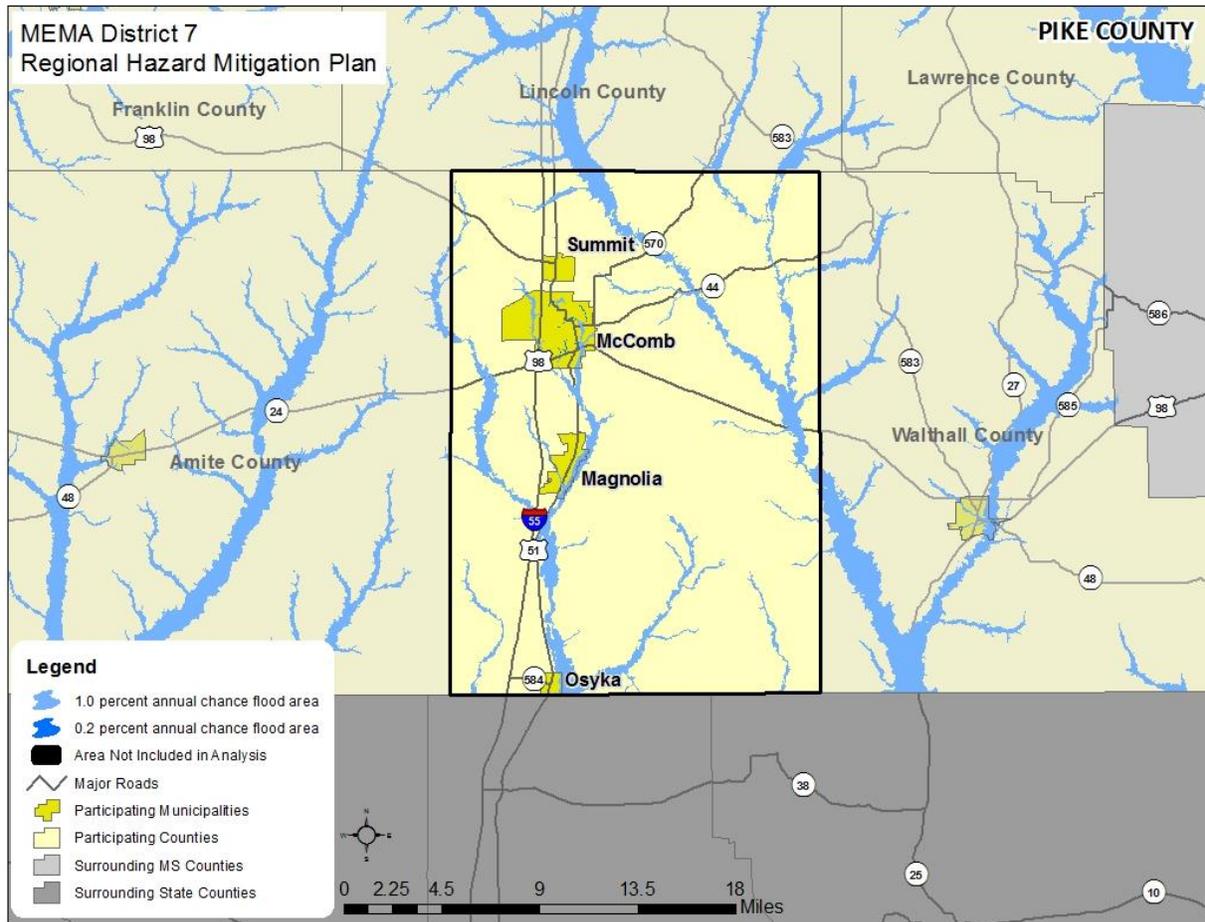
There are areas in Pike County that are susceptible to flood events. Special flood hazard areas in the county were mapped using Geographic Information System (GIS) and FEMA Digital Flood Insurance Rate Maps (DFIRM).<sup>2</sup> This includes Zone A (1-percent annual chance floodplain), Zone AE (1-percent annual chance floodplain with elevations), and Zone X-500 (0.2-percent annual chance floodplain). According to GIS analysis, of the 407 square miles that make up Pike County, there are 33.52 square miles of land in zones A and AE (1-percent annual chance floodplain/100-year floodplain) and 0.19 square miles of land in zone X-500 (0.2 percent annual change floodplain/500-year floodplain).

These flood zone values account for 8.3 percent of the total land area in Pike County. It is important to note that while FEMA digital flood data is recognized as best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Flooding and flood-related losses often do occur outside of delineated special flood hazard areas. **Figure G.4** illustrates the location and extent of currently mapped special flood hazard areas for Pike County based on best available FEMA Digital Flood Insurance Rate Map (DFIRM) data.

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<sup>2</sup>The county-level DFIRM data used for Pike County were updated in 2010.

**FIGURE G.4: SPECIAL FLOOD HAZARD AREAS IN PIKE COUNTY**



Source: Federal Emergency Management Agency

### **HISTORICAL OCCURRENCES**

Floods were at least partially responsible for seven disaster declarations in Pike County in 1972, 1973, 1974, 1980, 1983, 1990, and 2003.<sup>3</sup> Information from the National Climatic Data Center was used to ascertain additional historical flood events. The National Climatic Data Center reported a total of 14 events in Pike County since 1997.<sup>4</sup> A summary of these events is presented in **Table G.6**. These events accounted for over \$1.0 million (2017 dollars) in property damage.<sup>5</sup> Specific information on flood events, including date, type of flooding, and deaths and injuries, can be found in **Table G.7**.

<sup>3</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>4</sup> These flood events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported. As additional local data becomes available, this hazard profile will be amended.

<sup>5</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE G.6: SUMMARY OF FLOOD OCCURRENCES IN PIKE COUNTY**

| Location                 | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|--------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Magnolia                 | 0                     | 0/0             | \$0                    | \$0                        |
| McComb                   | 5                     | 0/0             | \$30,527               | \$1,526                    |
| Osyka                    | 1                     | 0/0             | \$256,711              | \$256,711                  |
| Summit                   | 1                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area      | 7                     | 0/0             | \$749,892              | \$39,468                   |
| <b>PIKE COUNTY TOTAL</b> | <b>14</b>             | <b>0/0</b>      | <b>\$1,037,130</b>     | <b>\$297,705</b>           |

Source: National Climatic Data Center

**TABLE G.7: HISTORICAL FLOOD EVENTS IN PIKE COUNTY**

| Location                   | Date       | Type        | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-------------|-----------------|------------------|
| <b>Magnolia</b>            |            |             |                 |                  |
| None reported              | --         | --          | --              | --               |
| <b>McComb</b>              |            |             |                 |                  |
| MC COMB                    | 4/27/1997  | Flash Flood | 0/0             | \$30,527         |
| MC COMB                    | 7/5/2003   | Heavy Rain  | 0/0             | \$0              |
| MC COMB                    | 3/27/2009  | Flash Flood | 0/0             | \$0              |
| MC COMB                    | 4/12/2009  | Flash Flood | 0/0             | \$0              |
| MC COMB                    | 10/26/2015 | Flood       | 0/0             | \$0              |
| <b>Osyka</b>               |            |             |                 |                  |
| OSYKA                      | 3/10/2016  | Flash Flood | 0/0             | \$256,711        |
| <b>Summit</b>              |            |             |                 |                  |
| SUMMIT                     | 2/20/2014  | Flash Flood | 0/0             | \$0              |
| <b>Unincorporated Area</b> |            |             |                 |                  |
| COUNTYWIDE                 | 1/6/1998   | Flash Flood | 0/0             | \$37,829         |
| COUNTYWIDE                 | 1/29/1999  | Flash Flood | 0/0             | \$0              |
| COUNTYWIDE                 | 9/26/2002  | Flash Flood | 0/0             | \$0              |
| COUNTYWIDE                 | 6/15/2003  | Flash Flood | 0/0             | \$0              |
| PRICEDALE                  | 3/28/2009  | Flash Flood | 0/0             | \$0              |
| OAKLAND                    | 8/29/2012  | Flash Flood | 0/0             | \$265,350        |
| TERRYS CREEK               | 8/12/2016  | Flash Flood | 0/0             | \$446,714        |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

### **HISTORICAL SUMMARY OF INSURED FLOOD LOSSES**

According to FEMA flood insurance policy records as of March 31, 2017, there have been 103 flood losses reported in Pike County through the National Flood Insurance Program (NFIP) since 1978, totaling over \$3.5 million in claims payments. A summary of these figures for the county is provided in **Table G.8**. It should be emphasized that these numbers include only those losses to structures that were insured through the NFIP policies, and for losses in which claims were sought and received. It is likely that many additional instances of flood loss in Pike County were either uninsured, denied claims payment, or not reported.

**TABLE G.8: SUMMARY OF INSURED FLOOD LOSSES IN PIKE COUNTY**

| Location                 | Number of Policies | Flood Losses | Claims Payments       |
|--------------------------|--------------------|--------------|-----------------------|
| Magnolia                 | 2                  | 7            | \$124,711.85          |
| McComb                   | 45                 | 29           | \$391,369.90          |
| Osyka                    | 1                  | 0            | \$0.00                |
| Summit*                  | --                 | --           | --                    |
| Unincorporated Area      | 78                 | 67           | \$3,021,752.83        |
| <b>PIKE COUNTY TOTAL</b> | <b>126</b>         | <b>103</b>   | <b>\$3,537,834.58</b> |

\*These communities do not participate in the NFIP. Therefore, no values are reported.

Source: National Flood Insurance Program

### REPETITIVE LOSS PROPERTIES

According to the Mississippi Emergency Management Agency, there are 19 non-mitigated repetitive loss properties located in Pike County, which accounted for 61 losses and more than \$2.8 million in claims payments under the NFIP. The average claim amount for these properties is \$46,121.92. Of the 19 properties, 12 are single family, 1 is other residential, and 6 are other non-residential. Without mitigation, these properties will likely continue to experience flood losses. **Table G.9** presents detailed information on repetitive loss properties and NFIP claims and policies for Pike County.

**TABLE G.9: REPETITIVE LOSS PROPERTIES IN PIKE COUNTY**

| Location                 | Number of Properties | Types of Properties   | Number of Losses | Building Payments     | Content Payments      | Total Payments        | Average Payment     |
|--------------------------|----------------------|---|------------------|-----------------------|-----------------------|-----------------------|---------------------|
| Magnolia                 | 3                    | 2 single family; 1 other non-residential                      | 7                | \$94,060.25           | \$51,986.28           | \$146,046.50          | \$20,863.79         |
| McComb                   | 4                    | 3 single family; 1 other non-residential                      | 16               | \$131,163.47          | \$140,300.28          | \$271,463.75          | \$16,966.48         |
| Osyka                    | 0                    | --  | 0                | \$0.00                | \$0.00                | \$0.00                | \$0.00              |
| Summit*                  | --                   | --  | --               | --                    | --                    | --                    | --                  |
| Unincorporated Area      | 12                   | 7 single family; 1 other residential; 4 other non-residential | 38               | \$1,102,142.90        | \$1,293,783.82        | \$2,395,926.72        | \$63,050.70         |
| <b>PIKE COUNTY TOTAL</b> | <b>19</b>            |   | <b>61</b>        | <b>\$1,327,366.62</b> | <b>\$1,486,070.38</b> | <b>\$2,813,436.97</b> | <b>\$100,880.97</b> |

\*These communities do not participate in the NFIP. Therefore, no values are reported.

Source: National Flood Insurance Program

### PROBABILITY OF FUTURE OCCURRENCES

Flood events will remain a threat in Pike County, and the probability of future occurrences will remain

highly likely (100 percent annual probability). The probability of future flood events based on magnitude and according to best available data is illustrated in the figure above, which indicates those areas susceptible to the 1-percent annual chance flood (100-year floodplain).

It can be inferred from the floodplain location maps, previous occurrences, and repetitive loss properties that risk varies throughout the county. For example, Summit has less floodplain and thus a lower risk of flood than the other incorporated municipalities. Flood is not the greatest hazard of concern but will continue to occur and cause damage. Therefore, mitigation actions may be warranted, particularly for repetitive loss properties.

## ***FIRE-RELATED HAZARDS***

### **G.2.4 Drought**

#### ***LOCATION AND SPATIAL EXTENT***

Drought typically covers a large area and cannot be confined to any geographic or political boundaries. Furthermore, it is assumed that Pike County would be uniformly exposed to drought, making the spatial extent potentially widespread. It is also notable that drought conditions typically do not cause significant damage to the built environment but may exacerbate wildfire conditions.

#### ***HISTORICAL OCCURRENCES***

According to the U.S. Drought Monitor, Pike County had drought levels of Severe or worse in 7 of the last 17 years (January 2000-December 2016). **Table G.10** shows the most severe drought classification for each year, according to U.S. Drought Monitor classifications. It should be noted that the U.S. Drought Monitor also estimates what percentage of the county is in each classification of drought severity. For example, the most severe classification reported may be exceptional but a majority of the county may actually be in a less severe condition.

**TABLE G.10: HISTORICAL DROUGHT OCCURRENCES IN PIKE COUNTY**

Abnormally Dry (D0) Moderate Drought (D1) Severe Drought (D2) Extreme Drought (D3) Exceptional Drought (D4)



| Year | Pike County |
|------|-------------|
| 2000 | EXCEPTIONAL |
| 2001 | MODERATE    |
| 2002 | MODERATE    |
| 2003 | ABNORMAL    |
| 2004 | ABNORMAL    |
| 2005 | ABNORMAL    |
| 2006 | EXTREME     |
| 2007 | SEVERE      |
| 2008 | MODERATE    |
| 2009 | MODERATE    |
| 2010 | SEVERE      |

| Year | Pike County |
|------|-------------|
| 2011 | EXTREME     |
| 2012 | MODERATE    |
| 2013 | ABNORMAL    |
| 2014 | MODERATE    |
| 2015 | EXTREME     |
| 2016 | SEVERE      |

Source: United States Drought Monitor

No anecdotal information was available from the National Climatic Data Center on droughts in Pike County.

### **PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that Pike County has a probability level of possible (between 1 and 10 percent annual probability) for future drought events. However, the extent (or magnitude) of drought and the amount of geographic area covered by drought, varies with each year. Historic information indicates that there is a much lower probability for extreme, long-lasting drought conditions.

## **G.2.5 Lightning**

### **LOCATION AND SPATIAL EXTENT**

Lightning occurs randomly, therefore it is impossible to predict where and with what frequency it will strike. It is assumed that all of Pike County is uniformly exposed to lightning.

### **HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, there have been five recorded lightning events in Pike County since 1997.<sup>6</sup> These events resulted in almost \$10,000 (2017 dollars) in damages, as listed in summary **Table G.11**.<sup>7</sup> Furthermore, lightning has caused one reported fatality in Pike County. Detailed information on historical lightning events can be found in **Table G.12**.

It is certain that more than five events have impacted the county. Many of the reported events are those that cause damage, and it should be expected that damages are likely much higher for this hazard than what is reported.

<sup>6</sup> These lightning events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is certain that additional lightning events have occurred in Pike County. As additional local data becomes available, this hazard profile will be amended.

<sup>7</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE G.11: SUMMARY OF LIGHTNING OCCURRENCES IN PIKE COUNTY**

| Location                 | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|--------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Magnolia                 | 0                     | 0/0             | \$0                    | \$0                        |
| McComb                   | 3                     | 1/0             | \$0                    | \$0                        |
| Osyka                    | 0                     | 0/0             | \$0                    | \$0                        |
| Summit                   | 2                     | 0/0             | \$9,839                | \$492                      |
| Unincorporated Area      | 0                     | 0/0             | \$0                    | \$0                        |
| <b>PIKE COUNTY TOTAL</b> | <b>5</b>              | <b>1/0</b>      | <b>\$9,839</b>         | <b>\$492</b>               |

Source: National Climatic Data Center

**TABLE G.12: HISTORICAL LIGHTNING OCCURRENCES IN PIKE COUNTY**

| Location                   | Date      | Deaths/Injuries | Property Damage* | Details   |
|----------------------------|-----------|-----------------|------------------|---|
| <b>Magnolia</b>            |           |                 |                  |   |
| None reported              | --        | --              | --               | --  |
| <b>McComb</b>              |           |                 |                  |   |
| MC COMB                    | 3/20/2006 | 0/0             | \$0              | Lightning caused a fire that damaged a house and shed on Highway 44 East.   |
| MC COMB                    | 8/23/2006 | 0/0             | \$0              | A 14 year old girl was shocked by a lightning discharge while talking on the telephone. She was taken to the hospital for pre-cautionary reasons, but suffered no injuries. |
| MC COMB                    | 8/26/2006 | 1/0             | \$0              | A 64 year old man was a fatally shocked by a lightning discharge while talking on the telephone. He succumbed to his injuries during the early morning hours of Aug 27.     |
| <b>Osyka</b>               |           |                 |                  |   |
| None reported              | --        | --              | --               | --  |
| <b>Summit</b>              |           |                 |                  |   |
| SUMMIT                     | 6/17/1997 | 0/0             | \$3,051          | Lightning struck a house damaging the electrical system which resulted in a fire when electrical service was re-established.  |
| SUMMIT                     | 7/7/2002  | 0/0             | \$6,789          | A lightning strike started a fire in a shed that spread to an adjacent house.   |
| <b>Unincorporated Area</b> |           |                 |                  |   |
| None reported              | --        | --              | --               | --  |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

### PROBABILITY OF FUTURE OCCURRENCES

Although there was not a high number of historical lightning events reported in Pike County via NCDC data, it is a regular occurrence accompanied by thunderstorms. In fact, lightning events will assuredly happen on an annual basis, though not all events will cause damage. According to Vaisala's U.S. National Lightning Detection Network (NLDN), Pike County is located in an area of the country that experienced an average of 12 to 20 lightning flashes per square mile per year between 2007 and 2016. Therefore, the

probability of future events is highly likely (100 percent annual probability). It can be expected that future lightning events will continue to threaten life and cause minor property damages throughout the county.

## G.2.6 Wildfire

### ***LOCATION AND SPATIAL EXTENT***

The entire county is at risk to a wildfire occurrence. However, several factors such as drought conditions or high levels of fuel on the forest floor, may make a wildfire more likely. Furthermore, areas in the urban-wildland interface are particularly susceptible to fire hazard as populations abut formerly undeveloped areas. The Wildfire Ignition Density data shown in the figure below give an indication of historic location.

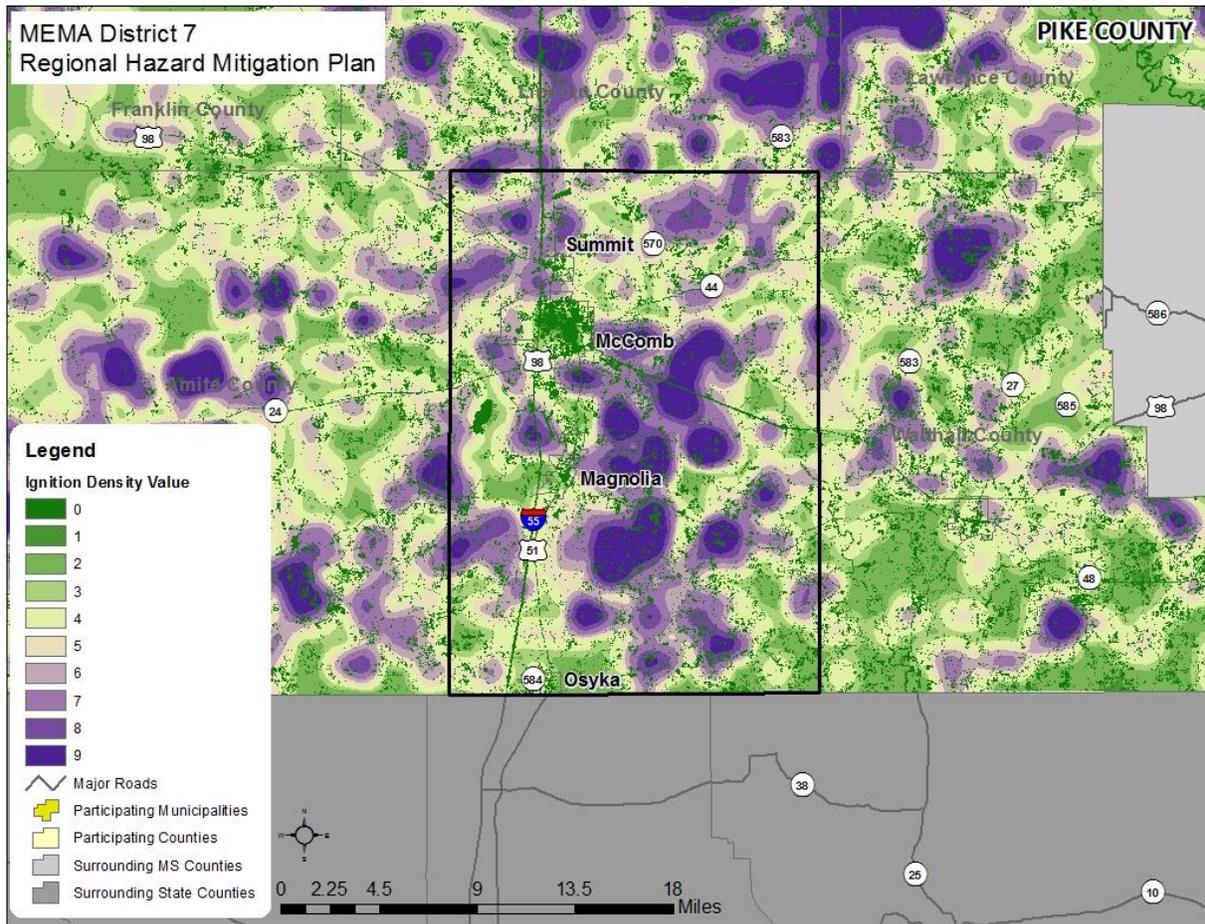
### ***HISTORICAL OCCURRENCES***

**Figure G.5** shows the Wildfire Ignition Density in Pike County based on data from the Southern Wildfire Risk Assessment. This data is based on historical fire ignitions and the likelihood of a wildfire igniting in an area. Occurrence is derived by modeling historic wildfire ignition locations to create an average ignition rate map. This is measured in the number of fires per year per 1,000 acres.<sup>8</sup>

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<sup>8</sup> Southern Wildfire Risk Assessment, 2014.

**FIGURE G.5: WILDFIRE IGNITION DENSITY IN PIKE COUNTY**



Source: Southern Wildfire Risk Assessment

Based on data from the Mississippi Forestry Commission from 2007 to 2016, Pike County experienced an average of 26.6 wildfires annually which burned a combined 262.6 acres per year. The data indicate that most of these fires were small to moderate in size, averaging about 9.9 acres per fire. **Table G.13** provides a summary of wildfire occurrences in Pike County and **Table G.14** lists the number of reported wildfire occurrences in the county between the years 2007 and 2016.

**TABLE G.13: SUMMARY TABLE OF ANNUAL WILDFIRE OCCURRENCES (2007-2016)\***

|   | Pike County |
|---|-------------|
| Average Number of Fires per year        | 26.6        |
| Average Number of Acres Burned per year | 262.6       |
| Average Number of Acres Burned per fire | 9.9         |

\*These values reflect averages over a 10-year period.

Source: Mississippi Forestry Commission

**TABLE G.14: HISTORICAL WILDFIRE OCCURRENCES IN PIKE COUNTY**

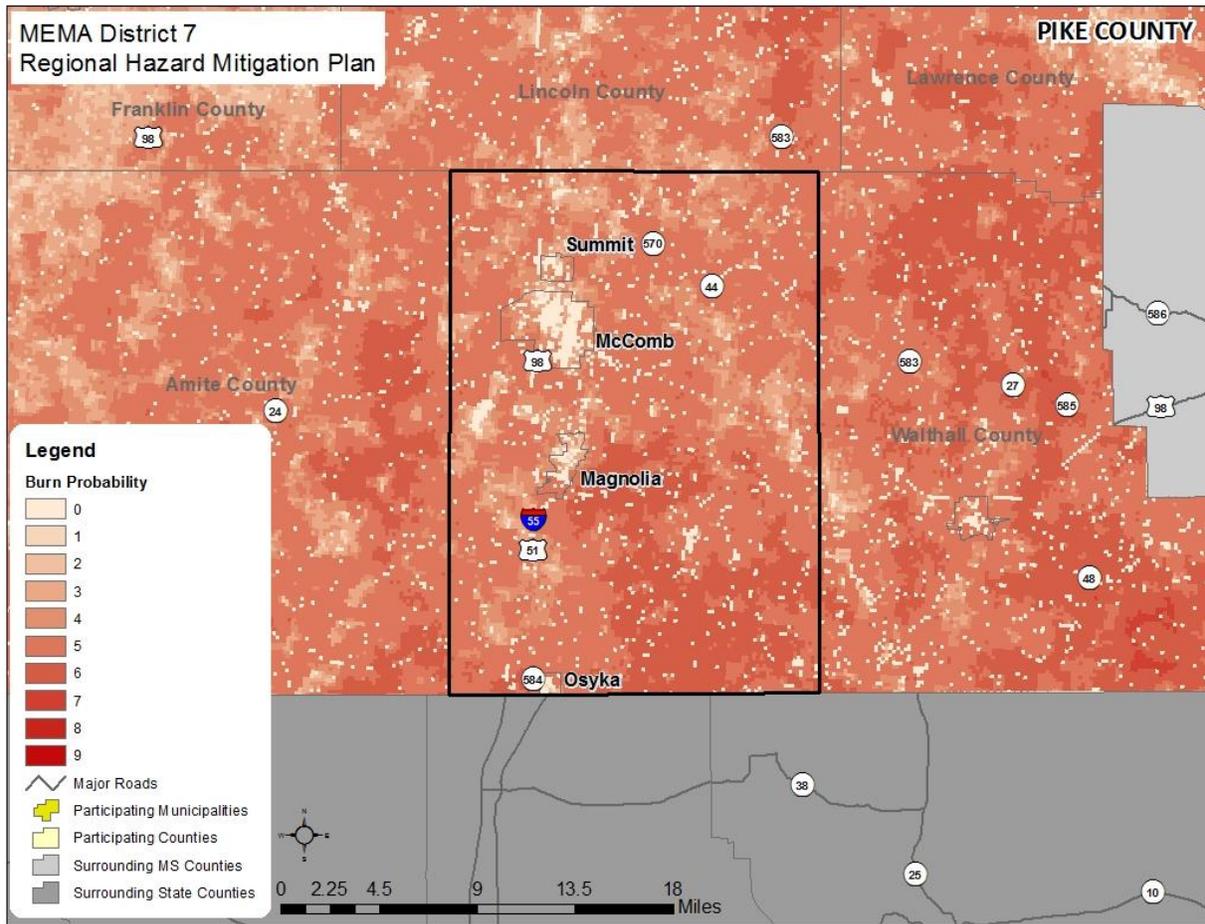
| Year                   | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|------------------------|------|------|------|------|------|------|------|------|------|------|
| <b>Pike County</b>     |      |      |      |      |      |      |      |      |      |      |
| Number of Fires        | 39   | 40   | 43   | 23   | 53   | 18   | 15   | 16   | 4    | 15   |
| Number of Acres Burned | 540  | 389  | 389  | 197  | 464  | 304  | 113  | 105  | 34   | 91   |

Source: Mississippi Forestry Commission

### **PROBABILITY OF FUTURE OCCURRENCES**

Wildfire events will be an ongoing occurrence in Pike County. **Figure G.6** shows that there is some probability a wildfire will occur throughout the county. However, the likelihood of wildfires increases during drought cycles and abnormally dry conditions. Fires are likely to stay small in size but could increase due to local climate and ground conditions. Dry, windy conditions with an accumulation of forest floor fuel (potentially due to ice storms or lack of fire) could create conditions for a large fire that spreads quickly. It should also be noted that some areas do vary somewhat in risk. For example, highly developed areas are less susceptible unless they are located near the urban-wildland boundary. The risk will also vary due to assets. Areas in the urban-wildland interface will have much more property at risk, resulting in increased vulnerability and need to mitigate compared to rural, mainly forested areas. The probability assigned to Pike County for future wildfire events is highly likely (100 percent annual probability).

**FIGURE G.6: BURN PROBABILITY IN PIKE COUNTY**



Source: Southern Wildfire Risk Assessment

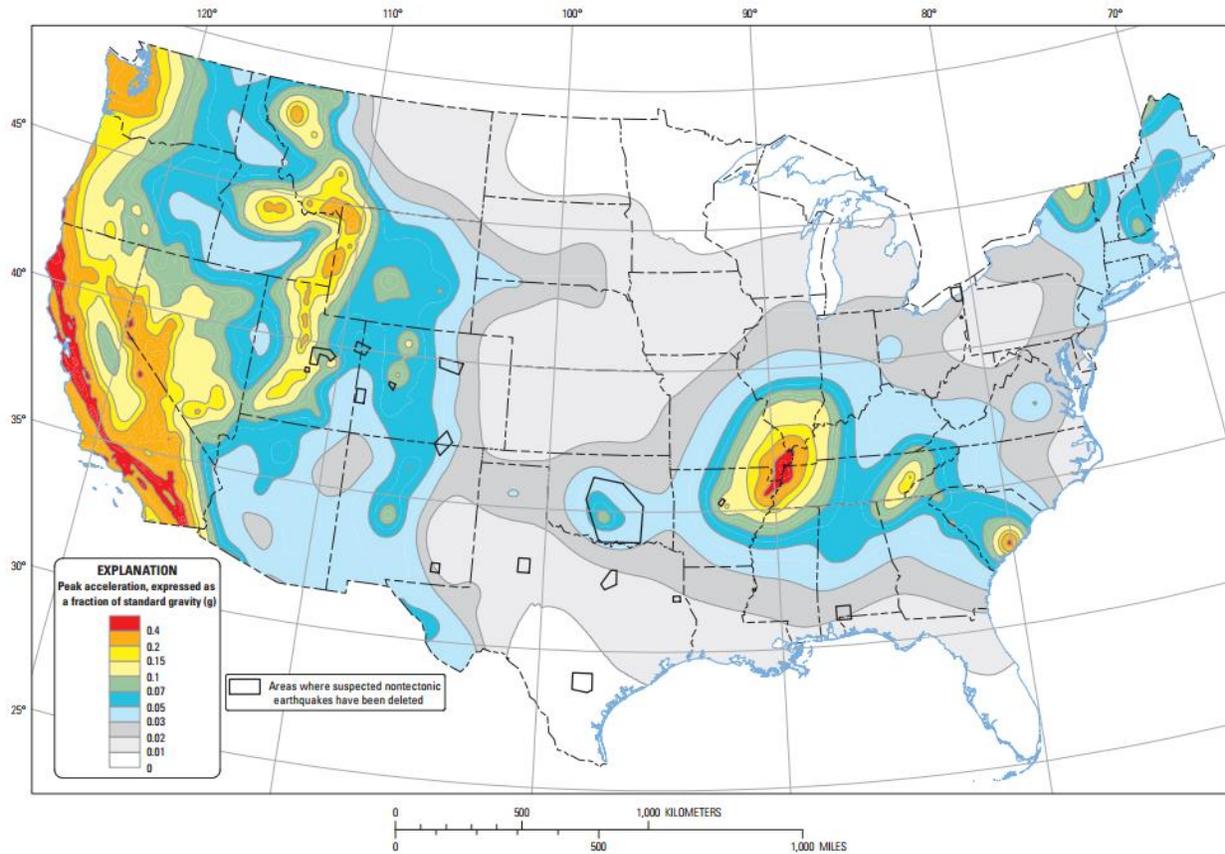
## ***GEOLOGIC HAZARDS***

### **G.2.7 Earthquake**

#### ***LOCATION AND SPATIAL EXTENT***

Figure G.7 shows the intensity level associated with Pike County, based on the national USGS map of peak acceleration with 10 percent probability of exceedance in 50 years. It is the probability that ground motion will reach a certain level during an earthquake. The data show peak horizontal ground acceleration (the fastest measured change in speed, for a particle at ground level that is moving horizontally due to an earthquake) with a 10 percent probability of exceedance in 50 years. The map was compiled by the U.S. Geological Survey (USGS) Geologic Hazards Team, which conducts global investigations of earthquake, geomagnetic, and landslide hazards. According to this map, Pike County lies within an approximate zone of level “0.01” to “0.03” ground acceleration. This indicates that the county exists within an area of low seismic risk.

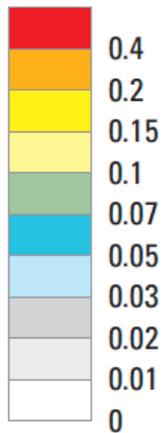
**FIGURE G.7: PEAK ACCELERATION WITH 10 PERCENT PROBABILITY OF EXCEEDANCE IN 50 YEARS**



**Ten-percent probability of exceedance in 50 years map of peak ground acceleration**

**EXPLANATION**

Peak acceleration, expressed as a fraction of standard gravity (g)



**Areas where suspected nontectonic earthquakes have been deleted**

Source: United States Geological Survey, 2014

The primary source of potential damage to Pike County from an earthquake is the New Madrid Seismic Zone (NMSZ). Historically, a series of earthquakes in 1811 and 1812 demonstrated that this fault zone can produce high magnitude seismic events, sometimes on the scale of a 7.5-8.0 on the Richter scale. The biggest challenge with earthquakes that occur in this area of seismic activity is predicting the recurrence of earthquakes emanating from this zone. Although the magnitude of earthquakes from the NMSZ can be large, they occur very irregularly and fairly infrequently. This makes it extremely difficult to project when they will occur.

It should also be noted that the State of Mississippi Hazard Mitigation Plan identifies certain areas of concern for liquefaction and lists the counties and corresponding zones within those counties that have the highest liquefaction potential. Pike County does not have any identified liquefaction potential risk.

### **HISTORICAL OCCURRENCES**

No earthquakes are known to have affected Pike County since 1638. **Table G.15** provides a summary of earthquake events reported by the National Centers for Environmental Information (formerly National Geophysical Data Center) between 1638 and 1985, and **Figure G.8** presents a map showing earthquakes whose epicenters have occurred near the county between 1985 and 2015 (no earthquakes occurred within the county's boundaries during this period). **Table G.16** presents a detailed occurrence of each event including the date, distance for the epicenter, magnitude and Modified Mercalli Intensity (if known).<sup>9</sup>

**TABLE G.15: SUMMARY OF SEISMIC ACTIVITY IN PIKE COUNTY**

| Location                 | Number of Occurrences | Greatest MMI Reported | Greatest Richter Scale Reported |
|--------------------------|-----------------------|-----------------------|---------------------------------|
| Magnolia                 | 0                     | --                    | --                              |
| McComb                   | 0                     | --                    | --                              |
| Osyka                    | 0                     | --                    | --                              |
| Summit                   | 0                     | --                    | --                              |
| Unincorporated Area      | 0                     | --                    | --                              |
| <b>PIKE COUNTY TOTAL</b> | <b>0</b>              | <b>--</b>             | <b>--</b>                       |

Source: National Centers for Environmental Information

**TABLE G.16: SIGNIFICANT SEISMIC EVENTS IN PIKE COUNTY (1638 -1985)**

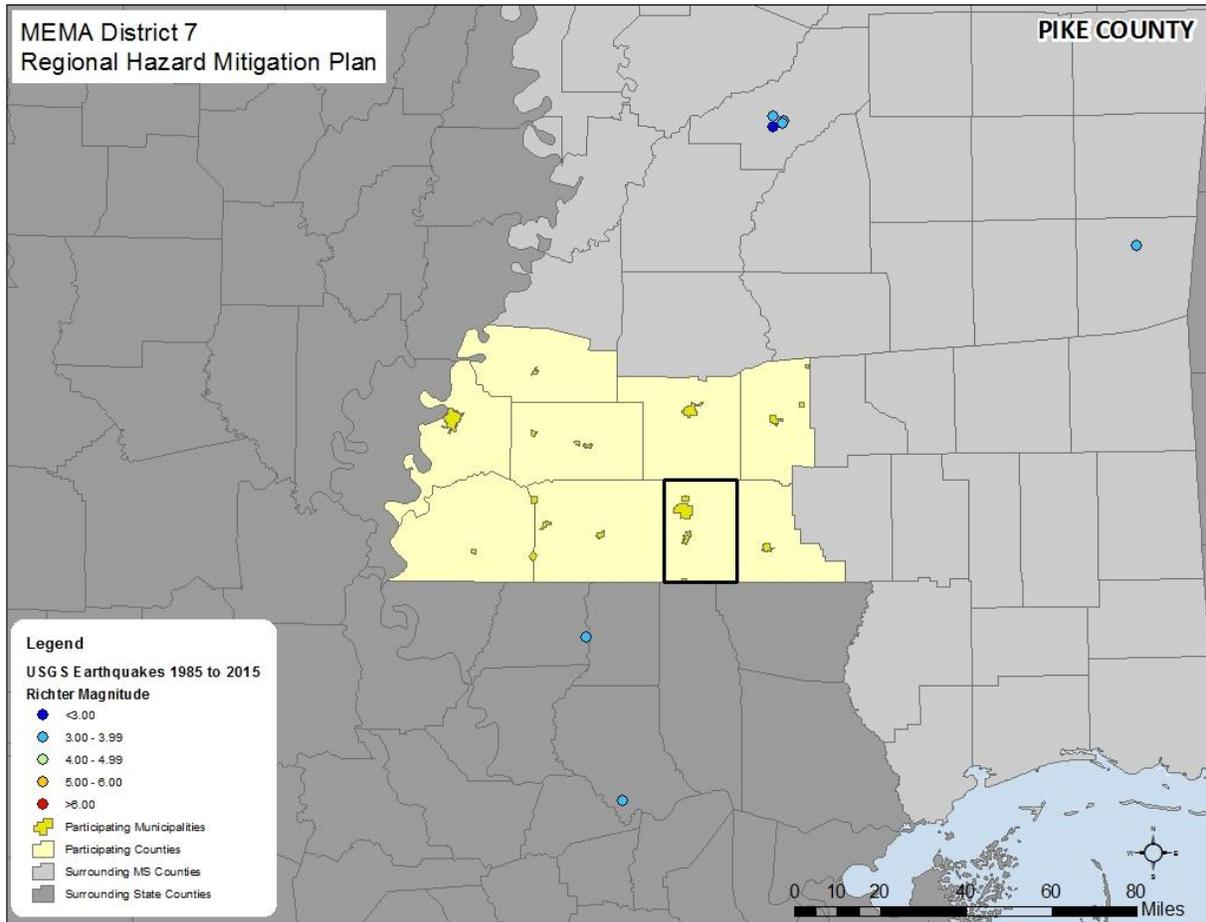
| Location        | Date | Epicentral Distance | Magnitude | MMI |
|-----------------|------|---------------------|-----------|-----|
| <b>Magnolia</b> |      |                     |           |     |
| None reported   | --   | --                  | --        | --  |
| <b>McComb</b>   |      |                     |           |     |
| None reported   | --   | --                  | --        | --  |
| <b>Osyka</b>    |      |                     |           |     |
| None reported   | --   | --                  | --        | --  |
| <b>Summit</b>   |      |                     |           |     |
| None reported   | --   | --                  | --        | --  |

<sup>9</sup> Due to reporting mechanisms, not all earthquakes events were recorded during this time. Furthermore, some are missing data, such as the epicenter location, due to a lack of widely used technology. In these instances, a value of "unknown" is reported.

| Location                   | Date | Epicentral Distance | Magnitude | MMI |
|----------------------------|------|---------------------|-----------|-----|
| <b>Unincorporated Area</b> |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |

Source: National Centers for Environmental Information

**FIGURE G.8: HISTORIC EARTHQUAKES WITH EPICENTERS NEAR PIKE COUNTY (1985-2015)**



Source: United States Geological Survey

**PROBABILITY OF FUTURE OCCURRENCES**

The probability of significant, damaging earthquake events affecting Pike County is unlikely. However, it is certainly possible that future earthquakes resulting in light or moderate perceived shaking and damages will affect the county much more frequently. The annual probability level for the county is estimated to be less than 1 percent (unlikely).

## ***WIND-RELATED HAZARDS***

### **G.2.8 Extreme Heat**

#### ***LOCATION AND SPATIAL EXTENT***

Heat waves typically impact a large area and cannot be confined to any geographic or political boundaries. Therefore, the entire county is considered to be equally susceptible to extreme heat.

#### ***HISTORICAL OCCURRENCES***

The National Climatic Data Center was used to determine historical heat wave occurrences in the county. No events specific to Pike County were reported, however, several events were reported elsewhere in the region. Similar events and impacts can be expected in Pike County.

**Summer of 2000 Heat Wave** – Hot temperatures persisted from July to September across the South and Plains. Known as the Summer of 2000 Heat Wave, high temperatures commonly peaked over 100 degrees.

**August 2005** – A "HOT" stretch of weather occurred during the middle to later part of August 2005. This "Heat Wave" covered a large portion of the south and lasted for a period of about 10 days. Each of these days had high temperatures consistently between 95 and 100 degrees, with 1 or 2 of these days actually reaching 100 degrees or more. Additionally, overnight lows remained warm with lower and middle 70s recorded. This is the first time since August 2000 where 100 degree temperatures were reached in this area as well as having such an extended period of "HOT" weather.

**July 2006** – A small "heat wave" gripped the region during the middle of July with high temperature ranging from the upper 90s to around 100 degrees for five days with overnight lows only reaching the middle 70s. The hottest temperatures during this period occurred from the Mississippi Delta, across northern Mississippi and then down to the Jackson Metro and toward Meridian. This area peaked between 100 and 102 degrees for at least two days during the hot five day stretch.

**August 2007** – During the first half of August, a heat wave took hold of the region and brought some of the warmest temperatures since the summer of 2000. This heat wave began around August 5th and lasted until the 16th. Between August 10th and 15th, the entire area reached 100 degrees or higher. Twenty-three record highs were also set during this time. As the temperature soared each day, high relative humidities resulted in heat index values between 105 and 112 degrees.

**August 2010** – A four day stretch of extreme temperatures occurred across the region to start off the month of August. High pressure was firmly entrenched across the southeast and allowed temperatures to soar into the triple digits across much of the region. Across the NWS Jackson, MS forecast area, 19 record highs were set between August 1st and 4th. On August 2nd, the 2nd warmest average temperature was recorded. The low was 78 and the high 105, this resulted in an average temperature of 91.5 degrees. Additionally, relatively high humidity levels made conditions even more oppressive, with heat index readings surpassing 110 degrees in many areas. This extreme heat resulted in 3 fatalities across the forecast area.

**PROBABILITY OF FUTURE OCCURRENCES**

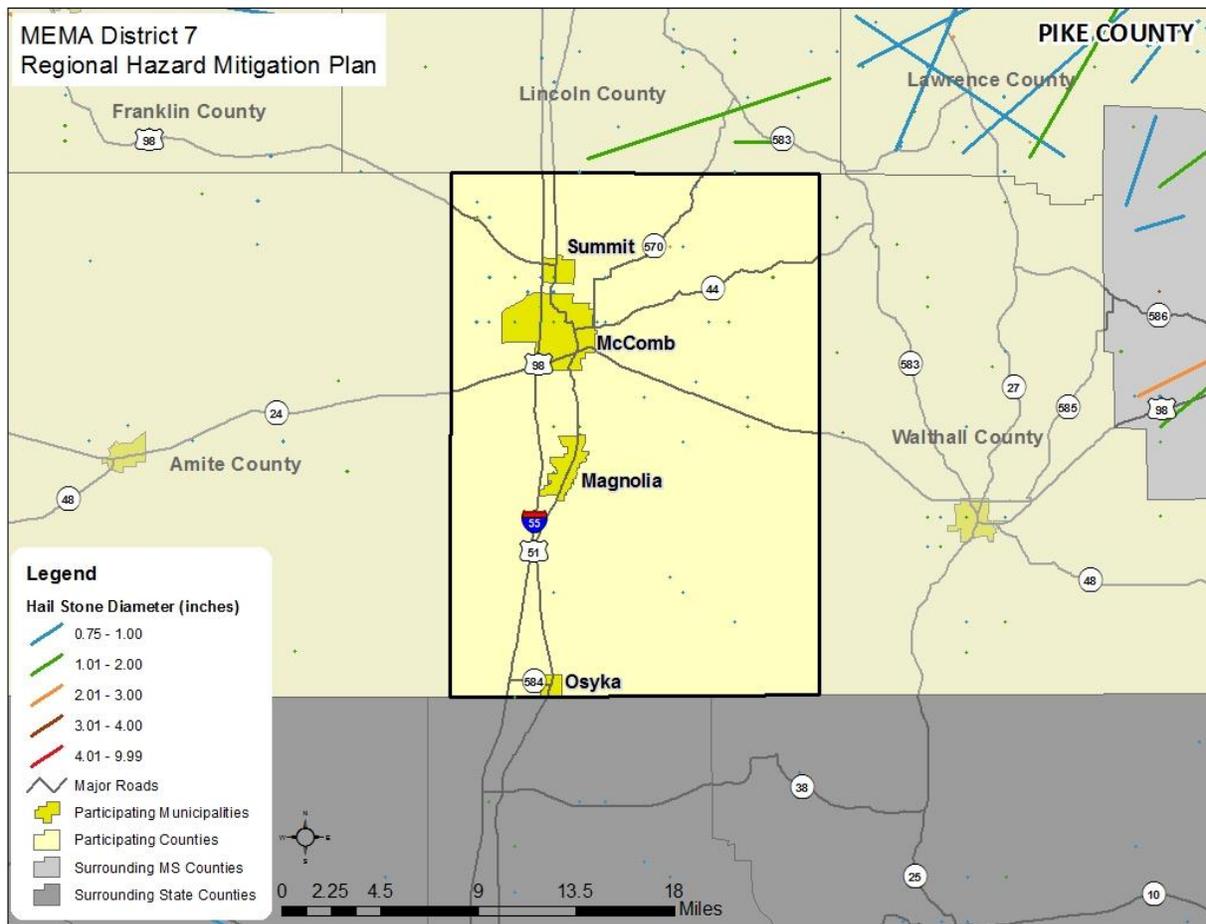
Based on historical occurrence information, it is assumed that all of Pike County has a probability level of likely (between 10 and 100 percent annual probability) for future heat wave events.

**G.2.9 Hailstorm**

**LOCATION AND SPATIAL EXTENT**

Hailstorms frequently accompany thunderstorms, so their locations and spatial extents coincide. It is assumed that Pike County is uniformly exposed to severe thunderstorms; therefore, all areas of the county are equally exposed to hail which may be produced by such storms. With that in mind, **Figure G.9** shows the location of hail events that have impacted the county between 1955 and 2015.

**FIGURE G.9: HAILSTORM TRACKS IN PIKE COUNTY**



Source: National Weather Service Storm Prediction Center

**HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, 83 recorded hailstorm events have affected Pike County since 1963.<sup>10</sup> **Table G.17** is a summary of the hail events in Pike County. **Table G.18** provides detailed information about each event that occurred in the county. In all, hail occurrences resulted in approximately \$85,000 (2017 dollars) in property damages.<sup>11</sup> Hail ranged in diameter from 0.75 inches to 2.75 inches. It should be noted that hail is notorious for causing substantial damage to cars, roofs, and other areas of the built environment that may not be reported to the National Climatic Data Center. Therefore, it is likely that damages are greater than the reported value.

**TABLE G.17: SUMMARY OF HAIL OCCURRENCES IN PIKE COUNTY**

| Location                 | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|--------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Magnolia                 | 7                     | 0/0             | \$85,141               | \$3,548                    |
| McComb                   | 21                    | 0/0             | \$0                    | \$0                        |
| Osyka                    | 4                     | 0/0             | \$0                    | \$0                        |
| Summit                   | 11                    | 0/0             | \$0                    | \$0                        |
| Unincorporated Area      | 40                    | 0/0             | \$0                    | \$0                        |
| <b>PIKE COUNTY TOTAL</b> | <b>83</b>             | <b>0/0</b>      | <b>\$85,141</b>        | <b>\$3,548</b>             |

Source: National Climatic Data Center

**TABLE G.18: HISTORICAL HAIL OCCURRENCES IN PIKE COUNTY**

| Location        | Date      | Magnitude | Deaths/Injuries | Property Damage* |
|-----------------|-----------|-----------|-----------------|------------------|
| <b>Magnolia</b> |           |           |                 |                  |
| Magnolia        | 3/25/1993 | 1.75 in.  | 0/0             | \$85,141         |
| MAGNOLIA        | 1/27/1997 | 1.75 in.  | 0/0             | \$0              |
| MAGNOLIA        | 1/27/1997 | 0.75 in.  | 0/0             | \$0              |
| MAGNOLIA        | 1/27/1997 | 1.75 in.  | 0/0             | \$0              |
| MAGNOLIA        | 4/17/1998 | 1.75 in.  | 0/0             | \$0              |
| MAGNOLIA        | 3/31/2005 | 1.75 in.  | 0/0             | \$0              |
| MAGNOLIA        | 3/29/2011 | 1.00 in.  | 0/0             | \$0              |
| <b>McComb</b>   |           |           |                 |                  |
| MC COMB         | 1/26/1996 | 1.00 in.  | 0/0             | \$0              |
| MC COMB         | 4/14/1996 | 0.75 in.  | 0/0             | \$0              |
| MC COMB         | 4/28/1998 | 0.88 in.  | 0/0             | \$0              |
| MC COMB         | 3/10/2000 | 1.00 in.  | 0/0             | \$0              |
| MC COMB         | 4/2/2000  | 1.00 in.  | 0/0             | \$0              |
| MC COMB         | 4/23/2000 | 0.75 in.  | 0/0             | \$0              |
| MC COMB         | 3/12/2001 | 0.75 in.  | 0/0             | \$0              |
| MC COMB         | 7/7/2002  | 0.75 in.  | 0/0             | \$0              |

<sup>10</sup> These hail events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017. It is likely that additional hail events have affected Pike County. As additional local data becomes available, this hazard profile will be amended.

<sup>11</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**ANNEX G: PIKE COUNTY**

| Location                   | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-----------|-----------------|------------------|
| MC COMB                    | 5/11/2003  | 0.88 in.  | 0/0             | \$0              |
| MC COMB                    | 5/1/2004   | 0.75 in.  | 0/0             | \$0              |
| MC COMB                    | 3/31/2005  | 1.75 in.  | 0/0             | \$0              |
| MC COMB                    | 4/22/2005  | 0.88 in.  | 0/0             | \$0              |
| MC COMB                    | 4/18/2008  | 0.88 in.  | 0/0             | \$0              |
| MC COMB                    | 12/9/2008  | 0.75 in.  | 0/0             | \$0              |
| MC COMB                    | 3/27/2009  | 1.00 in.  | 0/0             | \$0              |
| MC COMB                    | 4/2/2009   | 1.75 in.  | 0/0             | \$0              |
| MC COMB                    | 2/21/2010  | 1.00 in.  | 0/0             | \$0              |
| MC COMB                    | 4/15/2011  | 1.00 in.  | 0/0             | \$0              |
| MC COMB                    | 4/15/2011  | 1.75 in.  | 0/0             | \$0              |
| MC COMB                    | 4/15/2011  | 2.50 in.  | 0/0             | \$0              |
| MC COMB                    | 3/18/2013  | 1.75 in.  | 0/0             | \$0              |
| <b>Osyka</b>               |            |           |                 |                  |
| Osyka                      | 5/28/1995  | 0.75 in.  | 0/0             | \$0              |
| OSYKA                      | 4/25/2003  | 1.75 in.  | 0/0             | \$0              |
| OSYKA                      | 5/8/2006   | 0.75 in.  | 0/0             | \$0              |
| OSYKA                      | 11/21/2007 | 1.75 in.  | 0/0             | \$0              |
| <b>Summit</b>              |            |           |                 |                  |
| Summit                     | 4/15/1994  | 1.00 in.  | 0/0             | \$0              |
| SUMMIT                     | 4/14/1996  | 0.75 in.  | 0/0             | \$0              |
| SUMMIT                     | 5/28/1998  | 0.75 in.  | 0/0             | \$0              |
| SUMMIT                     | 5/28/1998  | 0.75 in.  | 0/0             | \$0              |
| SUMMIT                     | 8/9/1999   | 0.75 in.  | 0/0             | \$0              |
| SUMMIT                     | 4/15/2001  | 1.00 in.  | 0/0             | \$0              |
| SUMMIT                     | 8/2/2002   | 0.88 in.  | 0/0             | \$0              |
| SUMMIT                     | 5/13/2003  | 1.00 in.  | 0/0             | \$0              |
| SUMMIT                     | 4/22/2005  | 0.75 in.  | 0/0             | \$0              |
| SUMMIT                     | 4/2/2009   | 1.75 in.  | 0/0             | \$0              |
| SUMMIT                     | 4/15/2011  | 1.75 in.  | 0/0             | \$0              |
| <b>Unincorporated Area</b> |            |           |                 |                  |
| PIKE CO.                   | 4/12/1963  | 1.50 in.  | 0/0             | \$0              |
| PIKE CO.                   | 4/13/1966  | 1.75 in.  | 0/0             | \$0              |
| PIKE CO.                   | 2/6/1974   | 0.75 in.  | 0/0             | \$0              |
| PIKE CO.                   | 7/30/1974  | 0.75 in.  | 0/0             | \$0              |
| PIKE CO.                   | 5/7/1975   | 1.75 in.  | 0/0             | \$0              |
| PIKE CO.                   | 5/14/1976  | 1.75 in.  | 0/0             | \$0              |
| PIKE CO.                   | 5/24/1976  | 1.75 in.  | 0/0             | \$0              |
| PIKE CO.                   | 3/29/1980  | 1.75 in.  | 0/0             | \$0              |
| PIKE CO.                   | 8/10/1980  | 2.75 in.  | 0/0             | \$0              |
| PIKE CO.                   | 3/22/1981  | 1.75 in.  | 0/0             | \$0              |
| PIKE CO.                   | 3/22/1981  | 1.75 in.  | 0/0             | \$0              |
| PIKE CO.                   | 6/19/1981  | 1.75 in.  | 0/0             | \$0              |
| PIKE CO.                   | 6/4/1983   | 1.50 in.  | 0/0             | \$0              |
| PIKE CO.                   | 4/8/1984   | 1.75 in.  | 0/0             | \$0              |
| PIKE CO.                   | 4/8/1984   | 1.75 in.  | 0/0             | \$0              |

| Location                | Date      | Magnitude | Deaths/Injuries | Property Damage* |
|-------------------------|-----------|-----------|-----------------|------------------|
| PIKE CO.                | 4/14/1984 | 1.75 in.  | 0/0             | \$0              |
| PIKE CO.                | 3/12/1986 | 1.00 in.  | 0/0             | \$0              |
| PIKE CO.                | 3/15/1986 | 0.75 in.  | 0/0             | \$0              |
| PIKE CO.                | 4/12/1986 | 0.75 in.  | 0/0             | \$0              |
| PIKE CO.                | 8/2/1986  | 1.00 in.  | 0/0             | \$0              |
| PIKE CO.                | 5/24/1988 | 0.75 in.  | 0/0             | \$0              |
| PIKE CO.                | 6/21/1988 | 1.75 in.  | 0/0             | \$0              |
| PIKE CO.                | 6/21/1988 | 0.75 in.  | 0/0             | \$0              |
| PIKE CO.                | 5/15/1989 | 0.75 in.  | 0/0             | \$0              |
| PIKE CO.                | 5/5/1991  | 0.80 in.  | 0/0             | \$0              |
| Chatawa                 | 3/7/1995  | 0.75 in.  | 0/0             | \$0              |
| Chatawa                 | 4/22/1995 | 0.75 in.  | 0/0             | \$0              |
| FERNWOOD                | 1/26/1996 | 1.25 in.  | 0/0             | \$0              |
| PROGRESS                | 3/18/1996 | 1.75 in.  | 0/0             | \$0              |
| PROGRESS                | 3/2/1999  | 0.75 in.  | 0/0             | \$0              |
| PROGRESS                | 6/10/1999 | 0.88 in.  | 0/0             | \$0              |
| HOLMESVILLE             | 3/26/2002 | 1.00 in.  | 0/0             | \$0              |
| PRICEDALE               | 5/14/2007 | 1.75 in.  | 0/0             | \$0              |
| CHATAWA                 | 5/15/2007 | 0.75 in.  | 0/0             | \$0              |
| OAKLAND                 | 2/21/2010 | 0.75 in.  | 0/0             | \$0              |
| OAKLAND                 | 2/21/2010 | 1.00 in.  | 0/0             | \$0              |
| FELDER'S CAMP<br>GROUND | 2/21/2010 | 1.00 in.  | 0/0             | \$0              |
| HOLMESVILLE             | 3/28/2014 | 1.00 in.  | 0/0             | \$0              |
| EMERALD                 | 4/15/2015 | 1.00 in.  | 0/0             | \$0              |
| JENNINGS                | 4/15/2015 | 1.00 in.  | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

### **PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that the probability of future hail occurrences is highly likely (100 percent annual probability). Since hail is an atmospheric hazard, it is assumed that Pike County has equal exposure to this hazard. It can be expected that future hail events will continue to cause minor damage to property and vehicles throughout the county.

## **G.2.10 Hurricane and Tropical Storm**

### **LOCATION AND SPATIAL EXTENT**

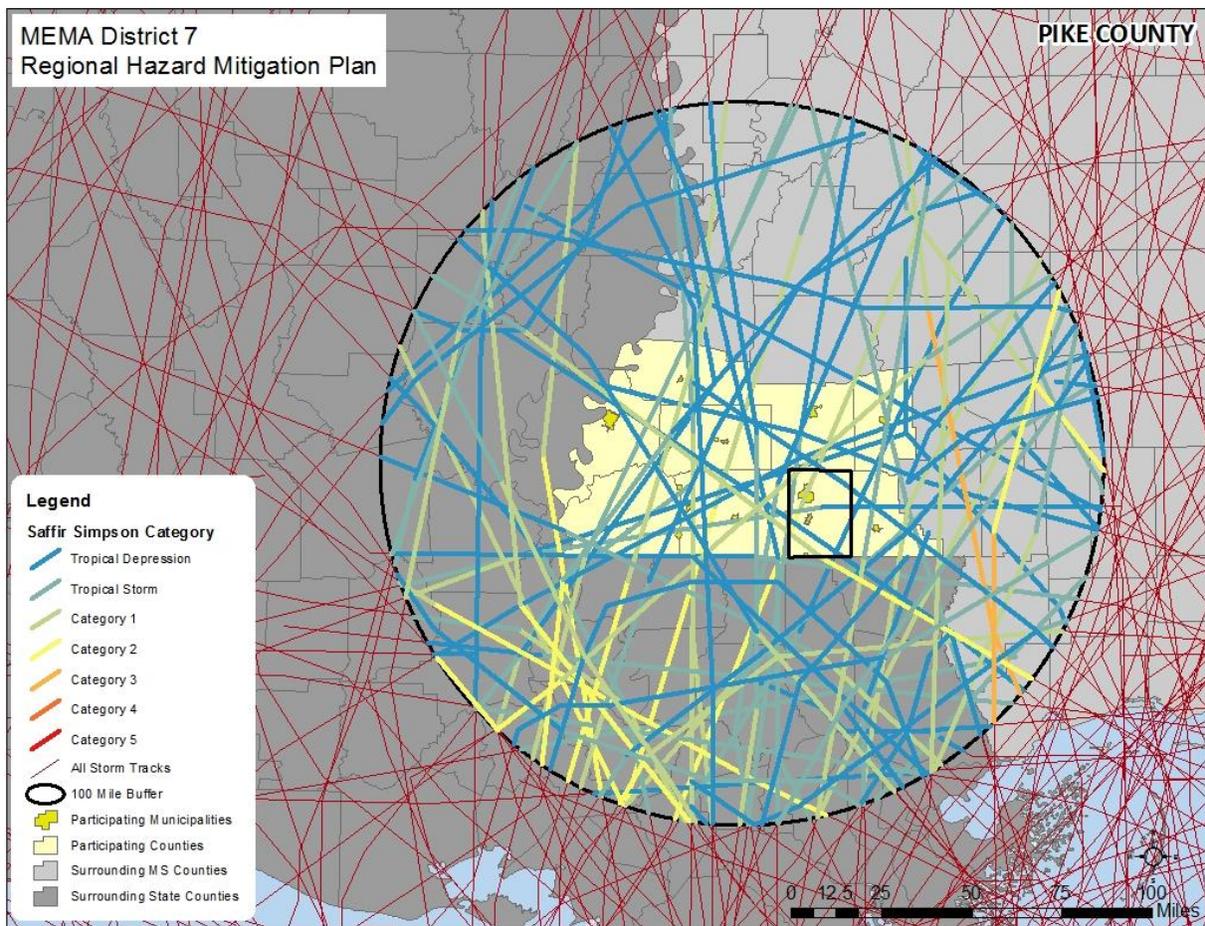
Hurricanes and tropical storms threaten the entire Atlantic and Gulf seaboard of the United States. While coastal areas are most directly exposed to the brunt of landfalling storms, their impact is often felt hundreds of miles inland and they can affect Pike County. All areas in Pike County are equally susceptible to hurricane and tropical storms.

**HISTORICAL OCCURRENCES**

According to the National Hurricane Center’s historical storm track records, 86 hurricane or tropical storm/depression tracks have passed within 100 miles of the MEMA District 7 Region since 1854.<sup>12</sup> This includes: 35 hurricanes, 21 tropical storms, and 30 tropical depressions.

A total of 61 tracks passed directly through the region as shown in **Figure G.10**. **Table G.19** provides the date of occurrence, name (if applicable), maximum wind speed (as recorded within 100 miles of the MEMA District 7 Region) and category of the storm based on the Saffir-Simpson Scale for each event.

**FIGURE G.10: HISTORICAL HURRICANE STORM TRACKS WITHIN 100 MILES OF THE MEMA DISTRICT 7 REGION**



Source: National Oceanic and Atmospheric Administration; National Hurricane Center

<sup>12</sup> These storm track statistics include tropical depressions, tropical storms, and hurricanes. Lesser events may still cause significant local impact in terms of rainfall and high winds.

**TABLE G.19: HISTORICAL STORM TRACKS WITHIN 100 MILES OF THE MEMA 7 DISTRICT REGION (1850–2016)**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/21/1854          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/5/1855           | NOT NAMED  | Not Available              | Tropical Depression |
| 8/11/1856          | UNNAMED    | 85.03                      | Category 2          |
| 10/2/1860          | UNNAMED    | 89.03                      | Category 2          |
| 8/18/1861          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/16/1862          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/30/1863          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/5/1869           | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/12/1872          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/18/1875          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/1/1879           | UNNAMED    | 89.03                      | Category 2          |
| 10/7/1879          | UNNAMED    | 58.6                       | Tropical Storm      |
| 10/7/1879          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/3/1881           | NOT NAMED  | Not Available              | Tropical Depression |
| 6/15/1886          | UNNAMED    | 69.67                      | Category 1          |
| 8/20/1888          | UNNAMED    | 81.90                      | Category 1          |
| 8/27/1890          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/7/1893           | UNNAMED    | 78.78                      | Category 1          |
| 8/8/1894           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/20/1898          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/29/1905          | UNNAMED    | 42.69                      | Tropical Storm      |
| 10/9/1905          | UNNAMED    | 42.69                      | Tropical Storm      |
| 8/2/1908           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/21/1909          | UNNAMED    | 92.89                      | Category 2          |
| 8/12/1911          | UNNAMED    | 50.35                      | Tropical Storm      |
| 6/13/1912          | UNNAMED    | 64.34                      | Category 1          |
| 7/17/1912          | UNNAMED    | 0.87                       | Tropical Depression |
| 9/18/1914          | UNNAMED    | 32.60                      | Tropical Depression |
| 9/29/1915          | UNNAMED    | 95.53                      | Category 2          |
| 7/6/1916           | UNNAMED    | 85.03                      | Category 2          |
| 9/22/1920          | UNNAMED    | 87.29                      | Category 2          |
| 10/16/1923         | UNNAMED    | 78.78                      | Category 1          |
| 8/26/1926          | UNNAMED    | 78.78                      | Category 1          |
| 9/21/1926          | UNNAMED    | 58.60                      | Tropical Storm      |
| 7/15/1931          | UNNAMED    | 50.35                      | Tropical Storm      |
| 9/19/1932          | UNNAMED    | 64.34                      | Category 1          |
| 10/16/1932         | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/26/1933          | UNNAMED    | 17.56                      | Tropical Depression |
| 6/16/1934          | UNNAMED    | 87.29                      | Category 2          |
| 7/27/1936          | UNNAMED    | 42.69                      | Tropical Storm      |
| 8/23/1936          | UNNAMED    | 4.99                       | Tropical Depression |
| 10/3/1937          | UNNAMED    | 32.6                       | Tropical Depression |
| 9/24/1940          | UNNAMED    | 32.6                       | Tropical Depression |
| 9/6/1945           | UNNAMED    | 17.56                      | Tropical Depression |

**ANNEX G: PIKE COUNTY**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/8/1947           | UNNAMED    | 32.6                       | Tropical Depression |
| 9/19/1947          | UNNAMED    | 91.63                      | Category 2          |
| 9/4/1948           | UNNAMED    | 69.67                      | Category 1          |
| 9/4/1949           | UNNAMED    | 58.6                       | Tropical Storm      |
| 8/1/1955           | BRENDA     | 64.34                      | Category 1          |
| 8/27/1955          | UNNAMED    | 50.35                      | Tropical Storm      |
| 6/13/1956          | UNNAMED    | 58.60                      | Tropical Storm      |
| 9/18/1957          | ESTHER     | 64.34                      | Category 1          |
| 5/31/1959          | ARLENE     | 64.34                      | Category 1          |
| 10/4/1964          | HILDA      | 91.63                      | Category 2          |
| 9/10/1965          | BETSY      | 89.03                      | Category 2          |
| 8/18/1969          | CAMILLE    | 99.88                      | Category 3          |
| 8/9/1971           | UNNAMED    | 4.99                       | Tropical Depression |
| 9/1/1971           | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1971           | FERN       | 4.99                       | Tropical Depression |
| 9/16/1971          | EDITH      | 87.29                      | Category 2          |
| 7/29/1975          | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1977           | BABE       | 58.60                      | Tropical Storm      |
| 7/11/1979          | BOB        | 73.83                      | Category 1          |
| 7/20/1980          | UNNAMED    | 0.87                       | Tropical Depression |
| 8/15/1985          | DANNY      | 78.78                      | Category 1          |
| 9/2/1985           | ELENA      | 92.89                      | Category 2          |
| 10/29/1985         | JUAN       | 73.83                      | Category 1          |
| 8/11/1987          | UNNAMED    | 4.99                       | Tropical Depression |
| 8/9/1988           | BERYL      | 50.35                      | Tropical Storm      |
| 9/10/1988          | FLORENCE   | 69.67                      | Category 1          |
| 8/26/1992          | ANDREW     | 85.03                      | Category 2          |
| 9/20/1998          | HERMINE    | 32.60                      | Tropical Depression |
| 6/11/2001          | ALLISON    | 42.69                      | Tropical Storm      |
| 8/5/2002           | BERTHA     | 32.60                      | Tropical Depression |
| 9/26/2002          | ISIDORE    | 64.34                      | Category 1          |
| 10/3/2002          | LILI       | 69.67                      | Category 1          |
| 6/30/2003          | BILL       | 58.60                      | Tropical Storm      |
| 10/10/2004         | MATTHEW    | 17.56                      | Tropical Depression |
| 8/29/2005          | KATRINA    | 94.63                      | Category 3          |
| 9/13/2007          | HUMBERTO   | 32.60                      | Tropical Depression |
| 8/24/2008          | FAY        | 17.56                      | Tropical Depression |
| 9/1/2008           | GUSTAV     | 87.29                      | Category 2          |
| 7/25/2010          | BONNIE     | 0.87                       | Tropical Depression |
| 8/17/2010          | FIVE       | 4.99                       | Tropical Depression |
| 9/4/2011           | LEE        | 32.60                      | Tropical Depression |
| 8/29/2012          | ISAAC      | 69.67                      | Category 1          |

Source: National Hurricane Center

Federal records indicate that eight disaster declarations were made in 1965 (Hurricane Betsy), 1969 (Hurricane Camille), 1998 (Hurricane Georges), 2002 (Tropical Storm Isidore), 2004 (Hurricane Ivan), 2005

(Hurricane Katrina), 2008 (Hurricane Gustav), and 2012 (Hurricane Isaac) in Pike County.<sup>13</sup> Hurricane and tropical storm events can cause substantial damage in the area due to high winds and flooding.

The National Climatic Data Center also reported six hurricane or tropical storm events in Pike County since 2002.<sup>14</sup> These storms are listed in **Table G.20** and are generally representative of storms with the greatest impact on the county over that time period.

**TABLE G.20: HISTORICAL HURRICANE/TROPICAL STORM OCCURRENCES IN PIKE COUNTY**

| Date of Occurrence | Storm Name          | Deaths/Injuries | Property Damage (2017) <sup>15</sup> |
|--------------------|---------------------|-----------------|--------------------------------------|
| 10/2/2002          | Hurricane Lili      | 0/0             | \$2,252,372                          |
| 8/28/2005          | Hurricane Katrina   | 0/0             | \$366,038,982                        |
| 8/24/2008          | Tropical Storm Faye | 0/0             | \$0                                  |
| 9/1/2008           | Hurricane Gustav    | 0/0             | \$558,828                            |
| 9/2/2011           | Tropical Storm Lee  | 0/0             | \$5,389                              |
| 8/28/2012          | Hurricane Isaac     | 0/0             | \$53,070                             |

Source: National Climatic Data Center

Flooding and high winds from hurricanes and tropical storms can cause damage throughout the county. Anecdotes are available from NCDC for the major storms that have impacted the county as found below:

**Hurricane Katrina – August 29, 2005**

The damage from Hurricane Katrina was devastating and widespread. Damage occurred across all of the Jackson forecast area which includes 9 parishes in Northeast Louisiana, 2 counties in Southeast Arkansas and about 2/3 of Central and Southern Mississippi. As widespread as the damage was, the more concentrated and most significant damage occurred across Southeast and East-Central Mississippi. For other areas, especially those west of Natchez to Yazoo City to Grenada line, damage to trees and power lines was significant and scattered across the landscape. As you move toward Central Mississippi and along Interstate 55 the damage and impacts increase. This portion of the state sustained widespread damage to trees and power lines.

**Hurricane Gustav – September 1, 2008**

As the center of Gustav crossed much of southern Louisiana, tropical storm force winds extended into southern Mississippi and portions of east central Louisiana. Sustained winds were between 35 and 45 mph with higher gusts between 70 and 100 mph occurred. Tree and power line damage was extensive across these areas which resulted in widespread power outages, some of which lasted for 3 to 5 days. As Gustav slowed across central Louisiana, the outer rainbands continued to rotate across much of southern and central Mississippi. This kept those portions of Mississippi in the region which was favorable for tornadoes. Over 3 days, 26 tornadoes were confirmed, all of which were in the EF0 to EF1 range.

<sup>13</sup> A complete listing of historical disaster declarations can be found in Section 4: Hazard Identification.

<sup>14</sup> These hurricane events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported.

<sup>15</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**Hurricane Isaac – August 29, 2012**

Isaac moved very slowly to the north and northwest over the course of August 29th, which made for prolonged impacts. Forward motion of about 5 mph lead to tremendous flooding issues for both Louisiana and portions of Mississippi south of I-20. Around noon on August 29th, Isaac was downgraded to a Tropical Storm, but this was not much relief to the many residents who were being inundated with rain and wind. The worst of the wind was felt generally along and south of an axis from Marion County to Adams County. Numerous trees were down in Adams County, leaving many without power for several days. Eighty percent of the roads were blocked in Franklin County due to downed trees.

**PROBABILITY OF FUTURE OCCURRENCES**

Given the inland location of the county, Pike County will not be susceptible to many of the sub-hazards that are often associated with hurricanes and tropical storms such as storm surge. Although the probability of experiencing major impacts is somewhat less than coastal areas because of this, hurricanes and tropical storms remain a real threat to Pike County due to induced events like flooding and high wind. Based on historical evidence, the probability level of future occurrence is likely (between 10 and 100 percent annual probability). Given the regional nature of the hazard, all areas in the county are equally exposed to this hazard. However, when the county is impacted, the damage could be significant, threatening lives and property throughout the planning area.

**HURRICANE EVACUATIONS**

As discussed above, the MEMA District 7 Region has been directly impacted by a number of hurricane and tropical storm events historically. However, it should be noted that the region is also susceptible to indirect effects from hurricanes and tropical storms, particularly in the form of evacuations from coastal counties. The counties within MEMA District 7 are located far enough inland that they are often the primary recipients of evacuees from counties that will be (or have been) impacted by major storm events.

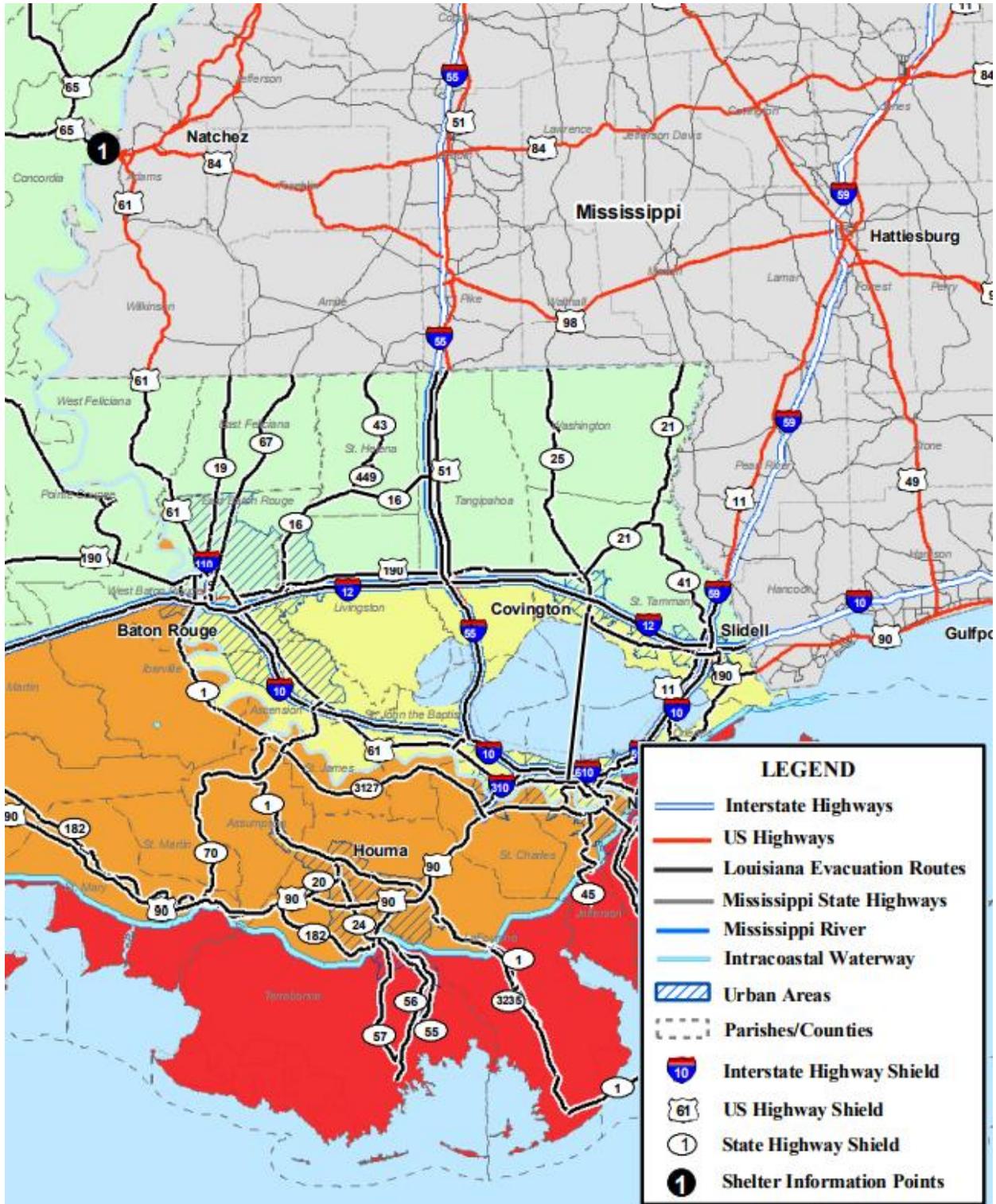
For example, during Hurricane Katrina in 2005, thousands of evacuees made their way to counties in southwest Mississippi to take temporary refuge from the storm. Due to the severe and devastating effects of the storm, temporary sheltering within these counties was extended much longer than originally anticipated and in some cases, the evacuees ended up staying for weeks or months. This additional population caused a major strain on resources within these relatively rural counties, as local communities with limited resources had an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people.

Caring for all of these evacuees was especially challenging for counties in the MEMA District 7 Region because most had been impacted themselves by the storm and were attempting to help their own citizens recover from the storm. Undoubtedly, recovering from a major disaster while simultaneously attempting to help evacuees from surrounding counties poses a number of difficulties for emergency management personnel and other local officials.

Based on Hurricane Katrina and other major hurricane events that have impacted the Gulf Coast in the past, it is likely that many of the MEMA District 7 counties will be receiver counties when it comes to evacuees. Many of these evacuees will likely come from locations in Louisiana, including New Orleans. Indeed, the State of Louisiana evacuation plan indicates that one of the primary evacuation routes from the City of New Orleans will direct evacuees north along Interstate 55, sending people through Pike County

and Lincoln County (Figure G.11). Depending on the severity of the event, officials in Louisiana may even change Interstate 55 over to a contraflow traffic pattern to enable quicker evacuations.

**FIGURE G.11: STATE OF LOUISIANA EVACUATION ROUTES**



Source: State of Louisiana Evacuation Plan

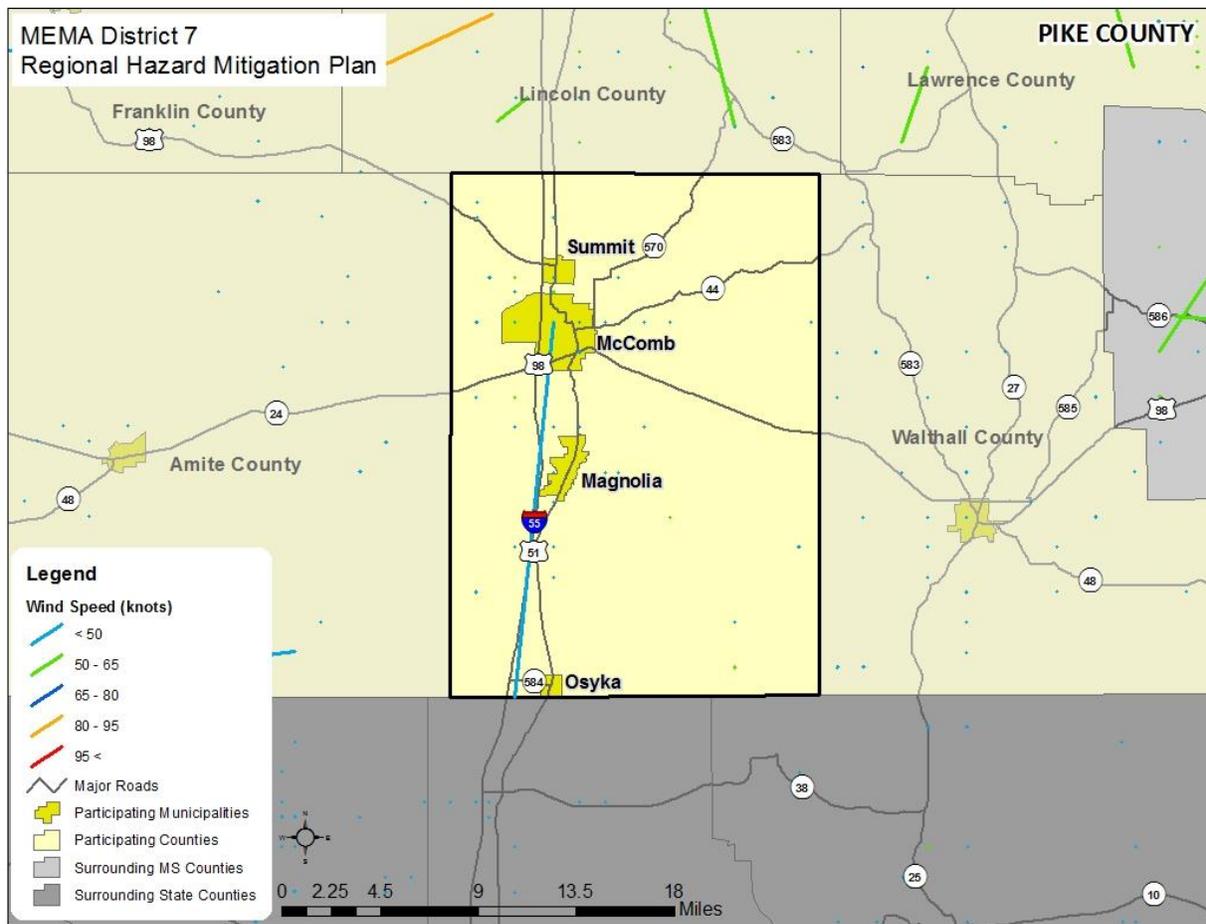
As a result of the influx of evacuees during storm events, it is critical for local officials in MEMA District 7 to prepare for evacuations during hurricanes and other tropical storms, even if the counties themselves may not be directly impacted by the storm. As in past storms, it is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future storm events.

### G.2.11 Severe Thunderstorm/High Wind

#### LOCATION AND SPATIAL EXTENT

A thunderstorm event is an atmospheric hazard, and thus has no geographic boundaries. It is typically a widespread event that can occur in all regions of the United States. However, thunderstorms are most common in the central and southern states because atmospheric conditions in those regions are favorable for generating these powerful storms. It is assumed that Pike County has uniform exposure to an event and the spatial extent of an impact could be large. With that in mind, **Figure G.12** shows the location of wind events that have impacted the county between 1955 and 2015.

**FIGURE G.12: SEVERE THUNDERSTORM TRACKS IN PIKE COUNTY**



Source: National Weather Service Storm Prediction Center

**HISTORICAL OCCURRENCES**

Severe storms were at least partially responsible for five disaster declarations in Pike County in 1980, 1983, 1990, 2001, and 2003.<sup>16</sup> According to NCDC, there have been 175 reported thunderstorm and high wind events since 1962 in Pike County.<sup>17</sup> These events caused almost \$1.4 million (2017 dollars) in damages.<sup>18</sup> There were also reports of one fatality and six injuries. **Table G.21** summarizes this information. **Table G.22** presents detailed thunderstorm and high wind event reports including date, magnitude, and associated damages for each event.

**TABLE G.21: SUMMARY OF THUNDERSTORM/HIGH WIND OCCURRENCES IN PIKE COUNTY**

| Location                 | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|--------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Magnolia                 | 15                    | 0/0             | \$123,968              | \$5,903                    |
| McComb                   | 48                    | 0/4             | \$618,560              | \$25,773                   |
| Osyka                    | 10                    | 0/0             | \$206,100              | \$9,814                    |
| Summit                   | 23                    | 0/0             | \$90,443               | \$3,932                    |
| Unincorporated Area      | 79                    | 1/2             | \$337,992              | \$6,145                    |
| <b>PIKE COUNTY TOTAL</b> | <b>175</b>            | <b>1/6</b>      | <b>\$1,377,063</b>     | <b>\$51,568</b>            |

Source: National Climatic Data Center

**TABLE G.22: HISTORICAL THUNDERSTORM/HIGH WIND OCCURRENCES IN PIKE COUNTY**

| Location        | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|-----------------|------------|-------------------|------------|-----------------|------------------|
| <b>Magnolia</b> |            |                   |            |                 |                  |
| MAGNOLIA        | 6/2/1996   | Thunderstorm Wind | --         | 0/0             | \$780            |
| MAGNOLIA        | 2/10/1998  | Thunderstorm Wind | --         | 0/0             | \$755            |
| MAGNOLIA        | 3/2/1999   | Thunderstorm Wind | --         | 0/0             | \$2,964          |
| MAGNOLIA        | 7/27/2000  | Thunderstorm Wind | --         | 0/0             | \$354            |
| MAGNOLIA        | 8/26/2000  | Thunderstorm Wind | --         | 0/0             | \$142            |
| MAGNOLIA        | 8/31/2000  | Thunderstorm Wind | --         | 0/0             | \$708            |
| MAGNOLIA        | 11/7/2000  | Thunderstorm Wind | --         | 0/0             | \$21,068         |
| MAGNOLIA        | 7/11/2001  | Thunderstorm Wind | --         | 0/0             | \$20,664         |
| MAGNOLIA        | 11/29/2001 | Thunderstorm Wind | --         | 0/0             | \$1,378          |
| MAGNOLIA        | 6/1/2004   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,934          |
| MAGNOLIA        | 3/1/2007   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$4,763          |
| MAGNOLIA        | 1/8/2008   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$34,753         |
| MAGNOLIA        | 11/24/2008 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,727          |
| MAGNOLIA        | 3/21/2012  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$31,979         |
| MAGNOLIA        | 1/3/2015   | Thunderstorm Wind | 52 kts. EG | 0/0             | \$0              |

<sup>16</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>17</sup> These thunderstorm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017 and these high wind events are only inclusive of those reported by NCDC from 1996 through February 2017. It is likely that additional thunderstorm and high wind events have occurred in Pike County. As additional local data becomes available, this hazard profile will be amended.

<sup>18</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**ANNEX G: PIKE COUNTY**

| Location      | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|---------------|------------|-------------------|------------|-----------------|------------------|
| <b>McComb</b> |            |                   |            |                 |                  |
| McComb        | 12/4/1993  | Thunderstorm Wind | 0 kts.     | 0/0             | \$839            |
| McComb        | 3/9/1994   | Thunderstorm Wind | 0 kts.     | 0/2             | \$83,058         |
| Mccomb        | 6/10/1994  | Thunderstorm Wind | 0 kts.     | 0/0             | \$8,261          |
| Mccomb        | 11/5/1994  | Thunderstorm Wind | 0 kts.     | 0/0             | \$89,838         |
| Mccomb        | 11/5/1994  | Thunderstorm Wind | 0 kts.     | 0/0             | \$24,501         |
| McComb        | 3/7/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$16,151         |
| McComb        | 5/8/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| McComb        | 7/27/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| MC COMB       | 3/18/1996  | Thunderstorm Wind | --         | 0/0             | \$47,114         |
| MC COMB       | 4/15/1996  | Thunderstorm Wind | --         | 0/0             | \$46,934         |
| MC COMB       | 6/2/1996   | Thunderstorm Wind | --         | 0/0             | \$7,802          |
| MC COMB       | 8/12/1996  | Thunderstorm Wind | --         | 0/0             | \$311            |
| MC COMB       | 4/5/1997   | Thunderstorm Wind | --         | 0/0             | \$763            |
| MC COMB       | 4/5/1997   | Thunderstorm Wind | --         | 0/0             | \$15,264         |
| MC COMB       | 4/22/1997  | Thunderstorm Wind | 50 kts.    | 0/0             | \$1,526          |
| MC COMB       | 1/22/1999  | Thunderstorm Wind | --         | 0/0             | \$1,488          |
| MC COMB       | 3/2/1999   | Thunderstorm Wind | --         | 0/0             | \$14,820         |
| MC COMB       | 6/10/1999  | Thunderstorm Wind | --         | 0/0             | \$736            |
| MC COMB       | 7/26/1999  | Thunderstorm Wind | --         | 0/0             | \$1,100          |
| MC COMB       | 4/2/2000   | Thunderstorm Wind | --         | 0/0             | \$7,137          |
| MC COMB       | 4/3/2000   | Thunderstorm Wind | --         | 0/0             | \$714            |
| MC COMB       | 6/25/2000  | Thunderstorm Wind | --         | 0/0             | \$5,673          |
| MC COMB       | 11/7/2000  | Thunderstorm Wind | --         | 0/0             | \$70,225         |
| MC COMB       | 2/9/2001   | Thunderstorm Wind | --         | 0/0             | \$8,346          |
| MC COMB       | 10/13/2001 | Thunderstorm Wind | --         | 0/0             | \$2,752          |
| MC COMB       | 5/17/2002  | Thunderstorm Wind | --         | 0/0             | \$2,040          |
| MC COMB       | 7/7/2002   | Thunderstorm Wind | --         | 0/0             | \$3,394          |
| MC COMB       | 12/31/2002 | Thunderstorm Wind | --         | 0/0             | \$10,814         |
| MC COMB       | 6/15/2003  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,662          |
| MC COMB       | 11/18/2003 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,988          |
| MC COMB       | 5/1/2004   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$12,931         |
| MC COMB       | 5/29/2005  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$18,868         |
| MC COMB       | 6/11/2007  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,868          |
| MC COMB       | 8/27/2007  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,176          |
| MC COMB       | 2/12/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$23,102         |
| MC COMB       | 3/19/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,718          |
| MC COMB       | 8/12/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,790          |
| MC COMB       | 3/27/2009  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,299          |
| MC COMB       | 3/28/2009  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,724          |
| MC COMB       | 4/2/2009   | Thunderstorm Wind | 50 kts. EG | 0/1             | \$5,734          |
| MC COMB       | 10/30/2009 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$848            |
| MC COMB       | 11/30/2010 | Thunderstorm Wind | 52 kts. EG | 0/0             | \$22,351         |
| MC COMB       | 4/4/2011   | Thunderstorm Wind | 60 kts. EG | 0/0             | \$5,436          |
| MC COMB       | 4/15/2011  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$5,436          |
| MC COMB       | 6/6/2011   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$1,083          |

**ANNEX G: PIKE COUNTY**

| Location                   | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-------------------|------------|-----------------|------------------|
| MC COMB                    | 4/8/2014   | Thunderstorm Wind | 60 kts. EG | 0/1             | \$30,943         |
| MC COMB                    | 7/4/2015   | Thunderstorm Wind | 56 kts. EG | 0/0             | \$0              |
| MC COMB                    | 1/2/2017   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| <b>Osyka</b>               |            |                   |            |                 |                  |
| OSYKA                      | 1/26/1996  | Thunderstorm Wind | --         | 0/0             | \$118,778        |
| OSYKA                      | 4/17/1998  | Thunderstorm Wind | --         | 0/0             | \$7,524          |
| OSYKA                      | 4/17/1998  | Thunderstorm Wind | --         | 0/0             | \$15,048         |
| OSYKA                      | 1/29/1999  | Thunderstorm Wind | --         | 0/0             | \$744            |
| OSYKA                      | 1/29/2001  | Thunderstorm Wind | --         | 0/0             | \$55,859         |
| OSYKA                      | 3/18/2003  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,655          |
| OSYKA                      | 7/21/2005  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,877          |
| OSYKA                      | 6/1/2006   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,615          |
| OSYKA                      | 4/15/2015  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| OSYKA                      | 4/15/2015  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$0              |
| <b>Summit</b>              |            |                   |            |                 |                  |
| Summit                     | 1/17/1994  | Thunderstorm Wind | 0 kts.     | 0/0             | \$8,363          |
| Summit                     | 5/8/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| SUMMIT                     | 11/24/1996 | Thunderstorm Wind | --         | 0/0             | \$308            |
| SUMMIT                     | 5/21/1997  | Thunderstorm Wind | --         | 0/0             | \$764            |
| SUMMIT                     | 6/17/1997  | Thunderstorm Wind | --         | 0/0             | \$4,576          |
| SUMMIT                     | 1/22/1999  | Thunderstorm Wind | --         | 0/0             | \$744            |
| SUMMIT                     | 2/27/1999  | Thunderstorm Wind | --         | 0/0             | \$743            |
| SUMMIT                     | 7/26/1999  | Thunderstorm Wind | --         | 0/0             | \$367            |
| SUMMIT                     | 7/17/2000  | Thunderstorm Wind | --         | 0/0             | \$7,075          |
| SUMMIT                     | 7/21/2000  | Thunderstorm Wind | --         | 0/0             | \$2,830          |
| SUMMIT                     | 8/10/2000  | Thunderstorm Wind | --         | 0/0             | \$708            |
| SUMMIT                     | 11/8/2000  | Thunderstorm Wind | --         | 0/0             | \$2,107          |
| SUMMIT                     | 1/29/2001  | Thunderstorm Wind | --         | 0/0             | \$2,793          |
| SUMMIT                     | 1/29/2001  | Thunderstorm Wind | --         | 0/0             | \$13,965         |
| SUMMIT                     | 7/11/2001  | Thunderstorm Wind | --         | 0/0             | \$20,664         |
| SUMMIT                     | 7/7/2002   | Thunderstorm Wind | --         | 0/0             | \$2,037          |
| SUMMIT                     | 3/13/2003  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$3,319          |
| SUMMIT                     | 3/9/2006   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$12,238         |
| SUMMIT                     | 5/14/2007  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| SUMMIT                     | 2/12/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,775          |
| SUMMIT                     | 4/15/2011  | Thunderstorm Wind | 61 kts. EG | 0/0             | \$0              |
| SUMMIT                     | 7/4/2012   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,067          |
| SUMMIT                     | 5/11/2015  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| <b>Unincorporated Area</b> |            |                   |            |                 |                  |
| PIKE CO.                   | 11/11/1962 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.                   | 7/22/1963  | Thunderstorm Wind | 61 kts.    | 0/0             | \$0              |
| PIKE CO.                   | 2/1/1970   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.                   | 2/1/1970   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.                   | 2/1/1970   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.                   | 2/1/1970   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.                   | 7/3/1972   | Thunderstorm Wind | 60 kts.    | 0/0             | \$0              |

**ANNEX G: PIKE COUNTY**

| Location          | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|-------------------|------------|-------------------|------------|-----------------|------------------|
| PIKE CO.          | 12/26/1973 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 2/6/1974   | Thunderstorm Wind | 55 kts.    | 0/0             | \$0              |
| PIKE CO.          | 7/22/1974  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 5/7/1975   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 6/7/1975   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 6/19/1975  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 7/21/1976  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 7/24/1976  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 3/28/1977  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 3/28/1977  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 12/13/1977 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 5/1/1978   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 5/17/1978  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 6/29/1978  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 8/13/1978  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 3/31/1981  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 5/7/1982   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 8/5/1983   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 12/11/1983 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 5/21/1985  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 8/10/1986  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 5/3/1987   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 7/26/1987  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 8/5/1987   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 9/17/1987  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 11/16/1987 | Thunderstorm Wind | 75 kts.    | 0/1             | \$0              |
| PIKE CO.          | 7/16/1988  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 10/2/1988  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 10/2/1988  | Thunderstorm Wind | 0 kts.     | 0/1             | \$0              |
| PIKE CO.          | 6/1/1989   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 6/8/1989   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 2/10/1990  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 5/20/1990  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 7/2/1990   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 3/1/1991   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 4/20/1992  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 6/29/1992  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 8/26/1992  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| PIKE CO.          | 11/21/1992 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| McComb FSS (MCB)  | 3/9/1994   | Thunderstorm Wind | 50 kts.    | 0/0             | \$0              |
| Percy Quinn       | 3/9/1994   | Thunderstorm Wind | 0 kts.     | 0/0             | \$831            |
| Osyka to Magnolia | 4/22/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| New Hartford      | 6/8/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$321            |
| Clarksville       | 6/8/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$321            |
| Louisiana         | 6/8/1995   | Thunderstorm Wind | 0 kts.     | 0/0             | \$481            |
| South Portion     | 12/17/1995 | Thunderstorm Wind | 0 kts.     | 0/0             | \$15,930         |

| Location                | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|-------------------------|------------|-------------------|------------|-----------------|------------------|
| PROGRESS                | 3/18/1996  | Thunderstorm Wind | --         | 0/0             | \$3,141          |
| PROGRESS                | 4/22/1997  | Thunderstorm Wind | 50 kts.    | 0/0             | \$763            |
| COUNTYWIDE              | 6/5/1998   | Thunderstorm Wind | --         | 0/0             | \$37,504         |
| PROGRESS                | 7/19/2000  | Thunderstorm Wind | 52 kts. E  | 0/0             | \$0              |
| COUNTYWIDE              | 7/20/2000  | Thunderstorm Wind | --         | 0/0             | \$1,415          |
| PROGRESS                | 1/29/2001  | Thunderstorm Wind | --         | 0/0             | \$23,740         |
| COUNTYWIDE              | 3/12/2001  | Thunderstorm Wind | --         | 0/0             | \$76,327         |
| COUNTYWIDE              | 4/15/2001  | Thunderstorm Wind | --         | 0/0             | \$2,073          |
| COUNTYWIDE              | 8/11/2001  | Thunderstorm Wind | --         | 0/0             | \$2,755          |
| COUNTYWIDE              | 4/8/2002   | Thunderstorm Wind | --         | 0/0             | \$2,720          |
| PIKE (ZONE)             | 6/30/2003  | Strong Wind       | 45 kts. EG | 0/0             | \$133,111        |
| COUNTYWIDE              | 11/24/2004 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,920          |
| (MCB)LEWIS FLD<br>MCCOM | 11/24/2008 | Thunderstorm Wind | 52 kts. MG | 0/0             | \$0              |
| MC COMB PIKE CO<br>ARPT | 12/9/2008  | Thunderstorm Wind | 62 kts. MG | 0/0             | \$2,908          |
| (MCB)LEWIS FLD<br>MCCOM | 3/27/2009  | Thunderstorm Wind | 62 kts. MG | 0/0             | \$0              |
| FERNWOOD                | 4/2/2009   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$11,467         |
| HOLMESVILLE             | 4/15/2011  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$5,436          |
| OAKLAND                 | 4/26/2011  | Thunderstorm Wind | 56 kts. EG | 1/0             | \$5,436          |
| FERNWOOD                | 7/22/2013  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$5,234          |
| HOLMESVILLE             | 3/28/2014  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$1,035          |
| BACOTS                  | 10/13/2014 | Thunderstorm Wind | 60 kts. EG | 0/0             | \$0              |
| OAKLAND                 | 12/15/2014 | Thunderstorm Wind | 56 kts. EG | 0/0             | \$3,124          |
| (MCB)LEWIS FLD<br>MCCOM | 7/4/2015   | Thunderstorm Wind | 56 kts. MG | 0/0             | \$0              |
| CHATAWA                 | 1/2/2017   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| GLADHURST               | 1/2/2017   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| GLADHURST               | 1/21/2017  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

†E = estimated; EG = estimated gust; ES = estimated sustained; M = measured; MG = measured gust; MS = measured sustained

Source: National Climatic Data Center

## PROBABILITY OF FUTURE OCCURRENCES

Given the high number of previous events, it is certain that thunderstorm events, including straight-line wind events, will occur in the future. This results in a probability level of highly likely (100 percent annual probability) for the entire county.

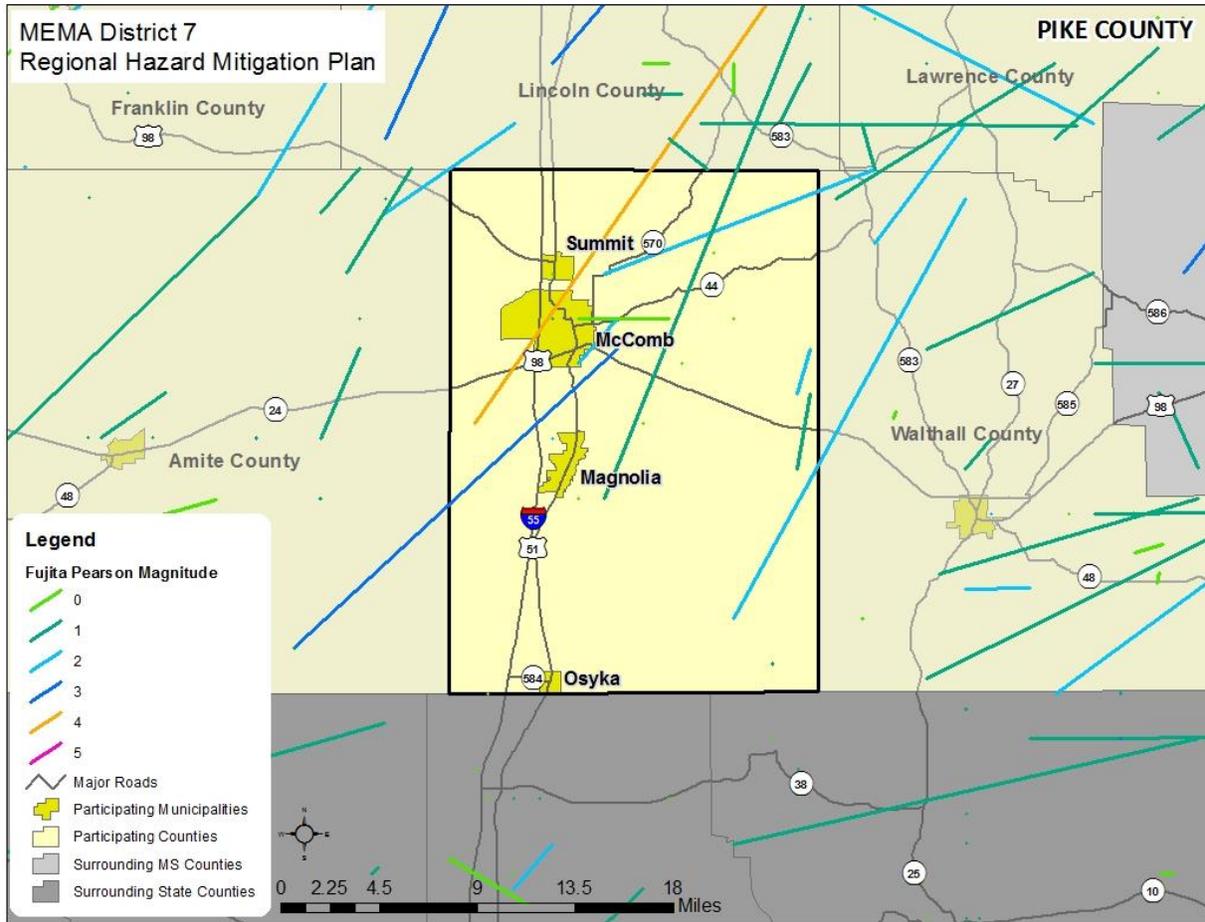
### G.2.12 Tornado

#### LOCATION AND SPATIAL EXTENT

Tornadoes occur throughout the state of Mississippi, and thus in Pike County. Tornadoes typically impact a relatively small area, but damage may be extensive. Event locations are completely random and it is not

possible to predict specific areas that are more susceptible to tornado strikes over time. Therefore, it is assumed that Pike County is uniformly exposed to this hazard. With that in mind, **Figure G.13** shows tornado track data for many of the major tornado events that have impacted the county between 1950 and 2015. While no definitive pattern emerges from this data, some areas that have been impacted in the past may be potentially more susceptible in the future.

**FIGURE G.13: HISTORICAL TORNADO TRACKS IN PIKE COUNTY**



Source: National Weather Service Storm Prediction Center

**HISTORICAL OCCURRENCES**

Tornadoes were at least partially responsible for seven disaster declarations in Pike County in 1973, 1975, 1980, 1983, 1990, 2001, and 2003.<sup>19</sup> According to the National Climatic Data Center, there have been a total of 27 recorded tornado events in Pike County since 1962 (**Table G.23**), resulting in more than \$131.9 million (2017 dollars) in property damages.<sup>20 21</sup> In addition, 4 fatalities and 213 injuries were reported. The

<sup>19</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>20</sup> These tornado events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1950 through February 2017. It is likely that additional tornadoes have occurred in Pike County. As additional local data becomes available, this hazard profile will be amended.

<sup>21</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for

magnitude of these tornadoes ranges from F0 to F4, although an F5 event is possible. Detailed information on historic tornado events can be found in **Table G.24**.

**TABLE G.23: SUMMARY OF TORNADO OCCURRENCES IN PIKE COUNTY**

| Location                 | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|--------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Magnolia                 | 2                     | 0/0             | \$28,549               | \$1,679                    |
| McComb                   | 5                     | 0/0             | \$0                    | \$0                        |
| Osyka                    | 2                     | 0/0             | \$7,441                | \$392                      |
| Summit                   | 1                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area      | 17                    | 4/213           | \$131,894,107          | \$2,398,075                |
| <b>PIKE COUNTY TOTAL</b> | <b>27</b>             | <b>4/213</b>    | <b>\$131,930,097</b>   | <b>\$2,400,146</b>         |

Source: National Climatic Data Center

**TABLE G.24: HISTORICAL TORNADO IMPACTS IN PIKE COUNTY**

| Location        | Date       | Magnitude    | Deaths/Injuries | Property Damage* | Details  |
|-----------------|------------|--------------|-----------------|------------------|--|
| <b>Magnolia</b> |            |              |                 |                  |  |
| MAGNOLIA        | 4/3/2000   | F0           | 0/0             | \$28,549         | A tornado touched down briefly knocking down numerous trees including some which fell on houses.   |
| MAGNOLIA        | 10/30/2009 | Funnel Cloud | 0/0             | \$0              | A motorist on Interstate 55 sighted a funnel cloud between the Magnolia and Fernwood exits.  |
| <b>McComb</b>   |            |              |                 |                  |  |
| McComb to       | 4/22/1995  | F0           | 0/0             | \$0              | A tornado touched down along an intermittent path from 4 miles west to 1 mile e of McComb. Damage to trees was reported.   |
| MC COMB         | 3/9/1999   | F0           | 0/0             | \$0              | The Mississippi Highway Patrol reported a brief tornado touchdown three miles east of McComb along Highway 98. The tornado did not cause any damage.                 |
| MC COMB         | 3/9/1999   | F0           | 0/0             | \$0              | Pike County Civil Defense reported that a tornado touched down briefly six miles east southeast of McComb near a trailer park. The tornado did not cause any damage. |
| MC COMB         | 2/12/2008  | EFO          | 0/0             | \$0              | A weak tornado was observed briefly touching down causing no damage between Highways 44 and 570.   |
| MC COMB         | 4/2/2009   | EFO          | 0/0             | \$0              | A weak tornado briefly touched down resulting in no damage.  |
| <b>Osyka</b>    |            |              |                 |                  |  |
| OSYKA           | 4/17/1998  | Funnel Cloud | 0/0             | \$0              | Reported by Pike County Civil Defense  |
| OSYKA           | 1/22/1999  | F0           | 0/0             | \$7,441          | The Pike County Civil Defense reported a brief tornado touchdown just west of Osyka that blew the roof of a house off.   |

consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**ANNEX G: PIKE COUNTY**

| Location                   | Date       | Magnitude    | Deaths/<br>Injuries | Property<br>Damage* | Details   |
|----------------------------|------------|--------------|---------------------|---------------------|---|
| <b>Summit</b>              |            |              |                     |                     |   |
| Summit                     | 4/22/1995  | F0           | 0/0                 | \$0                 | Civil Defense reported a tornado touched down near Highway 570. Path width and length estimated.  |
| <b>Unincorporated Area</b> |            |              |                     |                     |   |
| PIKE CO.                   | 11/11/1962 | F2           | 0/0                 | \$2,010,888         | --  |
| PIKE CO.                   | 6/21/1963  | F2           | 0/0                 | \$19,977            | --  |
| PIKE CO.                   | 6/1/1970   | F1           | 0/0                 | \$0                 | --  |
| PIKE CO.                   | 1/10/1975  | F4           | 4/200               | \$117,333,973       | --  |
| PIKE CO.                   | 12/13/1977 | F3           | 0/2                 | \$9,843,961         | --  |
| PIKE CO.                   | 3/31/1981  | F2           | 0/0                 | \$690,746           | --  |
| PIKE CO.                   | 3/12/1986  | F2           | 0/0                 | \$561,866           | --  |
| PIKE CO.                   | 11/20/1986 | F1           | 0/4                 | \$553,723           | --  |
| PIKE CO.                   | 2/15/1987  | F0           | 0/0                 | \$54,777            | --  |
| PIKE CO.                   | 11/4/1988  | F1           | 0/0                 | \$50,815            | --  |
| PIKE CO.                   | 4/20/1992  | F1           | 0/5                 | \$438,215           | --  |
| Princedale                 | 12/4/1993  | F0           | 0/0                 | \$83,856            | This weak tornado blew down several trees. A mobile home and a car were damaged by fallen trees.  |
| CHATAWA                    | 1/26/1996  | Funnel Cloud | 0/0                 | \$0                 | Sheriff's Office reported a funnel cloud. One half inch hail was reported in Magnolia.  |
| FERNWOOD                   | 2/5/2004   | Funnel Cloud | 0/0                 | \$0                 | A funnel cloud was observed near Fernwood.  |
| PROGRESS                   | 4/6/2005   | F2           | 0/2                 | \$251,309           | A tornado touched down near the community of Progress in Pike County and moved north northeast to the Barto area before crossing Highway 98 and moving out of Pike County and into Walthall County about 2 miles east northeast of Holmesville. Along its path in Pike County, the tornado destroyed a church and a couple of mobile homes, damaged a number of houses and businesses, and knocked down numerous trees. |
| MC COMB PIKE<br>CO ARPT    | 4/11/2005  | Funnel Cloud | 0/0                 | \$0                 | --  |
| EMERALD                    | 1/2/2017   | EF1          | 0/0                 | \$0                 | A weak tornado...EF1...touched down along an intermittent path in southeast Pike County from near Emerald Road south of Mississippi Highway 48 to Love Creek Road just north of Mississippi Highway 48. Primary damage was to trees and power lines with large trees toppled or snapped. A few houses and mobile homes were damaged by fallen trees as well as power lines.   |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

## PROBABILITY OF FUTURE OCCURRENCES

According to historical information, tornado events pose a significant threat to Pike County. The probability of future tornado occurrences affecting Pike County is likely (between 10 and 100 percent annual probability).

### G.2.13 Winter Storm and Freeze

#### LOCATION AND SPATIAL EXTENT

Nearly the entire continental United States is susceptible to winter storm and freeze events. Some ice and winter storms may be large enough to affect several states, while others might affect limited, localized areas. The degree of exposure typically depends on the normal expected severity of local winter weather. Pike County is not accustomed to severe winter weather conditions and seldom receives severe winter weather, even during the winter months. Events tend to be mild in nature; however, this creates a situation where even relatively small accumulations of snow, ice, or other wintery precipitation can lead to losses and damage due to the fact that these events are not commonplace. Given the atmospheric nature of the hazard, the entire county has uniform exposure to a winter storm.

#### HISTORICAL OCCURRENCES

According to the National Climatic Data Center, there have been a total of eight recorded winter storm events in Pike County since 2002 (**Table G.25**).<sup>22</sup> These events did not result in any property damages.<sup>23</sup> Detailed information on the recorded winter storm events can be found in **Table G.26**.

**TABLE G.25: SUMMARY OF WINTER STORM EVENTS IN PIKE COUNTY**

| Location    | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-------------|-----------------------|-----------------|------------------------|----------------------------|
| Pike County | 8                     | 0/0             | \$0                    | \$0                        |

Source: National Climatic Data Center

**TABLE G.26: HISTORICAL WINTER STORM IMPACTS IN PIKE COUNTY**

| Location        | Date | Type | Deaths/Injuries | Property Damage* |
|-----------------|------|------|-----------------|------------------|
| <b>Magnolia</b> |      |      |                 |                  |
| None reported   | --   | --   | --              | --               |
| <b>McComb</b>   |      |      |                 |                  |
| None reported   | --   | --   | --              | --               |
| <b>Osyka</b>    |      |      |                 |                  |
| None reported   | --   | --   | --              | --               |

<sup>22</sup> These ice and winter storm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional winter storm conditions have affected Pike County.

<sup>23</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| Location                   | Date       | Type           | Deaths/Injuries | Property Damage* |
|----------------------------|------------|----------------|-----------------|------------------|
| <b>Summit</b>              |            |                |                 |                  |
| <i>None reported</i>       | --         | --             | --              | --               |
| <b>Unincorporated Area</b> |            |                |                 |                  |
| PIKE (ZONE)                | 1/1/2002   | Winter Storm   | 0/0             | \$0              |
| PIKE (ZONE)                | 12/11/2008 | Heavy Snow     | 0/0             | \$0              |
| PIKE (ZONE)                | 12/4/2009  | Winter Storm   | 0/0             | \$0              |
| PIKE (ZONE)                | 2/11/2010  | Heavy Snow     | 0/0             | \$0              |
| PIKE (ZONE)                | 2/3/2011   | Ice Storm      | 0/0             | \$0              |
| PIKE (ZONE)                | 2/3/2011   | Ice Storm      | 0/0             | \$0              |
| PIKE (ZONE)                | 1/23/2014  | Winter Weather | 0/0             | \$0              |
| PIKE (ZONE)                | 1/28/2014  | Sleet          | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

There have been several severe winter weather events in Pike County. The text below describes two of the major events and associated impacts on the county. Similar impacts can be expected with severe winter weather.

**February 2010**

Heavy snow affected a large portion of the region, especially locations across central and southern Mississippi, on Thursday night and Friday, February 11th and 12th. The heavy snow was a result of a low pressure system that tracked eastward across the northern Gulf of Mexico, and a vigorous upper level disturbance that moved across the region while a cold air mass was in place. Light precipitation overspread the region late Thursday afternoon into the evening before becoming heavy Thursday night into early Friday morning. The snow tapered off from west to east during the midday hours Friday.

**February 2011**

An ice storm developed across the area on February 3rd into the early morning hours of the 4th. While this icing event was not devastating, the impact to travel was a major issue across the region. Thousands of accidents occurred from slick roads. As a result of the accidents, three fatalities occurred along with a handful of injuries. Overall, most areas received 0.25 to 0.5 inches of ice accumulation from freezing rain. Additionally, some areas had a mix of precipitation with sleet accumulating. Some snow did occur, but those were just across select areas and the accumulation was mainly one inch or less.

Winter storms throughout the planning area have several negative externalities including hypothermia, cost of snow and debris cleanup, business and government service interruption, traffic accidents, and power outages. Furthermore, citizens may resort to using inappropriate heating devices that could to fire or an accumulation of toxic fumes.

**PROBABILITY OF FUTURE OCCURRENCES**

Winter storm events will continue to occur in Pike County. Based on historical information, the probability is likely (between 10 and 100 percent annual probability).

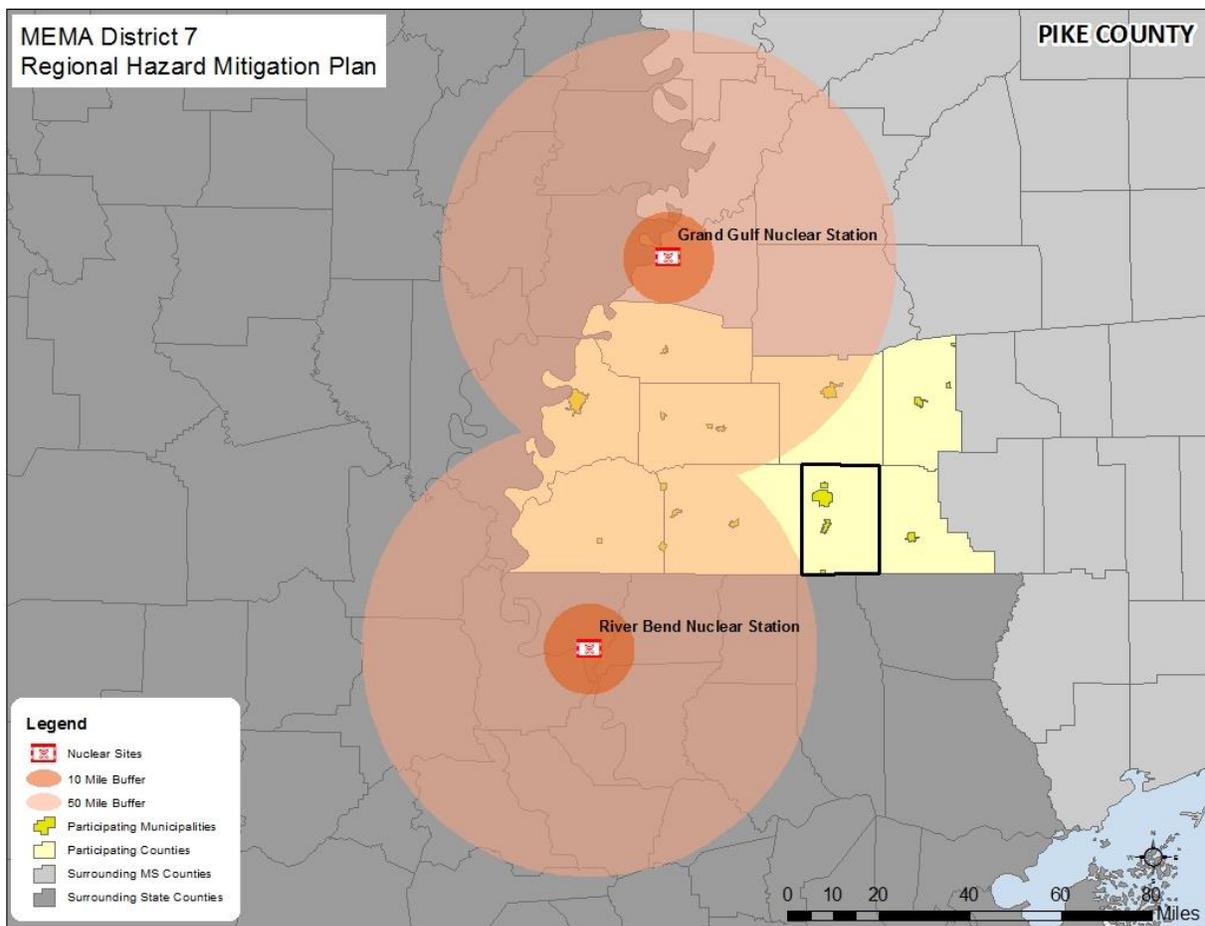
## HUMAN-CAUSED HAZARDS

### G.2.14 Radiological Event

#### LOCATION AND SPATIAL EXTENT

The Grand Gulf Nuclear Station and River Bend Nuclear Station are both located within a 50-mile radius of the MEMA District 7 Region. The Nuclear Regulatory Commission defines two emergency planning zones around nuclear plants. Areas located within 10 miles of the station are considered to be within the zone of highest risk to a nuclear incident and this radius is the designated evacuation radius recommended by the Nuclear Regulatory Commission. Within the 10-mile zone, the primary concern is exposure to and inhalation of radioactive contamination. No part of Pike County is located in the 10-mile radius of a nuclear station. The most concerning effects in the secondary 50-mile zone are related to ingestion of food and liquids that may have been contaminated. Virtually no part of Pike County is located within this 50-mile radius, however, the county is located just outside of this zone. The 50-mile zone is still considered to be at risk from a nuclear incident, though the impacts may be less severe than in the 10-mile zone (Figure G.14).

**FIGURE G.14: NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN PIKE COUNTY**



Source: International Atomic Energy Agency

## HISTORICAL OCCURRENCES

Although there have been no major nuclear events at either the Grand Gulf or River Bend Nuclear Stations, there is some possibility that one could occur as there have been incidents in the past in the United States at other facilities and at facilities around the world. Additionally, a list of minor events/notifications was acquired from reports collected by the Nuclear Regulatory Commission (NRC). The NRC classifies events using the scale found in **Table G.27**. A list of events at Grand Gulf Nuclear Station can be found in **Table G.28** and a list of events at River Bend Nuclear Station can be found in **Table G.29**. It is noteworthy that all of the events were minor in magnitude and many were insignificant enough that they did not register on the classification scale.

**TABLE G.27: NUCLEAR REGULATORY COMMISSION EMERGENCY CLASSIFICATION SCALE FOR EVENTS OCCURRING AT NUCLEAR POWER PLANTS**

| Classification                       | Description   |
|--------------------------------------|---|
| Notification of Unusual Event (NOUE) | Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. [Note: This term is sometimes shortened to Unusual Event (UE). The terms Notification of Unusual Event, NOUE and Unusual Event are used interchangeably.]  |
| Alert                                | Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) protective action guides (PAGs)  |
| Site Area Emergency                  | Site Area Emergency (SAE) – Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile action that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary. |
| General Emergency                    | Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile action that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.  |

Source: Nuclear Regulatory Commission

**TABLE G.28: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT GRAND GULF NUCLEAR STATION**

| Date      | Retrieved From*                  | Classification | Plant             | Description  |
|-----------|----------------------------------|----------------|-------------------|--|
| 8/29/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST |
| 10/1/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF NUCLEAR STATION SECURITY OFFICER LOCKOUT          |

| Date      | Retrieved From*                  | Classification | Plant             | Description  |
|-----------|----------------------------------|----------------|-------------------|--|
| 9/29/2016 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF EXTENDED PLANT SHUTDOWN TO ADDRESS OPERATIONS PERFORMANCE |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lersearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

**TABLE G.29: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT RIVER BEND NUCLEAR STATION**

| Date       | Retrieved From*                  | Classification                               | Plant             | Description   |
|------------|----------------------------------|--|-------------------|---|
| 11/26/1985 | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | ECCS Initiation: Improper restoration of a level transmitter causes HPSC injection    |
| 11/27/1985 | Licensee Event Report            | Alert  | River Bend Unit 1 | Failure to Perform Surveillance Tests   |
| 3/5/1992   | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | REACTOR SCRAM CAUSED BY A GENERATOR TRIP DUE TO HIGH WINDS CAUSING TRANSFORMER DAMAGE |
| 9/15/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE IVAN  |
| 10/4/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | Shutdown Greater than 72 Hours  |
| 9/23/2005  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | NRC ENTERS MONITORING MODE DUE TO HURRICANE RITA                                      |
| 5/23/2007  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REACTOR SHUTDOWN DUE TO UNEXPECTED CHANGE IN RECIRCULATION FLOW                       |
| 9/2/2008   | Preliminary Notification Reports | Notification of Unusual Event/Not Applicable | River Bend Unit 1 | NRC RESPONSE TO HURRICANE GUSTAV  |
| 5/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | AUGMENTED INSPECTION TEAM ONSITE AT RIVER BEND STATION                                |
| 8/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST                          |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lersearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

### **PROBABILITY OF FUTURE OCCURRENCES**

A nuclear event is a very rare occurrence in the United States due to the intense regulation of the industry. There have been minor incidents in the past, but it is considered unlikely (less than 1 percent annual probability).

### **RADIOLOGICAL EVACUATIONS**

Similar to the hurricane evacuations discussed above, in many ways the MEMA District 7 Region would potentially be impacted to a greater degree by evacuations caused by a radiological event than by the event itself. Since the region is not directly located within the 10-mile evacuation area but neighboring counties are located within this zone, it is highly likely that populations from those neighboring counties will be evacuated to the counties within the MEMA District 7 Region.

Due to the severe and long-term effects of a major radiological event, temporary sheltering will be an initial concern, but the greater challenge may be in the long-term. As has happened with historical radiological accidents in other locations, the danger in the impacted area will likely extend for a very long period after the event and evacuees may be unable to return to their homes for months or years. This additional influx of population will cause a major strain on resources within these relatively rural counties in the short-term, as local communities with limited resources will have an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people. In the long-term, there may be challenges for local officials as existing infrastructure will likely be inadequate to handle larger populations.

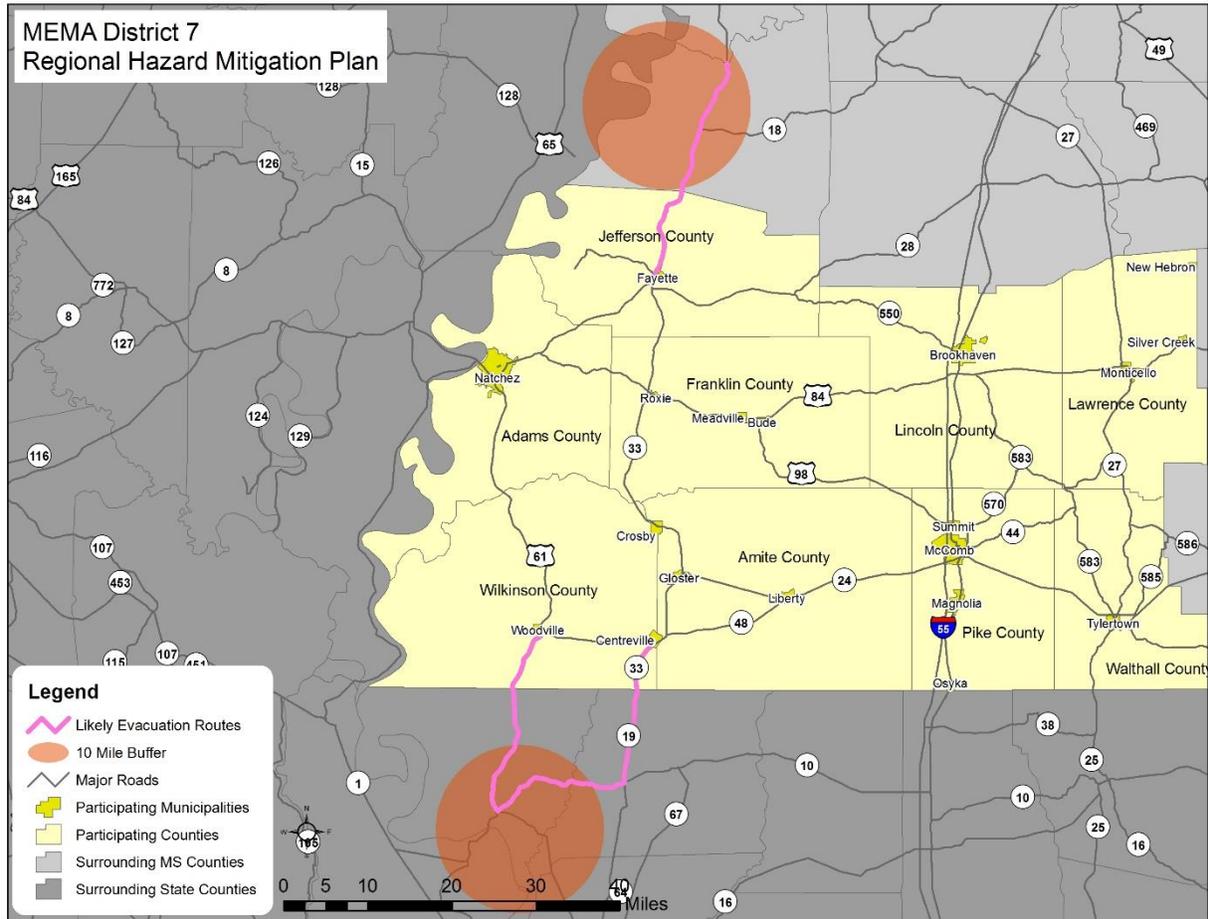
Although there have not been any major radiological events in the region historically, hurricane evacuations (discussed above) provide a similar scenario in terms of what the region might expect. However, one additional concern that officials will need to consider in a radiological event is that evacuees may be contaminated by radioactivity. According to the Centers for Disease Control, radioactive contamination can occur when radioactive materials are released into the environment and become deposited into the air, water, surfaces, soil, plants, buildings, people or animals. This contamination can then be spread when people touch other people, surfaces, or objects. Therefore, when people evacuate a contaminated zone, they pose a potential risk of spreading the contamination to others if they are not properly treated. Local officials in MEMA District 7 may need to be prepared to set up decontamination centers along major evacuation routes to ensure that the contamination is not spread. It is also important for citizens to understand the steps they can take to reduce the risk of spreading contamination such as evacuating quickly after an event and following decontamination instructions as directed by local officials.<sup>24</sup>

Based on the locations of the 10-mile evacuation areas near the region, many of these evacuees will likely come from Claiborne County to the north and West Feliciana and East Feliciana Parishes to the south. The main roads for these evacuees will probably be U.S. Highway 61 and Mississippi State Highway 33 since these are the primary and most direct roads into and out of the aforementioned evacuation counties and into MEMA District 7 (**Figure G.15**). Depending on the severity of the event, officials may even change these roads over to a contraflow traffic pattern to enable quicker evacuations.

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<sup>24</sup> Centers for Disease Control and Prevention. *Emergency Preparedness and Response: Contamination vs. Exposure*. Retrieved on September 1, 2017 from <https://emergency.cdc.gov/radiation/contamination.asp>

**FIGURE G.15: LIKELY EVACUATION ROUTES FOR A RADIOLOGICAL EVENT IN THE MEMA DISTRICT 7 REGION**



Source: International Atomic Energy Agency

As a result of the potential for an influx of evacuees during a radiological event, it is critical for local officials in MEMA District 7 to prepare for evacuations. It is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future events.

### G.2.15 Conclusions on Hazard Risk

The hazard profiles presented in this subsection were developed using best available data and result in what may be considered principally a qualitative assessment as recommended by FEMA in its “How-to” guidance document titled *Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA Publication 386-2). It relies heavily on historical and anecdotal data, stakeholder input, and professional and experienced judgment regarding observed and/or anticipated hazard impacts. It also carefully considers the findings in other relevant plans, studies, and technical reports.

**HAZARD EXTENT**

**Table G.30** describes the extent of each natural hazard identified for Pike County. The extent of a hazard is defined as its severity or magnitude, as it relates to the planning area.

**TABLE G.30: EXTENT OF PIKE COUNTY HAZARDS**

| Flood-related Hazards |  |            |                                   |                            |                         |                        |                                 |                                 |
|-----------------------|--|------------|-----------------------------------|----------------------------|-------------------------|------------------------|---------------------------------|---------------------------------|
| Dam and Levee Failure | Dam Failure extent is defined using the Mississippi Department of Environmental Quality classifications which include Low, Significant, and High. Three dams are classified as high-hazard in Pike County.   |            |                                   |                            |                         |                        |                                 |                                 |
| Erosion               | The extent of erosion can be defined by the measurable rate of erosion that occurs. There are no official erosion rate records in Pike County but local estimates are around 0.25 to 0.50 feet per year. Some areas of erosion have been identified by local coordinators.   |            |                                   |                            |                         |                        |                                 |                                 |
| Flood                 | Flood extent can be measured by the amount of land and property in the floodplain as well as flood height and velocity. The amount of land in the floodplain accounts for 8.3 percent of the total land area in Pike County.   |            |                                   |                            |                         |                        |                                 |                                 |
|                       | Flood depth and velocity are recorded via United States Geological Survey stream gages throughout the region. While a gage does not exist for each participating jurisdiction, there is one at or near many areas. The greatest peak discharge recorded for the county was on Bogue Chitto near Pricedale. Water reached a discharge of 70,000 cubic feet per second (recorded in December 1919). The highest stream gage height was also on Bogue Chitto near Pricedale with a height that was recorded at 53.60 feet (recorded in December 1919). Additional peak discharge readings, historic crest heights, and the corresponding flood categories (where available) are in the table below. |            |                                   |                            |                         |                        |                                 |                                 |
|                       | Location/<br>Jurisdiction  | Date       | Maximum<br>Historic<br>Crest (ft) | Peak<br>Discharge<br>(cfs) | Flood Categories        |                        |                                 |                                 |
|                       |  |            |                                   |                            | Action<br>Stage<br>(ft) | Flood<br>Stage<br>(ft) | Moderate<br>Flood<br>Stage (ft) | Major<br>Flood<br>Stage<br>(ft) |
|                       | <b>Pike County</b>   |            |                                   |                            |                         |                        |                                 |                                 |
|                       | Bogue Chitto near Pricedale  | 12/XX/1919 | 53.60                             | 70,000                     | NA                      | NA                     | NA                              | NA                              |
|                       | Bogue Chitto near Tylertown  | 1/7/1950   | 33.50                             | 45,700                     | 14                      | 15                     | 17                              | 23                              |

|                                |  |
|--------------------------------|--|
|                                | NA= Data not available for this particular gage<br>*Occurred on a different date than Maximum Historic Crest   |
| <b>Fire-related Hazards</b>    |  |
| Drought                        | Drought extent is defined by the U.S. Drought Monitor Classifications which include Abnormally Dry, Moderate Drought, Severe Drought, Extreme Drought, and Exceptional Drought. According to the U.S. Drought Monitor Classifications, the most severe drought condition is Exceptional. Pike County has received this ranking once over the 17-year reporting period.   |
| Lightning                      | According to the Vaisala’s flash density map, Pike County is located in an area that experiences 12 to 20 lightning flashes per square mile per year. It should be noted that future lightning occurrences may exceed these figures.   |
| Wildfire                       | Wildfire data was provided by the Mississippi Forestry Commission and is reported annually by county from 2007-2016. The greatest number of fires to occur in Pike County in any year was 53 in 2011. The greatest number of acres to burn in the county in a single year occurred in 2007 when 540 acres were burned. Although this data lists the extent that has occurred, larger and more frequent wildfires are possible throughout the county.               |
| <b>Geologic Hazards</b>        |  |
| Earthquake                     | Earthquake extent can be measured by the Richter Scale or the Modified Mercalli Intensity (MMI) scale. According to data provided by the National Centers for Environmental Information, no earthquakes were reported in Pike County.  |
| <b>Wind-related Hazards</b>    |  |
| Extreme Heat                   | The extent of extreme heat can be measured by the record high temperature recorded. Official long term temperature records are not kept for any areas in Pike County. However, the highest recorded temperature in the region was 106°F in 2007 with heat index values recorded above 115°F.   |
| Hailstorm                      | Hail extent can be defined by the size of the hail stone. The largest hail stone reported in Pike County was 2.75 inches (reported on August 10, 1980). It should be noted that future events may exceed this.   |
| Hurricane and Tropical Storm   | Hurricane extent is defined by the Saffir-Simpson Scale which classifies hurricanes into Category 1 through Category 5. The greatest classification of hurricane to impact the MEMA District 7 Region was a Category 3 storm. This occurred in 1969 with Hurricane Camille and in 2005 with Hurricane Katrina. The storm track of both storms passed just to the east of the region, but due to the size of these storms, their impact was felt across the region. |
| Severe Thunderstorm/ High Wind | Thunderstorm extent is defined by the number of thunder events and wind speeds reported. According to a 67-year history from the National Climatic Data Center, the strongest recorded wind event in Pike County was reported on November 16, 1987 at 75 knots (approximately 86 mph). It should be noted that future events may exceed these historical occurrences.  |
| Tornado                        | Tornado hazard extent is measured by tornado occurrences in the US provided by FEMA as well as the Fujita/Enhanced Fujita Scale. The greatest magnitude reported in Pike County was an F4 (reported on January 10, 1975).  |
| Winter Storm and Freeze        | The extent of winter storms can be measured by the amount of snowfall received (in inches). Official long term snow records are not kept for any areas in Pike County. However, reports from NCDC of the greatest snowfall in the county has been 5 inches (reported on February 11, 2010).  |
| <b>Human-caused Hazards</b>    |  |
| Radiological Event             | Although there is no history of a nuclear accident at either the Grand Gulf Nuclear Station or River Bend Nuclear Station, other events across the globe and in the United States in particular indicate that an event is possible. Since several national and international events were Level 7 events on the INES, the potential for a Level 7 event at these stations is possible.  |

### PRIORITY RISK INDEX RESULTS

In order to draw some meaningful planning conclusions on hazard risk for Pike County, the results of the hazard profiling process were used to generate countywide hazard classifications according to a “Priority Risk Index” (PRI). More information on the PRI and how it was calculated can be found in Section 5.17.2.

**Table G.31** summarizes the degree of risk assigned to each category for all initially identified hazards based on the application of the PRI. Assigned risk levels were based on the detailed hazard profiles developed for this subsection, as well as input from the Regional Hazard Mitigation Council. The results were then used in calculating PRI values and making final determinations for the risk assessment.

**TABLE G.31: SUMMARY OF PRI RESULTS FOR PIKE COUNTY**

| Hazard                        | Category/Degree of Risk |              |                |                    |                    |            |
|-------------------------------|-------------------------|--------------|----------------|--------------------|--------------------|------------|
|                               | Probability             | Impact       | Spatial Extent | Warning Time       | Duration           | PRI Score  |
| <b>Flood-related Hazards</b>  |                         |              |                |                    |                    |            |
| Dam Failure and Levee Failure | Possible                | Critical     | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>2.6</b> |
| Erosion                       | Possible                | Minor        | Small          | More than 24 hours | More than 1 week   | <b>1.8</b> |
| Flood                         | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 24 hours | <b>3.2</b> |
| <b>Fire-related Hazards</b>   |                         |              |                |                    |                    |            |
| Drought                       | Possible                | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.5</b> |
| Lightning                     | Highly Likely           | Limited      | Small          | 6 to 12 hours      | Less than 6 hours  | <b>2.6</b> |
| Wildfire                      | Highly Likely           | Limited      | Moderate       | Less than 6 hours  | Less than 1 week   | <b>3.1</b> |
| <b>Geologic Hazards</b>       |                         |              |                |                    |                    |            |
| Earthquake                    | Unlikely                | Minor        | Small          | Less than 6 hours  | Less than 6 hours  | <b>1.5</b> |
| <b>Wind-related Hazards</b>   |                         |              |                |                    |                    |            |
| Extreme Heat                  | Likely                  | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.8</b> |
| Hailstorm                     | Highly Likely           | Limited      | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>2.8</b> |
| Hurricane and Tropical Storm  | Likely                  | Catastrophic | Large          | More than 24 hours | Less than 1 week   | <b>3.3</b> |
| Severe Thunderstorm/High Wind | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>3.1</b> |
| Tornado                       | Likely                  | Catastrophic | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>3.2</b> |
| Winter Storm and Freeze       | Likely                  | Minor        | Moderate       | More than 24 hours | Less than 1 week   | <b>2.2</b> |
| <b>Human-caused Hazards</b>   |                         |              |                |                    |                    |            |
| Radiological Event            | Unlikely                | Minor        | Moderate       | More than 24 hours | Less than 1 week   | <b>1.6</b> |

### G.2.16 Final Determinations on Hazard Risk

The conclusions drawn from the hazard profiling process for Pike County, including the PRI results and input from the Regional Hazard Mitigation Council, resulted in the classification of risk for each identified hazard according to three categories: High Risk, Moderate Risk, and Low Risk (**Table G.32**). For purposes

of these classifications, risk is expressed in relative terms according to the estimated impact that a hazard will have on human life and property throughout all of Pike County. A more quantitative analysis to estimate potential dollar losses for each hazard has been performed separately, and is described in Section 6: *Vulnerability Assessment* and below in Section G.3. It should be noted that although some hazards are classified below as posing low risk, their occurrence of varying or unprecedented magnitudes is still possible in some cases and their assigned classification will continue to be evaluated during future plan updates. In most cases, the hazards of greatest concern did not change much since the last plan update, indicating that the priorities remained relatively stable and there were few changes in priorities.

**TABLE G.32: CONCLUSIONS ON HAZARD RISK FOR PIKE COUNTY**

|                      |   |
|----------------------|---|
| <b>HIGH RISK</b>     | Hurricane and Tropical Storm<br>Tornado<br>Flood<br>Wildfire<br>Severe Thunderstorm/High Wind |
| <b>MODERATE RISK</b> | Extreme Heat<br>Hailstorm<br>Dam and Levee Failure<br>Lightning<br>Drought                    |
| <b>LOW RISK</b>      | Winter Storm and Freeze<br>Erosion<br>Radiological Event<br>Earthquake                        |

### G.3 PIKE COUNTY VULNERABILITY ASSESSMENT

This subsection identifies and quantifies the vulnerability of Pike County to the significant hazards previously identified. This includes identifying and characterizing an inventory of assets in the county and assessing the potential impact and expected amount of damages caused to these assets by each identified hazard event. More information on the methodology and data sources used to conduct this assessment can be found in Section 6: *Vulnerability Assessment*.

#### G.3.1 Asset Inventory

**Table G.33** lists the estimated number of improved properties and the total value of improvements for Pike County and its participating jurisdictions (study area of vulnerability assessment). Because digital parcel data was not available for most communities, data obtained from Hazus-MH 4.0 inventory was utilized to complete the analysis.

**TABLE G.33: IMPROVED PROPERTY IN PIKE COUNTY**

| Location                 | Counts of Improved Property | Total Value of Improvements |
|--------------------------|-----------------------------|-----------------------------|
| Magnolia                 | 1,106                       | \$221,010                   |
| McComb                   | 6,079                       | \$1,482,797                 |
| Osyka                    | 309                         | \$67,670                    |
| Summit                   | 963                         | \$162,688                   |
| Unincorporated Area      | 9,759                       | \$3,495,366,835             |
| <b>PIKE COUNTY TOTAL</b> | <b>18,216</b>               | <b>\$3,497,301,000</b>      |

Source: Hazus-MH 4.0

**Table G.34** lists the fire stations, police stations, medical care facilities, emergency operation centers, schools, government/public buildings, transportation infrastructure, and private facilities located in Pike County according to previous plan data and Hazus-MH 4.0 data that was reviewed and updated by local officials.

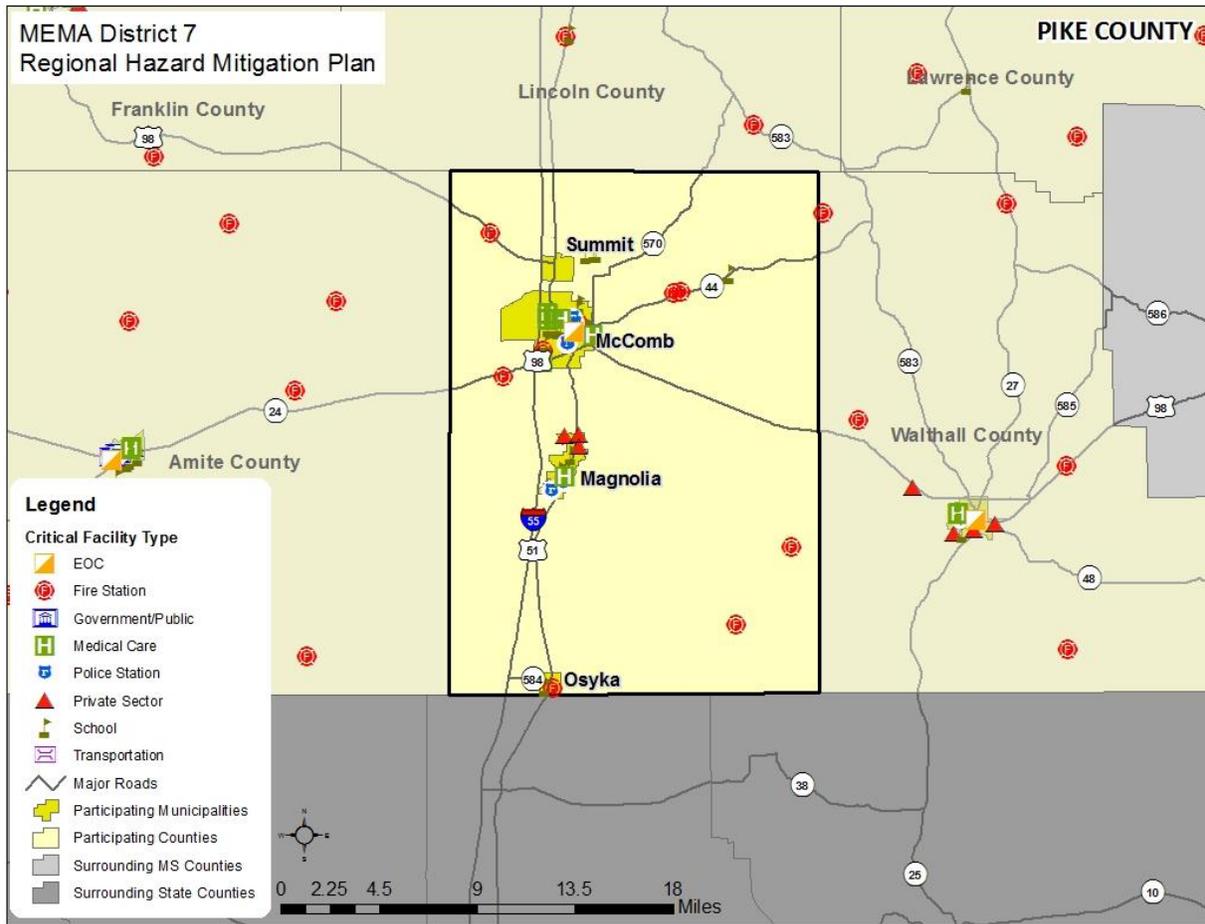
In addition, **Figure G.16** shows the locations of critical facilities in Pike County. **Table G.45**, at the end of this subsection, shows a complete list of the critical facilities by name, as well as the hazards that affect each facility. As noted previously, this list is not all-inclusive and only includes information provided through Hazus which was updated, as best as possible, with local knowledge.

**TABLE G.34: CRITICAL FACILITY INVENTORY IN PIKE COUNTY**

| Location                 | Fire Stations | Police Stations | Medical Care | EOC      | Schools   | Gov't/<br>Public | Trans    | Private Sector |
|--------------------------|---------------|-----------------|--------------|----------|-----------|------------------|----------|----------------|
| Magnolia                 | 1             | 3               | 2            | 0        | 4         | 0                | 0        | 3              |
| McComb                   | 4             | 4               | 7            | 1        | 9         | 0                | 0        | 0              |
| Osyka                    | 2             | 0               | 0            | 0        | 1         | 0                | 0        | 0              |
| Summit                   | 1             | 0               | 0            | 0        | 1         | 0                | 0        | 0              |
| Unincorporated Area      | 3             | 0               | 0            | 0        | 4         | 0                | 0        | 0              |
| <b>PIKE COUNTY TOTAL</b> | <b>11</b>     | <b>7</b>        | <b>9</b>     | <b>1</b> | <b>19</b> | <b>0</b>         | <b>0</b> | <b>3</b>       |

Source: Hazus-MH 4.0; Local Officials

**FIGURE G.16: CRITICAL FACILITY LOCATIONS IN PIKE COUNTY**



Source: Hazus-MH 4.0; Local Officials

### G.3.2 Social Vulnerability

In addition to identifying those assets potentially at risk to identified hazards, it is important to identify and assess those particular segments of the resident population in Pike County that are potentially at risk to these hazards.

**Table G.35** lists the population by jurisdiction according to U.S. Census, American Community Survey 2015 population estimates. The total population in Pike County according to Census data was 40,075 persons. Additional population estimates are presented above in Section G.1.

**TABLE G.35: TOTAL POPULATION IN PIKE COUNTY**

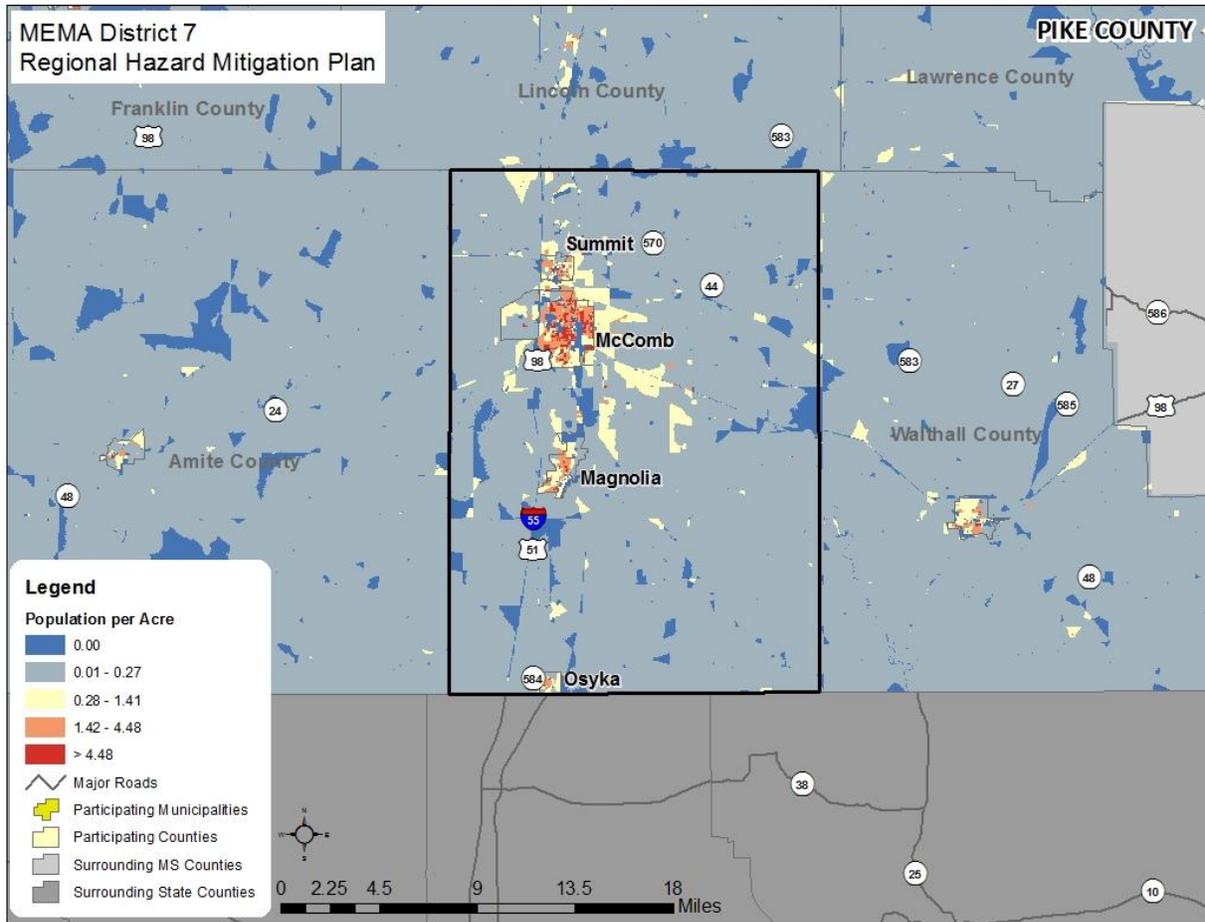
| Location            | Total 2015 Population |
|---------------------|-----------------------|
| Magnolia            | 2,021                 |
| McComb              | 12,723                |
| Osyka               | 425                   |
| Summit              | 2,307                 |
| Unincorporated Area | 22,599                |

| Location                 | Total 2015 Population |
|--------------------------|-----------------------|
| <b>PIKE COUNTY TOTAL</b> | <b>40,075</b>         |

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

In addition, **Figure G.17** illustrates the population density per acre by census block as it was reported by the U.S. Census Bureau in 2010. As can be seen in the figure, the population is spread out with concentrations in municipal areas such as Magnolia, McComb, Osyka, and Summit.

**FIGURE G.17: POPULATION DENSITY IN PIKE COUNTY**



Source: United States Census Bureau, 2010 Census

### G.3.3 Development Trends and Changes in Vulnerability

Since the previous hazard mitigation plan was approved, Pike County has experienced limited growth and development. **Table G.36** shows the number of building units constructed since 2010 according to the U.S. Census American Community Survey.

**TABLE G.36: BUILDING COUNTS FOR PIKE COUNTY**

| Location                 | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|--------------------------|----------------------------|---------------------------|----------------------------------|
| Magnolia                 | 861                        | 0                         | 0.00%                            |
| McComb                   | 6,005                      | 87                        | 1.45%                            |
| Osyka                    | 200                        | 0                         | 0.00%                            |
| Summit                   | 883                        | 0                         | 0.00%                            |
| Unincorporated Area      | 9,949                      | 294                       | 2.96%                            |
| <b>PIKE COUNTY TOTAL</b> | <b>17,898</b>              | <b>381</b>                | <b>2.13%</b>                     |

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

**Table G.37** shows population growth estimates for the county from 2010 to 2015 based on the U.S. Census American Community Survey.

**TABLE G.37: POPULATION GROWTH FOR PIKE COUNTY**

| Location                 | Population Estimates |               |               |               |               |               | % Change 2010-2015 |
|--------------------------|----------------------|---------------|---------------|---------------|---------------|---------------|--------------------|
|                          | 2010                 | 2011          | 2012          | 2013          | 2014          | 2015          |                    |
| Magnolia                 | 2,607                | 2,056         | 2,266         | 2,103         | 1,926         | 2,021         | -22.48%            |
| McComb                   | 12,932               | 12,881        | 12,841        | 12,814        | 12,771        | 12,723        | -1.62%             |
| Osyka                    | 518                  | 470           | 589           | 583           | 375           | 425           | -17.95%            |
| Summit                   | 1,631                | 1,630         | 1,651         | 1,945         | 2,108         | 2,307         | 41.45%             |
| Unincorporated Area      | 22,596               | 23,277        | 22,953        | 22,824        | 23,029        | 22,599        | 0.01%              |
| <b>PIKE COUNTY TOTAL</b> | <b>40,284</b>        | <b>40,314</b> | <b>40,300</b> | <b>40,269</b> | <b>40,209</b> | <b>40,075</b> | <b>-0.52%</b>      |

Source: United States Census Bureau, 2006-2010, 2007-2011, 2008-2012, 2009-2013, and 2010-2014, and 2011-2015 American Community Survey 5-Year Estimates

Based on the data above, there has been a low rate of residential development and population growth in the county since 2010, and the county has actually experienced a population decline. However, it is notable that Summit has experienced a significant rate of growth compared to the rest of the county, resulting in an increased number of people that are vulnerable to the potential impacts of the identified hazards. Therefore, population growth has impacted the county's vulnerability since the previous local hazard mitigation plan was approved and there has been a slight increase in the overall vulnerability as well as a larger increase in certain areas and communities.

It is also important to note that as development increases in the future, greater populations and more structures and infrastructure will be exposed to potential hazards if development occurs in the floodplains or other high risk areas.

### G.3.4 Vulnerability Assessment Results

As noted in Section 6: *Vulnerability Assessment*, only hazards with a specific geographic boundary, available modeling tool, or sufficient historical data allow for further analysis. Those results, specific to Pike County, are presented here. All other hazards are assumed to impact the entire planning region (drought, extreme heat, hailstorm, lightning, severe thunderstorm/high wind, tornado, and winter storm) or, due to lack of data, analysis would not lead to credible results (erosion). The total county exposure, and thus risk to these hazards, was presented in **Table G.33**.

The hazards to be further analyzed in this subsection include: dam/levee failure, flood, wildfire, earthquake, hurricane and tropical storm winds, and radiological event.

The annualized loss estimate for all hazards is presented near the end of this subsection in **Table G.44**.

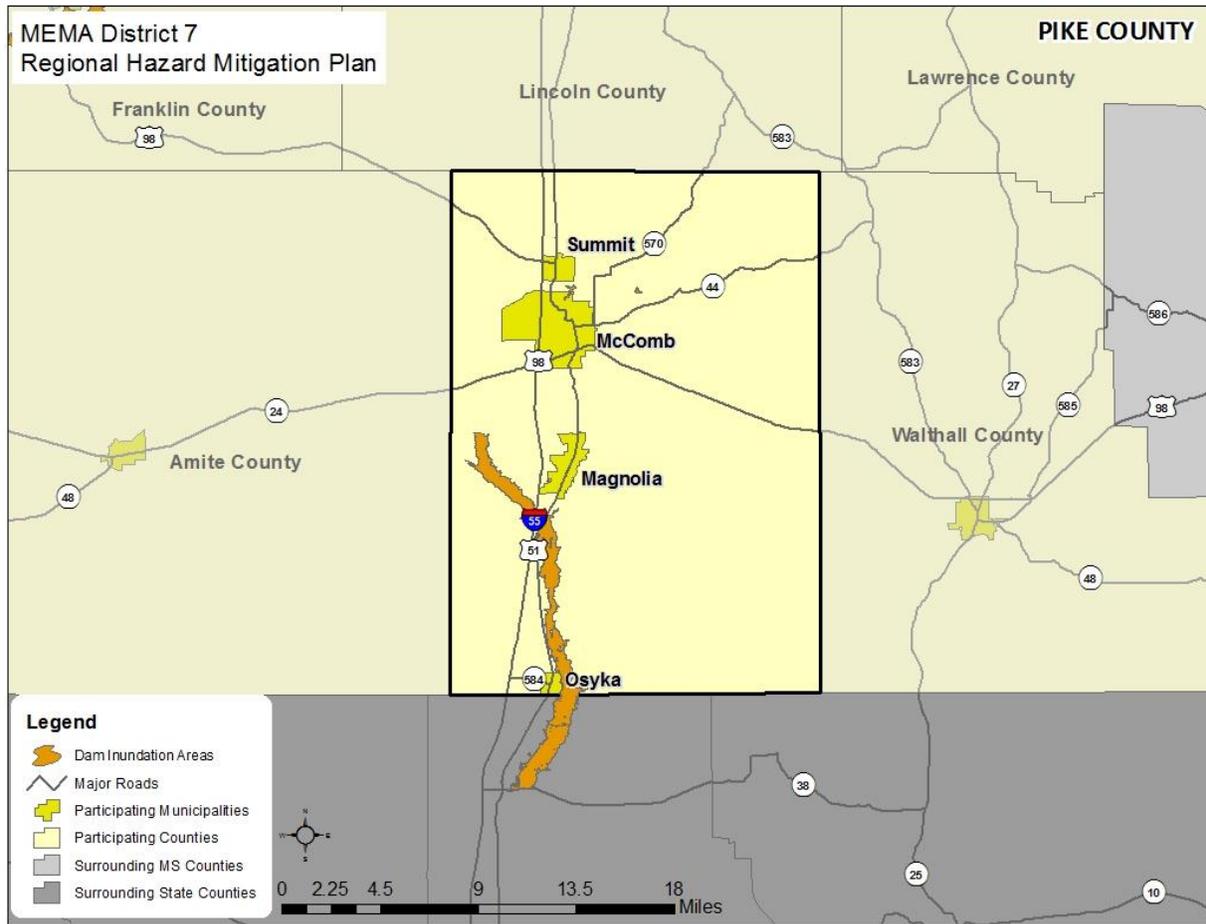
### ***DAM/LEVEE FAILURE***

In order to assess risk to a dam or levee failure, a GIS-based analysis was used to estimate exposure to one of the areas delineated by the Mississippi Department of Environmental Quality as a potential inundation area in the event of a failure. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified inundation area. As mentioned previously, this type of inundation mapping has not been completed for every dam/levee in the region, so the results of this analysis likely underestimate the overall vulnerability to a dam or levee failure. However, the analysis is still useful as a sort of baseline minimum of property that is potentially at-risk. The identified inundation areas can be found in **Figure G.18**.

In general, building footprint and parcel data were used in this analysis. However, in some communities, due to a lack of digital parcel data, it was determined that analysis using the inventory from Hazus-MH 4.0 would be used to supplement the building/parcel data. It should be noted that this data will merely be an estimation and may not reflect actual counts or values located in dam inundation areas. Indeed, in almost all cases, this data likely overestimates the amount of property in the identified risk zones.

**Table G.38** presents the potential at-risk property. Both the number of buildings and the approximate improved value are presented.

**FIGURE G.18: DAM INUNDATION AREAS IN PIKE COUNTY**



Source: Mississippi Department of Environmental Quality

**TABLE G.38: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE DAM/LEVEE FAILURE HAZARD**

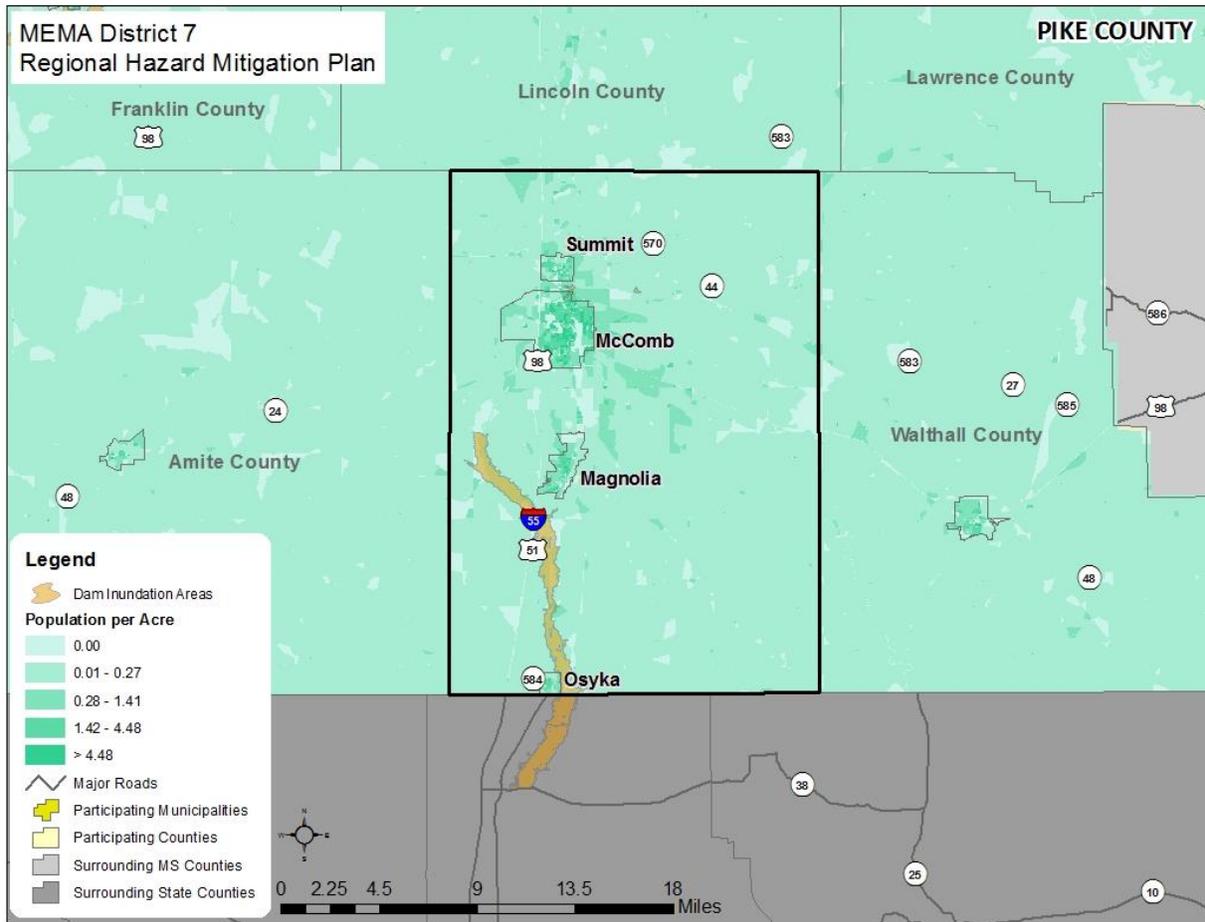
| Location                 | Dam Inundation Area            |                        |
|--------------------------|--------------------------------|------------------------|
|                          | Approx. Number of Improvements | Approx. Improved Value |
| Magnolia                 | 86                             | \$10,018,000           |
| McComb                   | 157                            | \$22,551,000           |
| Osyka                    | 38                             | \$7,399,000            |
| Summit                   | 41                             | \$4,841,000            |
| Unincorporated Area      | 331                            | \$51,569,000           |
| <b>PIKE COUNTY TOTAL</b> | <b>653</b>                     | <b>\$96,378,000</b>    |

Source: Mississippi Department of Environmental Quality; Hazus 4.0

**Social Vulnerability**

Figure G.19 is presented to gain a better understanding of at-risk population by evaluating census block level population data against dam inundation areas. There are several areas of concern in the county, although it should be noted that most of the population of the county is not at risk to a dam/levee failure.

**FIGURE G.19: POPULATION DENSITY NEAR DAM INUNDATION AREAS IN PIKE COUNTY**



Source: Mississippi Department of Environmental Quality; United States Census Bureau, 2010 Census

**Critical Facilities**

There are no critical facilities located within the identified dam inundation areas. Although there are no facilities located in the identified areas, this does not indicate that there is no risk to a dam/levee failure, especially considering not all dams have delineated inundation areas. A list of specific critical facilities and their associated risk can be found in **Table G.45** at the end of this section.

In conclusion, a dam/levee failure has the potential to impact many existing and future buildings, facilities, and populations in Pike County, though structures located near or in the dam inundation areas are at highest risk. Specific vulnerabilities for Pike County assets will be greatly dependent on their individual design and the mitigation measures in place where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates if data becomes available.

## FLOOD

Historical evidence indicates that Pike County is susceptible to flood events. A total of 14 flood events have been reported by the National Climatic Data Center resulting in \$1.0 million (2017 dollars) in property damage. On an annualized level, these damages amounted to \$297,705 for Pike County.

In order to assess flood risk, a GIS-based analysis was used to estimate exposure to flood events using Digital Flood Insurance Rate Map (DFIRM) data in combination with improved property records for the county. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified floodplain. Due to a lack of digital parcel data in most counties, it was determined that an analysis using the inventory from Hazus-MH 4.0 would be used, though it should be noted that the data will merely be an estimation and may not reflect actual counts or values located in the floodplain. Indeed, in almost all cases, this analysis likely overestimates the amount of property at risk. **Table G.39** presents the potential at-risk property. Both the number of parcels and the approximate value are presented.

**TABLE G.39: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE FLOOD HAZARD<sup>25</sup>**

| Location                 | 1.0-percent ACF                |                                | 0.2-percent ACF                |                                |
|--------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|                          | Approx. Number of Improvements |
| Magnolia                 | 261                            | \$48,177,000                   | 621                            | \$142,579,000                  |
| McComb                   | 779                            | \$171,902,000                  | 0                              | \$0                            |
| Osyka                    | 58                             | \$11,669,000                   | 0                              | \$0                            |
| Summit                   | 107                            | \$24,697,000                   | 0                              | \$0                            |
| Unincorporated Area      | 2,827                          | \$434,734,000                  | 0                              | \$0                            |
| <b>PIKE COUNTY TOTAL</b> | <b>4,032</b>                   | <b>\$691,179,000</b>           | <b>621</b>                     | <b>\$142,579,000</b>           |

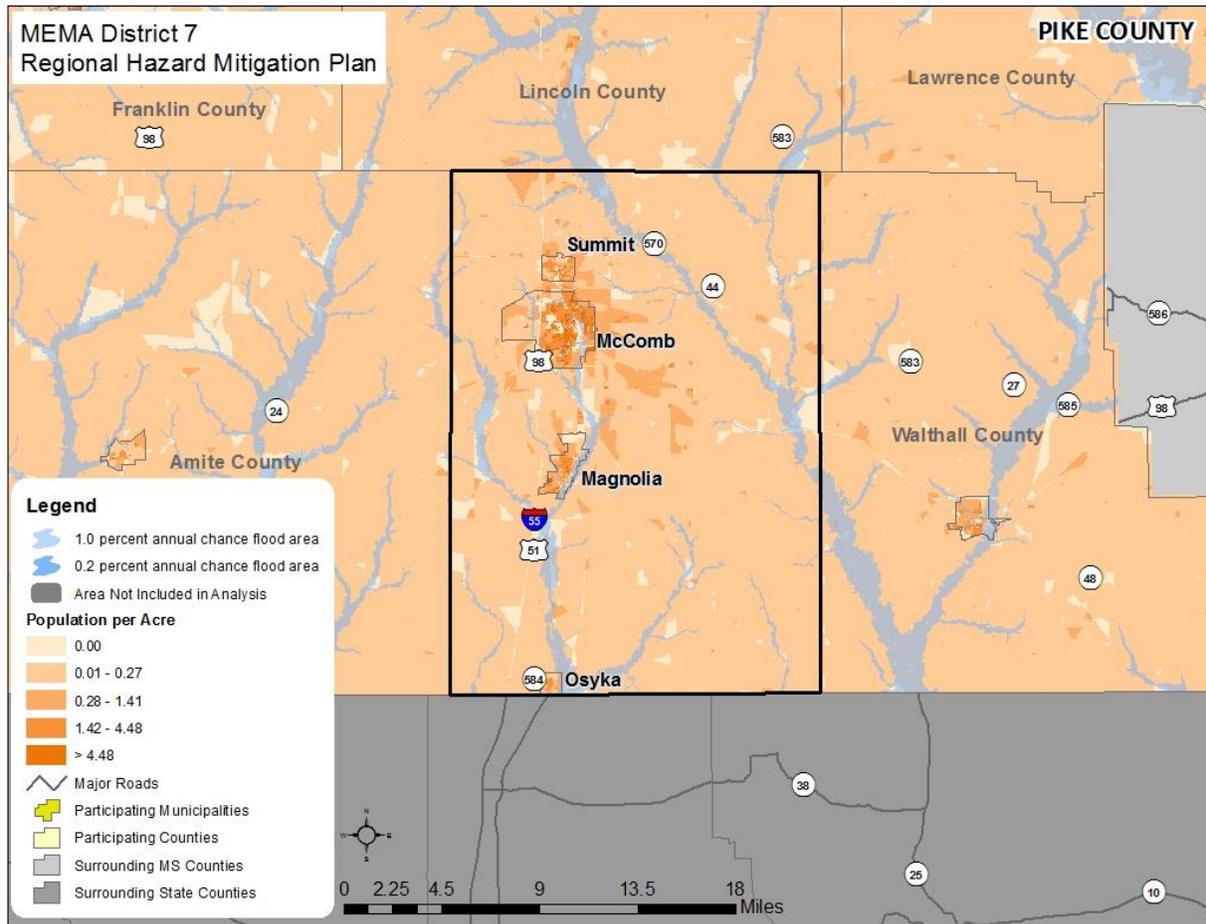
Source: Federal Emergency Management Agency DFIRM; Hazus MH 4.0

### Social Vulnerability

**Figure G.20** is presented to gain a better understanding of at-risk population by evaluating census block level population data against mapped floodplains. There are areas of concern in several of the population centers. Therefore, further investigation in these areas may be warranted.

<sup>25</sup> As noted in Section 6.4, no building-specific data, such as building footprints, was available to determine buildings at risk. As a result of this data limitation, at-risk census block building counts and values of the structures were used.

**FIGURE G.20 : POPULATION DENSITY NEAR FLOODPLAINS IN PIKE COUNTY**



Source: Federal Emergency Management Agency DFIRM; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are two critical facilities located in the floodplain. (Please note, as previously indicated, this analysis does not consider building elevation, which may negate risk.) Both of these facilities are located in the 1.0 percent annual chance flood zone, and they include a fire station and a medical care facility. A list of specific critical facilities and their associated risk can be found in **Table G.45** at the end of this subsection.

In conclusion, a flood has the potential to impact many existing and future buildings, facilities, and populations in Pike County, though some areas are at a higher risk than others. All types of structures in a floodplain are at-risk, though elevated structures will have a reduced risk. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. Furthermore, areas subject to repetitive flooding should be analyzed for potential mitigation actions.

**WILDFIRE**

Although historical evidence indicates that Pike County is susceptible to wildfire events, there are few reports which include information on historic dollar losses. Therefore, it is difficult to calculate a reliable

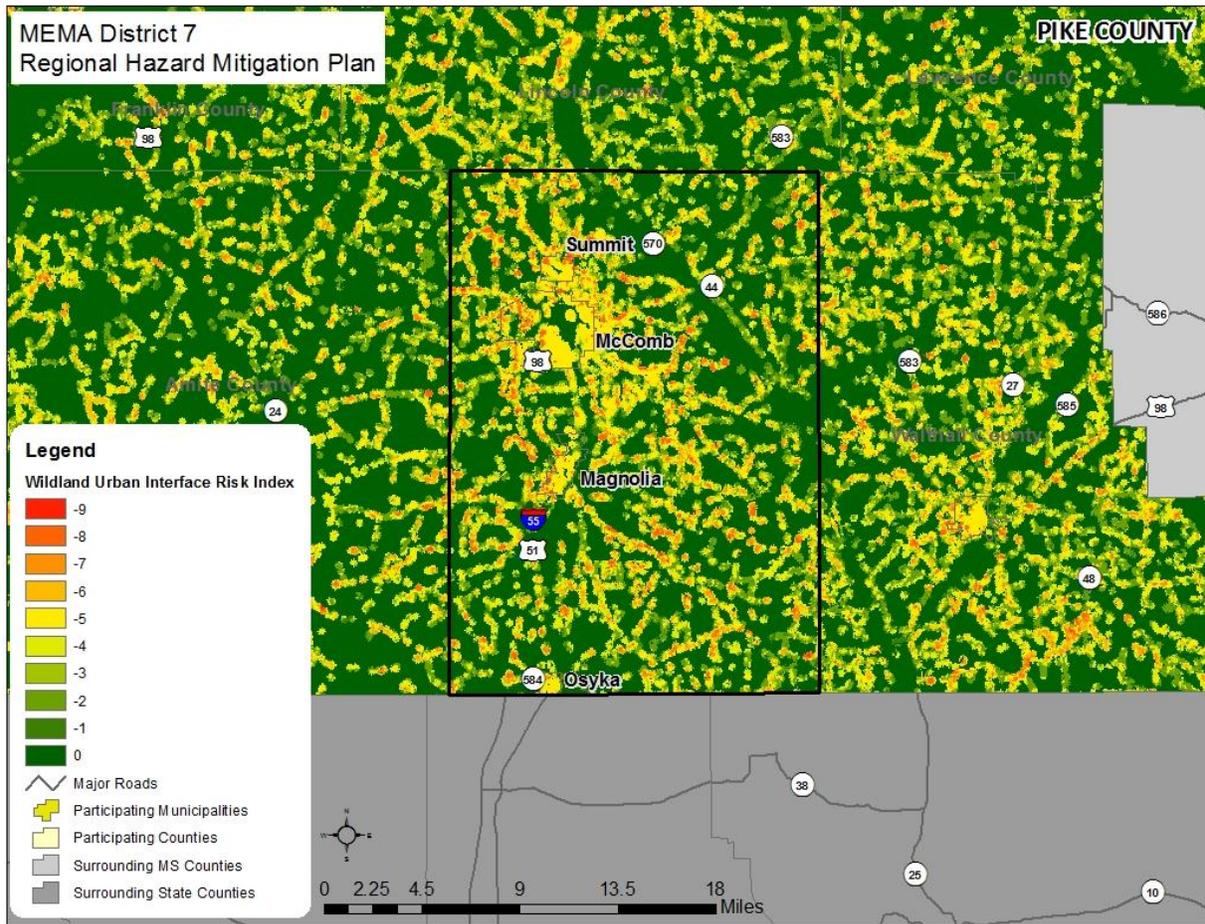
annualized loss figure. Annualized loss is considered negligible though it should be noted that a single event could result in significant damages throughout the county.

To estimate exposure to wildfire, building data was obtained from Hazus-MH 4.0 which includes information that has been aggregated at the census block level and which has been deemed useful for analyzing wildfire vulnerability. However, it should be noted that the accuracy of Hazus data is somewhat lower than that of parcel data. For the critical facility analysis, areas of concern were intersected with critical facility locations.

**Figure G.21** shows the Wildland Urban Interface Risk Index (WUIRI) data, which is a data layer that shows a rating of the potential impact of a wildfire on people and their homes. The key input, Wildland Urban Interface (WUI), reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the WUI and rural areas is key information for defining potential wildfire impacts to people and homes. Initially provided as raster data, it was converted to a polygon to allow for analysis. The Wildland Urban Interface Risk Index data ranges from 0 to -9 with lower values being most severe (as noted previously, this is only a measure of relative risk). **Figure G.22** shows the areas of analysis where any grid cell is less than -4. Areas with a value below -4 were chosen to be displayed as areas of risk because this showed the upper echelon of the scale and the areas at highest risk.

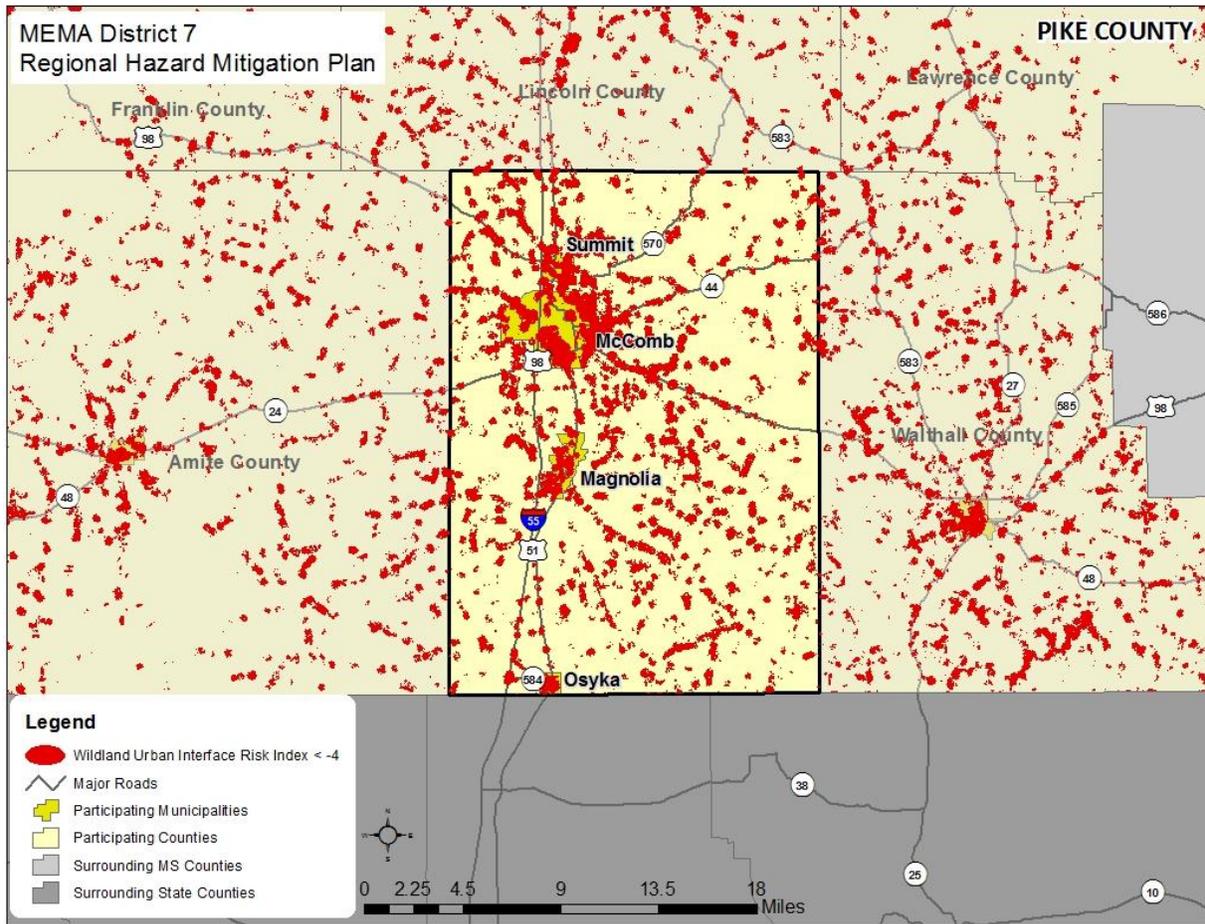
**Table G.40** shows the results of the analysis.

FIGURE G.21: WUI RISK INDEX AREAS IN PIKE COUNTY



Source: Southern Wildfire Risk Assessment Data

**FIGURE G.22: WILDFIRE RISK AREAS IN PIKE COUNTY**



Source: Southern Wildfire Risk Assessment Data

**TABLE G.40: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO WILDFIRE RISK AREAS<sup>26</sup>**

| Location                 | Wildfire Risk Area             |                        |
|--------------------------|--------------------------------|------------------------|
|                          | Approx. Number of Improvements | Approx. Improved Value |
| Magnolia                 | 1,097                          | \$217,471,000          |
| McComb                   | 4,591                          | \$1,069,353,000        |
| Osyka                    | 309                            | \$67,670,000           |
| Summit                   | 955                            | \$161,433,000          |
| Unincorporated Area      | 9,620                          | \$1,540,916,000        |
| <b>PIKE COUNTY TOTAL</b> | <b>16,572</b>                  | <b>\$3,056,843,000</b> |

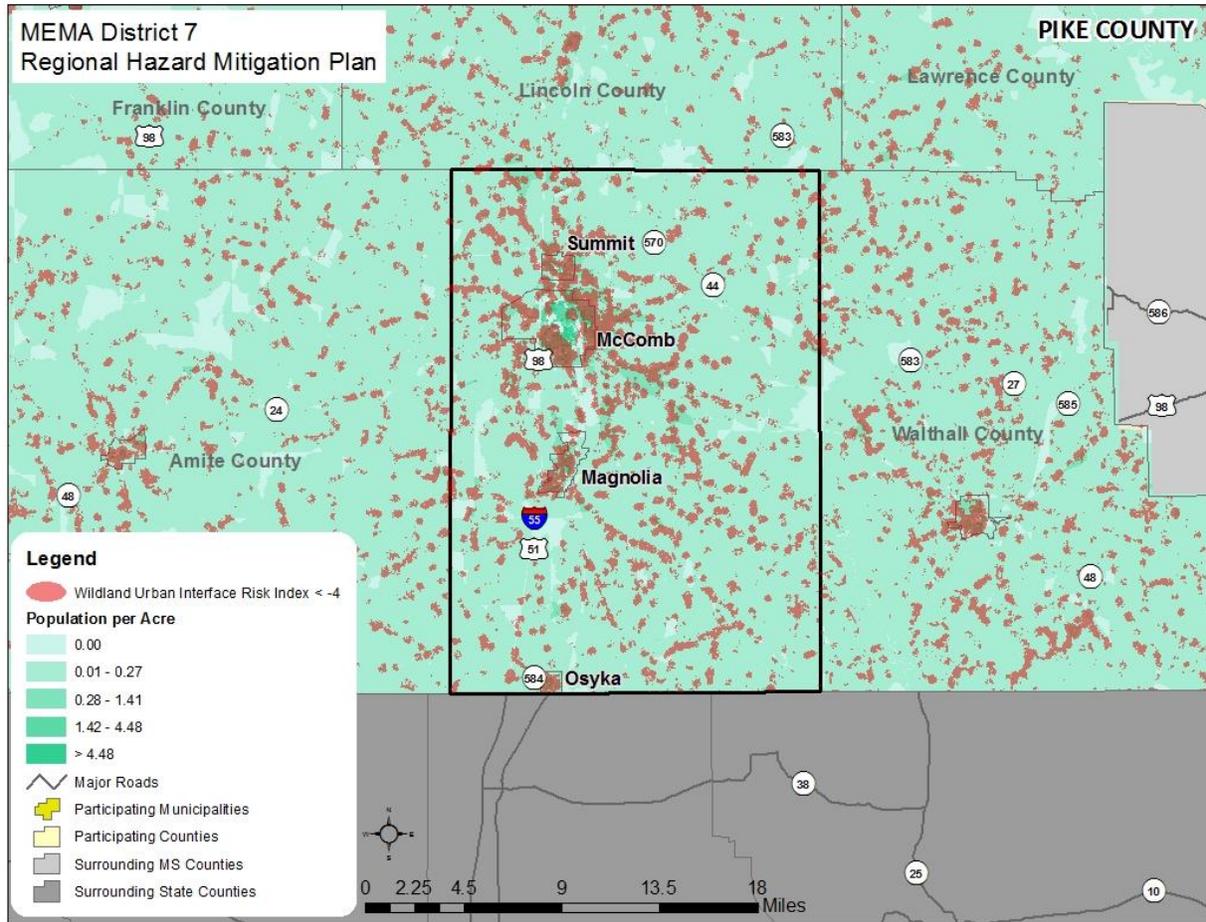
Source: Southern Wildfire Risk Assessment; Hazus-MH 4.0

<sup>26</sup> Parcel/Building Footprint data was not available for Pike County. Therefore, building counts and values were pulled from Hazus-MH at the census block level and approximate improved value was calculated.

**Social Vulnerability**

Given some level of susceptibility across the entire county, it is assumed that the total population is at risk to the wildfire hazard. **Figure G.23** shows an overlay of the wildfire risk areas identified above with the population density by census block. This shows that many of the areas of higher population concentration are susceptible to wildfire because of their proximity to the wildland urban interface.

**FIGURE G.23: WILDFIRE RISK AREAS IN PIKE COUNTY**



Source: Southern Wildfire Risk Assessment Data; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are 31 critical facilities located in wildfire areas of concern, including 7 fire stations, 4 medical care facilities, 5 police stations, and 15 schools. It should be noted, that several factors could impact the spread of a wildfire putting all facilities at risk. A list of specific critical facilities and their associated risk can be found in **Table G.45** at the end of this subsection.

In conclusion, a wildfire event has the potential to impact many existing and future buildings, critical facilities, and populations in Pike County.

**EARTHQUAKE**

As the Hazus-MH model suggests below, and historical occurrences confirm, any significant earthquake activity in the area is likely to inflict minor damage to the county. Hazus-MH 4.0 estimates a total annualized loss of \$22,000 which includes structural and non-structural damage to buildings, contents, and inventory throughout the county.

For the earthquake hazard vulnerability assessment, a probabilistic scenario was created to estimate the average annualized loss<sup>27</sup> for the county. The results of the analysis are generated at the census tract level within Hazus-MH and then aggregated to the county level. Since the scenario is annualized, no building counts are provided. Losses reported included losses due to structure failure, building loss, contents damage, and inventory loss. They do not include losses to business interruption, lost income, or relocation. **Table G.41** summarizes the findings with results rounded to the nearest thousand.

**TABLE G.41: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR EARTHQUAKE HAZARD**

| Location    | Structural Damage | Non-Structural Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|-------------|-------------------|-----------------------|-----------------|----------------|-----------------------|
| Pike County | \$6,000           | \$12,000              | \$4,000         | \$0            | \$22,000              |

Source: Hazus-MH 4.0

**Social Vulnerability**

It can be assumed that all existing and future populations are at risk to the earthquake hazard.

**Critical Facilities**

The Hazus-MH probabilistic analysis did not indicate that any critical facilities would sustain measurable damage in an earthquake event. However, all critical facilities should be considered at-risk to minor to moderate damage should an event occur. A list of specific critical facilities and their associated risk can be found in **Table G.45** at the end of this subsection.

In conclusion, an earthquake has the potential to impact all existing and future buildings, facilities, and populations in Pike County. Specific vulnerabilities for these assets will be greatly dependent on their individual design and the mitigation measures in place. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. The Hazus-MH scenario indicates that minimal to moderate damage is expected from an earthquake occurrence. While Pike County may not experience a catastrophic earthquake, localized damage is possible with a moderate to larger scale occurrence.

**HURRICANE AND TROPICAL STORM**

Historical evidence indicates that Pike County has significant risk to the hurricane and tropical storm hazard. There have been eight disaster declarations due to hurricanes as noted in previous sections. Several tracks have come near or traversed through the county, as shown and discussed in Section G.2.10. Hazus-MH 4.0 estimates a total annualized loss of \$1.1 million which includes buildings, contents, and inventory throughout the county.

<sup>27</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

Hurricanes and tropical storms can cause damage through numerous additional hazards such as flooding, erosion, tornadoes, and high winds, thus it is difficult to estimate total potential losses from these cumulative effects. The current Hazus-MH hurricane model only analyzes hurricane winds and is not capable of modeling and estimating cumulative losses from all hazards associated with hurricanes; therefore, only hurricane winds are analyzed in this section. It can be assumed that all existing and future buildings and populations are at risk to the hurricane and tropical storm hazard. Hazus-MH 4.0 was used to determine average annualized losses<sup>28</sup> for the county as shown below in **Table G.42**. Only losses to buildings, inventory, and contents are included in the results.

**TABLE G.42: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR HURRICANE WIND HAZARD**

| Location    | Building Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|-------------|-----------------|-----------------|----------------|-----------------------|
| Pike County | \$782,000       | \$301,000       | \$1,000        | \$1,084,000           |

Source: Hazus-MH 4.0

**Social Vulnerability**

Given some equal susceptibility across the entire county, it is assumed that the total population, both current and future, is at risk to the hurricane and tropical storm hazard.

**Critical Facilities**

Given equal vulnerability across Pike County, all critical facilities are considered to be at risk. Some buildings may perform better than others in the face of such an event due to construction and age, among other factors. Determining individual building response is beyond the scope of this plan. However, this plan will consider mitigation action for especially vulnerable structures and/or critical facilities to mitigate against the effects of the hurricane hazard. A list of specific critical facilities can be found in **Table G.45** at the end of this subsection.

In conclusion, a hurricane event has the potential to impact many existing and future buildings, critical facilities, and populations in Pike County.

**RADIOLOGICAL EVENT**

The location of Grand Gulf and River Bend Nuclear Stations north and south of the region, respectively, demonstrate that the county is at some risk to the effects of a nuclear accident. Although there have not been any major events at these plants in the past, there have been major events at other nuclear stations around the country. Additionally, smaller scale incidents at both these nuclear stations have occurred.

In order to assess nuclear risk, a GIS-based analysis was used to estimate exposure during a nuclear event within each of the risk zones described in Section G.2.14. The determination of assessed value at-risk (exposure) was calculated using GIS analysis by summing the total values for those properties that were confirmed to be located within one of the risk zones. **Table G.43** presents potential at-risk properties in the 50-mile buffer zone (no property was located in the 10-mile buffer zone). The number of buildings, parcels, and the approximate value are presented.

<sup>28</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

**TABLE G.43: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO A NUCLEAR ACCIDENT**

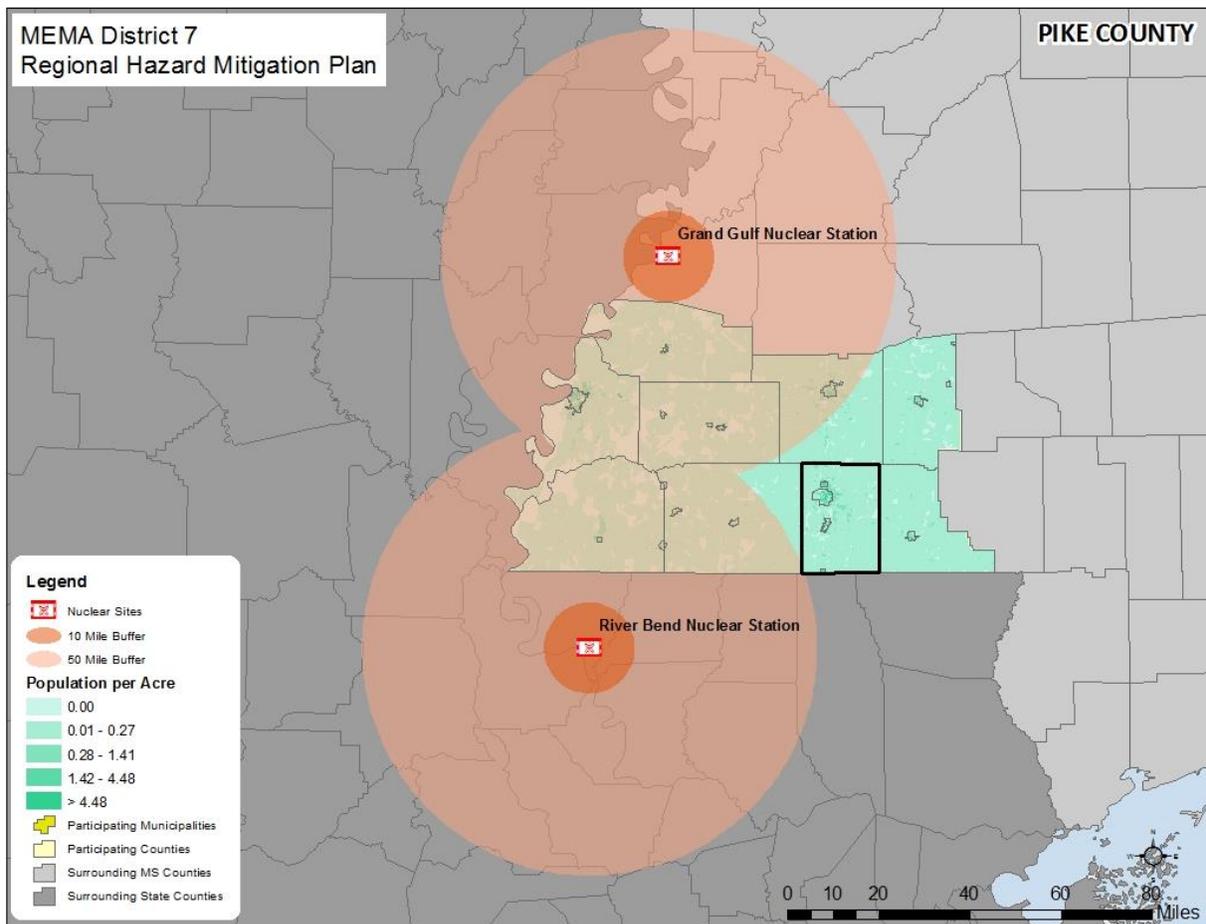
| Location                 | 50-mile Nuclear Buffer Area    |                        |
|--------------------------|--------------------------------|------------------------|
|                          | Approx. Number of Improvements | Approx. Improved Value |
| Magnolia                 | 0                              | \$0                    |
| McComb                   | 0                              | \$0                    |
| Osyka                    | 0                              | \$0                    |
| Summit                   | 0                              | \$0                    |
| Unincorporated Area      | 27                             | \$5,235,000            |
| <b>PIKE COUNTY TOTAL</b> | <b>27</b>                      | <b>\$5,235,000</b>     |

Source: International Atomic Energy Agency; Hazus-MH 4.0

**Social Vulnerability**

Only a small area in the southwestern corner of the county is within the 50-mile buffer area, this segment of the population is considered to be at high risk to a radiological event. However, other populations in the county may also be at some risk. This risk can be seen in **Figure G.24**.

**FIGURE G.24: POPULATION DENSITY NEAR NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN PIKE COUNTY**



Source: International Atomic Energy Agency; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are no critical facilities located in the 50-mile nuclear buffer area. However, the county is located on the boundary of the buffer area, so facilities may be at some risk. No critical facilities are located in the 10-mile buffer area. A list of specific critical facilities and their associated risk can be found in **Table G.45** at the end of this section.

In conclusion, a nuclear accident has the potential to impact existing and future buildings, facilities, and populations in Pike County.

**CONCLUSIONS ON HAZARD VULNERABILITY**

**Table G.44** presents a summary of annualized loss for each hazard in Pike County. Due to the reporting of hazard damages primarily at the county level, it was difficult to determine an accurate annualized loss estimate for each municipality. Therefore, an annualized loss was determined through the damage reported through historical occurrences at the county level. These values should be used as an additional planning tool or measure risk for determining hazard mitigation strategies throughout the county.

**TABLE G.44: ANNUALIZED LOSS FOR PIKE COUNTY**

| Event                         | Pike County  |
|-------------------------------|--------------|
| <b>Flood-related Hazards</b>  |              |
| Dam and Levee Failure         | Negligible   |
| Erosion                       | Negligible   |
| Flood                         | \$297,705    |
| <b>Fire-related Hazards</b>   |              |
| Drought                       | Negligible   |
| Lightning                     | \$492        |
| Wildfire                      | Negligible   |
| <b>Geologic Hazards</b>       |              |
| Earthquake*                   | \$6,000      |
| <b>Wind-related Hazards</b>   |              |
| Extreme Heat                  | Negligible   |
| Hailstorm                     | \$3,548      |
| Hurricane & Tropical Storm    | \$24,593,909 |
| Severe Thunderstorm/High Wind | \$51,568     |
| Tornado                       | \$2,400,146  |
| Winter Storm & Freeze         | \$0          |
| <b>Human-caused Hazards</b>   |              |
| Radiological Event            | Negligible   |

\*No historic losses for earthquake were recorded, so Hazus estimates for annualized loss were used.

| Event | Pike County |
|-------|-------------|
|-------|-------------|

Note: In this table, the term “Negligible” is used to indicate that no records of dollar losses for the particular hazard were recorded. This could be the case either because there were no events that caused dollar damage or because documentation of that particular type of event is not well kept.

As noted previously, all existing and future buildings and populations (including critical facilities) are vulnerable to atmospheric hazards including drought, lightning, extreme heat, hailstorm, hurricane and tropical storm, severe thunderstorm/high wind, tornado, and winter storm and freeze. Some buildings may be more vulnerable to these hazards based on other factors such as construction and building type. **Table G.45** shows the critical facilities vulnerable to the hazards analyzed in this section. The table lists those assets that are determined to be exposed to each of the identified hazards (marked with an “X”).

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**TABLE G.45: AT-RISK CRITICAL FACILITIES IN PIKE COUNTY**

| FACILITY NAME                                      | FACILITY TYPE | FLOOD-RELATED         |         |                | FIRE-RELATED   |         |           | GEO      | WIND-RELATED |              |           |                              |                                   |         | HUM                     |                                 |                                 |
|--|---------------|-----------------------|---------|----------------|----------------|---------|-----------|----------|--------------|--------------|-----------|------------------------------|-----------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|  |               | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought | Lightning | Wildfire | Earthquake   | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Lightning | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| <b>Pike County</b>                                 |               |                       |         |                |                |         |           |          |              |              |           |                              |                                   |         |                         |                                 |                                 |
| Pike County EOC                                    | EOC           |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| Friendship Fire Department #2                      | Fire Station  |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| Friendship Volunteer Fire Department               | Fire Station  |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| Magnolia Fire Department                           | Fire Station  |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| McComb Fire Chief                                  | Fire Station  |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| McComb Fire Department #2                          | Fire Station  |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| McComb Fire Department #3                          | Fire Station  |                       | X       | X              |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| Progress Volunteer Fire Department #1              | Fire Station  |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| Progress Volunteer Fire Department #2              | Fire Station  |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| Rural Osyka Volunteer Fire Department              | Fire Station  |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| Summit Rural Volunteer Fire Department             | Fire Station  |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| Sunnyhill Vol. Fire Dept.<br>Hwy 48 West McComb,MS | Fire Station  |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| Aston Court Assisted Living Personal Care          | Medical Care  |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| Beacham Memorial Hospital                          | Medical Care  |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| Camelia Estates Living/Nursing Home                | Medical Care  |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| Family Practice Clinic of McComb                   | Medical Care  |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| Magnolia Clinic                                    | Medical Care  |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |
| McComb Extended Care Center                        | Medical Care  |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 |                                 |

ANNEX G: PIKE COUNTY

| FACILITY NAME                 | FACILITY TYPE  | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                                    |         |                         | HUM                             |                                 |
|-------------------------------|----------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|------------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|                               |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Light Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| McComb Nursing and Rehab      | Medical Care   |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| SW Miss Regional Hospital     | Medical Care   |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| The Clibourne                 | Medical Care   |                       | X       | X              |                | X            | X         |          | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| Magnolia Police Dept          | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| Mc Comb Police-Animal Control | Police Station |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| Mc Comb Police-Support Svc    | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| Mc Comb Police Chief          | Police Station |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| Pike County Sheriff's Office  | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| Pike County Sheriff's Office  | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| Summit Police Dept            | Police Station |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| Kroft                         | Private Sector |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| Metro Pike Industrial Park    | Private Sector |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| Weyerhauser Packaging         | Private Sector |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| Denman Jr High School         | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| Eva Gordon Elementary School  | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| Higgins Middle School         | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| Kennedy Elementary School     | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| Magnolia Elementary School    | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| McComb High School            | School         |                       | X       |                |                | X            | X         |          | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |
| McComb Voc-Tech Center        | School         |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                  | X       |                         |                                 |                                 |

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| FACILITY NAME                           | FACILITY TYPE | FLOOD-RELATED         |         |                | FIRE-RELATED   |         |           | GEO      | WIND-RELATED |              |           |                              |                                    |         | HUM                     |                                 |
|---|---------------|-----------------------|---------|----------------|----------------|---------|-----------|----------|--------------|--------------|-----------|------------------------------|------------------------------------|---------|-------------------------|---------------------------------|
|   |               | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought | Lightning | Wildfire | Earthquake   | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Light Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area |
| North Pike Elementary School            | School        |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| North Pike High School                  | School        |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| North Pike Middle School                | School        |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Osyka Elementary School                 | School        |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Otken Elementary School                 | School        |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Parklane Academy                        | School        |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| South Pike High School                  | School        |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| South Pike Jr High School               | School        |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Southwest Mississippi Community College | School        |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| St. Alphonsus Elementary School         | School        |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Summit Learning Center                  | School        |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |
| Westbrook Head Start                    | School        |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       |                         |                                 |

## G.4 PIKE COUNTY CAPABILITY ASSESSMENT

This subsection discusses the capability of Pike County to implement hazard mitigation activities. More information on the purpose and methodology used to conduct the assessment can be found in Section 7: *Capability Assessment*.

### G.4.1 Planning and Regulatory Capability

**Table G.46** provides a summary of the relevant local plans, ordinances, and programs already in place or under development for Pike County. A checkmark (✓) indicates that the given item is currently in place and being implemented. An asterisk (\*) indicates that the given item is currently being developed for future implementation. A dagger (†) indicates that the given item is administered for that municipality by the county. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the MEMA District 7 Regional Hazard Mitigation Plan.

**TABLE G.46: RELEVANT PLANS, ORDINANCES, AND PROGRAMS**

| Planning Tool/Regulatory Tool | Hazard Mitigation Plan | Threat and Hazard Identification and Risk Assessment (THIRA) | Comprehensive Land Use Plan | Floodplain Management Plan/Flood Mitigation Plan | Open Space Management Plan (Parks & Rec/Greenway Plan) | Stormwater Management Plan/Ordinance | Natural Resource Protection Plan | Flood Response Plan | Emergency Operations Plan | Emergency Management Accreditation Program (EMAP Accreditation) | Continuity of Operations Plan | Evacuation Plan | Disaster Recovery Plan | Capital Improvements Plan | Economic Development Plan | Historic Preservation Plan | Flood Damage Prevention Ordinance | Zoning Ordinance | Subdivision Ordinance | Unified Development Ordinance | Post-Disaster Redevelopment/ Reconstruction Plan/ Ordinance | Building Code | Fire Code | National Flood Insurance Program (NFIP) | NFIP Community Rating System (CRS Program) |
|-------------------------------|------------------------|--|-----------------------------|--|--|--------------------------------------|----------------------------------|---------------------|---------------------------|---|-------------------------------|-----------------|------------------------|---------------------------|---------------------------|----------------------------|-----------------------------------|------------------|-----------------------|-------------------------------|---|---------------|-----------|---|--|
|                               | PIKE COUNTY            | ✓  |                             | ✓  |  |                                      |                                  |                     |                           | ✓   |                               |                 |                        |                           |                           | ✓                          |                                   | ✓                |                       |                               |   |               |           |   | ✓  |
| Magnolia                      | †                      |  | †                           |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            | ✓                                 |                  | ✓                     |                               |   |               |           | ✓                                       |  |
| McComb                        | †                      |  | ✓                           |  |  | ✓                                    |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            | ✓                                 | ✓                | ✓                     |                               |   | ✓             | ✓         | ✓                                       |  |
| Osyka                         | †                      |  | †                           |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            | ✓                                 |                  |                       |                               |   |               |           | ✓                                       |  |
| Summit                        | †                      |  | †                           |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            |                                   |                  |                       |                               |   |               |           |   |  |

A more detailed discussion on the county’s planning and regulatory capabilities follows.

### EMERGENCY MANAGEMENT

#### Hazard Mitigation Plan

Pike County has previously adopted a hazard mitigation plan. The City of Magnolia, City of McComb, Town of Osyka, and Town of Summit were also included in this plan.

**Emergency Operations Plan**

Pike County maintains an emergency operations plan through its Emergency Management Agency. The City of Magnolia, City of McComb, Town of Osyka, and Town of Summit are also covered by this plan.

**GENERAL PLANNING**

**Comprehensive Land Use Plan**

Pike County has adopted a county comprehensive plan. This plan also includes the City of Magnolia, City of McComb, Town of Osyka, and Town of Summit. The City of McComb has also adopted a city comprehensive plan.

**Historic Preservation Plan**

None of the jurisdictions in Pike County has a historic preservation plan. However, the City of McComb has adopted a historic preservation ordinance.

**Zoning Ordinance**

The City of McComb is the only jurisdiction in Pike County that has adopted a zoning ordinance.

**Subdivision Ordinance**

The City of Magnolia and City of McComb are the only jurisdictions in Pike County that have adopted a subdivision ordinance.

**Building Codes, Permitting, and Inspections**

The City of McComb is the only jurisdiction in Pike County that has adopted a building code.

**FLOODPLAIN MANAGEMENT**

Table G.47 provides NFIP policy and claim information for each participating jurisdiction in Pike County.

**TABLE G.47: NFIP POLICY AND CLAIM INFORMATION**

| Jurisdiction | Date Joined NFIP | Current Effective Map Date | NFIP Policies in Force | Insurance in Force | Closed Claims | Total Payments to Date |
|--------------|------------------|----------------------------|------------------------|--------------------|---------------|------------------------|
| PIKE COUNTY† | 09/15/89         | 06/18/10                   | 75                     | \$14,498,900       | 67            | \$3,021,753            |
| Magnolia     | 07/01/87         | 06/18/10                   | 2                      | \$1,323,400        | 7             | \$124,712              |
| McComb       | 08/01/79         | 06/18/10                   | 45                     | \$11,809,700       | 29            | \$391,370              |
| Osyka        | 10/16/12         | 06/18/10                   | 1                      | \$350,000          | 0             | \$0                    |
| Summit*      | --               | --                         | --                     | --                 | --            | --                     |

†Includes unincorporated areas of county only

\*Community does not participate in the NFIP

Source: NFIP Community Status information as of 8/17/2017; NFIP claims and policy information as of 4/30/2017

All jurisdictions listed above that are participants in the NFIP will continue to comply with all required provisions of the program and will work to adequately comply in the future utilizing a number of strategies. For example, the jurisdictions will coordinate with MEMA and FEMA to develop maps and regulations related to special flood hazard areas within their jurisdictional boundaries and, through a consistent monitoring process, will design and improve their floodplain management program in a way that reduces the risk of flooding to people and property.

As noted above, all jurisdictions are not participants in the NFIP. The Town of Summit does not participate because it currently does not have any identified flood hazard areas within its jurisdiction, so most residents would be unlikely to purchase flood insurance.

**Flood Damage Prevention Ordinance**

All communities participating in the NFIP are required to adopt a local flood damage prevention ordinance. Pike County, City of Magnolia, City of McComb, and Town of Osyka all participate in the NFIP and have adopted flood damage prevention regulations.

**Stormwater Management Plan**

Pike County does not have a stormwater management plan or ordinance in place. However, the City of McComb has adopted a local stormwater detention ordinance.

**G.4.2 Administrative and Technical Capability**

**Table G.48** provides a summary of the capability assessment results for Pike County with regard to relevant staff and personnel resources. A checkmark (✓) indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill. A dagger (†) indicates a county-level staff member(s) provides the specified knowledge or skill to that municipality.

**TABLE G.48: RELEVANT STAFF/PERSONNEL RESOURCES**

| Staff/Personnel Resource | Planners with knowledge of land development/land management practices | Engineers or professionals trained in construction practices related to buildings and/or infrastructure | Planners or engineers with an understanding of natural land/or human-caused hazards | Emergency Manager | Floodplain Manager | Land Surveyors | Scientists familiar with the hazards of the community | Staff with education or expertise to assess the community's vulnerability to hazards | Personnel skilled in GIS and/or Hazus | Resource development staff or grant writers |
|--------------------------|---|---|---|-------------------|--------------------|----------------|---|--|---------------------------------------|---|
| PIKE COUNTY              |   | ✓   |   | ✓                 | ✓                  |                | ✓   | ✓  |                                       |   |
| Magnolia                 |   |   |   | †                 | ✓                  |                | †   | †  |                                       |   |
| McComb                   | ✓   | ✓   |   | †                 | ✓                  |                | †   | †  |                                       |   |

| Staff/Personnel Resource | Planners with knowledge of land development/land management practices | Engineers or professionals trained in construction practices related to buildings and/or infrastructure | Planners or engineers with an understanding of natural and/or human-caused hazards | Emergency Manager | Floodplain Manager | Land Surveyors | Scientists familiar with the hazards of the community | Staff with education or expertise to assess the community's vulnerability to hazards | Personnel skilled in GIS and/or Hazus | Resource development staff or grant writers |
|--------------------------|---|---|--|-------------------|--------------------|----------------|---|--|---------------------------------------|---|
| Osyka                    |   |   |  | +                 | ✓                  |                | +   | +  |                                       |   |
| Summit                   |   |   |  | +                 |                    |                | +   | +  |                                       |   |

Credit for having a floodplain manager was given to those jurisdictions that have a flood damage prevention ordinance, and therefore an appointed floodplain administrator, regardless of whether the appointee was dedicated solely to floodplain management. Credit was given for having a scientist familiar with the hazards of the community if a jurisdiction has a Cooperative Extension Service or Soil and Water Conservation Department. Credit was also given for having staff with education or expertise to assess the community's vulnerability to hazards if a staff member from the jurisdiction was a participant on the existing hazard mitigation plan's planning committee.

### G.4.3 Fiscal Capability

**Table G.49** provides a summary of the results for Pike County with regard to relevant fiscal resources. A checkmark (✓) indicates that the given fiscal resource has previously been used to implement hazard mitigation actions. A dagger (†) indicates that the given fiscal resource is locally available for hazard mitigation purposes (including match funds for state and federal mitigation grant funds).

**TABLE G.49: RELEVANT FISCAL RESOURCES**

| Fiscal Tool/Resource | Capital Improvement Programming | Community Development Block Grants (CDBG) | Special Purpose Taxes (or taxing districts) | Gas/Electric Utility Fees | Water/Sewer Fees | Stormwater Utility Fees | Development Impact Fees | General Obligation, Revenue, and/or Special Tax Bonds | Partnering Arrangements or Intergovernmental Agreements | Other: FEMA Hazard Mitigation Grants, Homeland Security Grants, USDA Rural Development Agency Grants, and US Economic Development Administration Grants |
|----------------------|---------------------------------|---|---|---------------------------|------------------|-------------------------|-------------------------|---|---|---|
| PIKE COUNTY          |                                 | +   |   |                           |                  |                         |                         |   | +   | +   |

| Fiscal Tool/Resource | Capital Improvement Programming | Community Development Block Grants (CDBG) | Special Purpose Taxes (or taxing districts) | Gas/Electric Utility Fees | Water/Sewer Fees | Stormwater Utility Fees | Development Impact Fees | General Obligation, Revenue, and/or Special Tax Bonds | Partnering Arrangements or Intergovernmental Agreements | Other: FEMA Hazard Mitigation Grants, Homeland Security Grants, USDA Rural Development Agency Grants, and US Economic Development Administration Grants |
|----------------------|---------------------------------|---|---|---------------------------|------------------|-------------------------|-------------------------|---|---|---|
|                      | Magnolia                        |   | †   |                           |                  |                         |                         |   |   |   |
| McComb               |                                 | ✓   |   |                           |                  |                         |                         |   | †   | †   |
| Osyka                |                                 | †   |   |                           |                  |                         |                         |   |   | †   |
| summit               |                                 | †   |   |                           |                  |                         |                         |   |   | †   |

### G.4.4 Political Capability

During the months immediately following a disaster, local public opinion in Pike County is more likely to shift in support of hazard mitigation efforts.

**Table G.50** provides a summary of the results for Pike County with regard to political capability. A checkmark (✓) indicates the expected degree of political support by local elected officials in terms of adopting/funding information.

**TABLE G.50: LOCAL POLITICAL SUPPORT**

| Political Support  | Limited | Moderate | High |
|--------------------|---------|----------|------|
| <b>PIKE COUNTY</b> |         | ✓        |      |
| Magnolia           |         | ✓        |      |
| McComb             |         | ✓        |      |
| Osyka              |         | ✓        |      |
| Summit             | ✓       |          |      |

## G.4.5 Conclusions on Local Capability

**Table G.51** shows the results of the capability assessment using the designed scoring methodology described in Section 7: *Capability Assessment*. The capability score is based solely on the information found in existing hazard mitigation plans and readily available on the jurisdictions' government websites. This information was reviewed by all jurisdictions and each jurisdiction provided feedback on the information included in the capability assessment. Local government input was vital to identifying capabilities. According to the assessment, the average local capability score for the county and its jurisdictions is 21.2, which falls into the limited capability ranking.

**TABLE G.51: CAPABILITY ASSESSMENT RESULTS**

| Jurisdiction | Overall Capability Score | Overall Capability Rating |
|--------------|--------------------------|---------------------------|
| PIKE COUNTY  | 27                       | Moderate                  |
| Magnolia     | 19                       | Limited                   |
| McComb       | 32                       | Moderate                  |
| Osyka        | 18                       | Limited                   |
| Summit       | 10                       | Limited                   |

## G.5 PIKE COUNTY MITIGATION STRATEGY

This subsection provides the blueprint for Pike County to follow in order to become less vulnerable to its identified hazards. It is based on general consensus of the Regional Hazard Mitigation Council and the findings and conclusions of the capability assessment and risk assessment. Additional Information can be found in Section 8: *Mitigation Strategy* and Section 9: *Mitigation Action Plan*.

### G.5.1 Mitigation Goals

Pike County developed six mitigation goals in coordination with the other participating MEMA District 7 Region jurisdictions. The regional mitigation goals are presented in **Table G.52**.

**TABLE G.52: MEMA DISTRICT 7 REGIONAL MITIGATION GOALS**

|         | Goal   |
|---------|--|
| Goal #1 | Increase the overall public awareness of natural hazards that face the region.   |
| Goal #2 | Retrofit of critical facilities and/or critical infrastructure to lower the risk of damage from natural hazards.   |
| Goal #3 | General improvement of regional or local mitigation planning and capability.   |
| Goal #4 | Support State Identified Mitigation Initiatives such as saferooms and storm shelters, severe weather warning systems for universities and colleges, and severe weather notification systems for local communities. |

|         | Goal  |
|---------|---|
| Goal #5 | Reduce loss of life, damage and loss of property and infrastructure, economic costs, including response, recovery and disruption of economic activity.      |
| Goal #6 | Foster cooperation among all levels of governments and the private sector with respect to improving, updating, and implementing the hazard mitigation plan. |

### G.5.2 Mitigation Action Plan

The mitigation actions proposed by Pike County, City of Magnolia, City of McComb, Town of Osyka, and Town of Summit are listed in the following individual Mitigation Action Plans.

## Pike County Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|-------------------|--|---------------------------|-------------------|--|---|-------------------------|--|
| <b>Prevention</b> |  |                           |                   |  |   |                         |  |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning –</b> Pike County, the Cities of Magnolia and McComb, and the Towns of Summit and Osyka have a Comprehensive Plan. This plan should be reviewed and updated if necessary in light of the Hurricane Katrina and Rita disasters. | Hurricane or other hazard | High              | Pike County Board of Supervisors/ Cities of Magnolia and McComb/ Towns of Summit and Osyka | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Pike County Board of Supervisors/Cities of Magnolia and McComb/Towns of Summit and Osyka recognize that comprehensive land use planning yields many benefits for both the county and cities. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. The City of McComb Comprehensive Plan was updated in 2016, however, the county plan should also be reviewed and update, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-2      | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

| Action #                           | Description  | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|------------------------------------|--|---|-------------------|--|---|-------------------------|---|
| <b>Property Protection</b>         |  |   |                   |  |   |                         |   |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Pike County Board of Supervisors/Cities of Magnolia and McComb/Towns of Summit and Osyka should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Pike County Board of Supervisors/ Cities of Magnolia and McComb/ Towns of Summit and Osyka | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Pike County Board of Supervisors/Cities of Magnolia and McComb/Towns of Summit and Osyka recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/city/town government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |
| <b>Natural Resource Protection</b> |  |   |                   |  |   |                         |   |
| NRP-1                              |  |   |                   |  |   |                         |   |
| <b>Structural Projects</b>         |  |   |                   |  |   |                         |   |
| SP-1                               |  |   |                   |  |   |                         |   |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions.</p> |

**ANNEX G: PIKE COUNTY**

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department          | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---|-------------------|----------------------------------|---|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city/town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | Pike County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city/town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Pike County will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department          | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|----------------------------------|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Pike County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Pike County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department          | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|----------------------------------|---|-------------------------|--|
| ES-4     | <b>Construct New Emergency Shelter</b> – The county should construct a 300 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions.                              | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Pike County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Pike County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/city/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. A regional storm/evacuation shelter is currently being constructed off of Hwy 55, so this action will remain in the plan. |
| ES-5     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system. | Tornado  | High              | Pike County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County General Fund  | 2022                    | Many citizens in Pike County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. A warning system needs to be installed in Pike County, so this action will remain in the plan.   |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---|---------------------------|-------------------------|--|
| ES-6                                  | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA                | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |
| <b>Public Education and Awareness</b> |   |                     |                   |   |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Pike County Board of Supervisors        | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|---|
| PEA-2    | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP. |
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                           |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.  | Dam Failure         | Moderate          | MDEQ, Dam Safety Division | N/A                       | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Pike County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.    |

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-5    | <b>Education: FireWise –</b><br>Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.                  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                      | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan.  |

**ANNEX G: PIKE COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-7    | <p><b>Education: Public Outreach –</b><br/>                     Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan. |

### City of Magnolia Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as cities develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as cities develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                      | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|--|---|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | City of Magnolia Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The City of Magnolia will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                           | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|---|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | City of Magnolia Board of Aldermen and Mayor      | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The City of Magnolia continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the city to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the city where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the city-wide system. | Tornado   | High              | City of Magnolia/Pike County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/City General Fund   | 2022                    | In the event of inclement weather, it is essential that residents of the City of Magnolia receive timely warnings. A warning system needs to be installed in the City of Magnolia, so this action will remain in the plan.  |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                      | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency      | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The city should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | City of Magnolia Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | City of Magnolia          | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**ANNEX G: PIKE COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The City of Magnolia will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**ANNEX G: PIKE COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

### City of McComb Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as cities develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the city would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**ANNEX G: PIKE COUNTY**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist cities with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as cities develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/city general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|--|---|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as city halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | City of McComb Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and city governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The City of McComb will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                         | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.   | Hurricane or other hazard leading to loss of traditional communications systems | High              | City of McComb Board of Aldermen and Mayor      | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The City of McComb continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the city to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the city where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the citywide system. | Tornado   | High              | City of McComb/Pike County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/City General Fund   | 2022                    | In the event of inclement weather, it is essential that residents of the City of McComb receive timely warnings. A warning system needs to be installed in the City of McComb, so this action will remain in the plan.  |

**ANNEX G: PIKE COUNTY**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency    | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The city should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | City of McComb Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | City of McComb            | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**ANNEX G: PIKE COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The City of McComb will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Osyka Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**ANNEX G: PIKE COUNTY**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                              | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of Osyka<br/>Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Osyka will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                        | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---|-------------------|--|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Osyka<br>Board of Aldermen and Mayor   | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Osyka continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Osyka/Pike County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | 2022                    | In the event of inclement weather, it is essential that residents of the Town of Osyka receive timely warnings. A warning system needs to be installed in the Town of Osyka, so this action will remain in the plan.   |

**ANNEX G: PIKE COUNTY**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency   | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Osyka Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Osyka             | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**ANNEX G: PIKE COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Osyka will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Summit Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2018                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2018                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

**ANNEX G: PIKE COUNTY**

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                           | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|---|--|-------------------|---|--|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Town of Summit Board of Aldermen and Mayor</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds</p> | <p>2018-2019</p>        | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. A generator for the water facility was installed in August of 2017. The Town of Summit will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                         | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|---|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Summit Board of Aldermen and Mayor      | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2018                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Summit continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Summit/Pike County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | Completed               | In the event of inclement weather, it is essential that residents of the Town of Summit receive timely warnings. The warning system in the town has been deemed adequate at this time.  |

**ANNEX G: PIKE COUNTY**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency    | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Summit Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Summit            | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2019                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2018                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2019                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Summit will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.  |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018-2019               | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

**ANNEX G: PIKE COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018-2019               | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2019                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

# ANNEX H

## WALTHALL COUNTY

This annex includes jurisdiction-specific information for Walthall County and its participating municipalities. It consists of the following five subsections:

- H.1 Walthall County Community Profile
  - H.2 Walthall County Risk Assessment
  - H.3 Walthall County Vulnerability Assessment
  - H.4 Walthall County Capability Assessment
  - H.5 Walthall County Mitigation Strategy
- 

### H.1 WALTHALL COUNTY COMMUNITY PROFILE

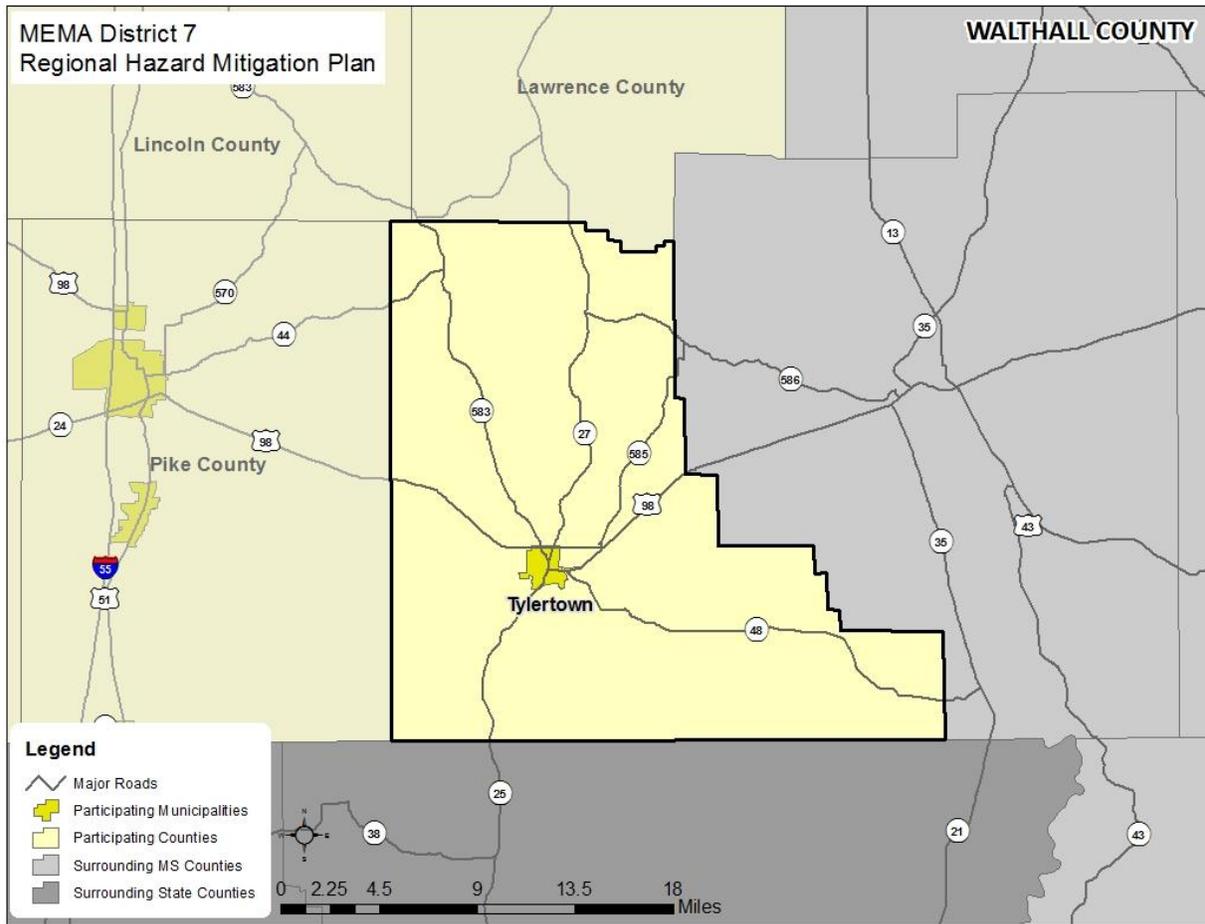
#### H.1.1 Geography and the Environment

Walthall County is located in southwestern Mississippi. It comprises one town, Town of Tylertown, as well as many small unincorporated communities. An orientation map is provided as **Figure H.1**.

The county is located to the east of the Mississippi River supplying diverse recreational activities. The total area of the county is 404 square miles, less than 1 square mile of which is water area.

Walthall County enjoys four distinct seasons but the climate in the region is generally hot and humid compared to the rest of the United States given its latitude and relative proximity to the Gulf Coast. Precipitation is generally highest in winter months when the temperatures are moderately lower, but the likelihood of precipitation remains relatively constant throughout the year. Summers in the region can become fairly hot with average highs in the nineties and lows in the seventies. The region is also often susceptible to turbulent weather when warm, wet air from the Gulf of Mexico is pushed up into the region to mix with cooler air coming down from across the continent which can result in severe weather conditions. This is particularly true in the spring when seasons are changing and diverse weather patterns interact.

**FIGURE H.1: WALTHALL COUNTY ORIENTATION MAP**



### H.1.2 Population and Demographics

According to the 2015 American Community Survey, Walthall County has a population of 14,978 people. The county has seen a decrease in population between 2000 and 2015, and the population density is 37 people per square mile. Population counts from the U.S. Census Bureau for 2000 and 2010 and from the American Community Survey for 2015 for the county and participating jurisdiction are presented in **Table H.1**.

**TABLE H.1: POPULATION COUNTS FOR WALTHALL COUNTY**

| Jurisdiction           | 2000 Census Population | 2010 Census Population | 2015 American Community Survey Estimate | % Change 2000-2015 |
|------------------------|------------------------|------------------------|---|--------------------|
| <b>Walthall County</b> | <b>15,156</b>          | <b>15,443</b>          | <b>14,978</b>                           | <b>-1.2%</b>       |
| Tylertown              | 1,910                  | 1,609                  | 1,641                                   | -14.1%             |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

Based on the 2010 Census, the median age of residents of Walthall County is 38.0 years. The racial characteristics of the county are presented in **Table H.2**. Whites make up the majority of the population in the county, accounting for 53 percent of the population.

**TABLE H.2: DEMOGRAPHICS OF WALTHALL COUNTY**

| Jurisdiction           | White, Percent | Black or African American, Percent | American Indian or Alaska Native, Percent | Asian, Percent | Native Hawaiian or Other Pacific Islander, Percent | Other Race, Percent | Two or More Races, percent | Persons of Hispanic Origin, Percent* |
|------------------------|----------------|------------------------------------|---|----------------|--|---------------------|----------------------------|--------------------------------------|
| <b>Walthall County</b> | <b>53.2%</b>   | <b>45.2%</b>                       | <b>0.0%</b>                               | <b>0.3%</b>    | <b>0.0%</b>  | <b>0.6%</b>         | <b>0.8%</b>                | <b>1.8%</b>                          |
| Tylertown              | 58.0%          | 37.1%                              | 0.0%                                      | 2.0%           | 0.0%   | 0.4%                | 2.6%                       | 2.3%                                 |

\*Hispanics may be of any race, so also are included in applicable race categories

Source: 2011-2015 American Community Survey 5-Year Estimates

### H.1.3 Housing

According to the 2010 U.S. Census, there are 7,132 housing units in Walthall County, the majority of which are single family homes or mobile homes. Housing information for the county and municipality is presented in **Table H.3**. As shown in the table, the incorporated town has a lower percentage of seasonal housing units compared to the unincorporated county.

**TABLE H.3: HOUSING CHARACTERISTICS OF WALTHALL COUNTY**

| Jurisdiction           | Housing Units (2000) | Housing Units (2010) | Seasonal Units, Percent (2010) | Median Home Value (2011-2015) |
|------------------------|----------------------|----------------------|--------------------------------|-------------------------------|
| <b>Walthall County</b> | <b>6,418</b>         | <b>7,132</b>         | <b>5.0%</b>                    | <b>\$93,200</b>               |
| Tylertown              | 825                  | 747                  | 1.7%                           | \$109,600                     |

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

### H.1.4 Infrastructure

#### TRANSPORTATION

In Walthall County, U.S. Highway 98 provides access to the east and west and Mississippi Highway 27 provides access to the north and south.

Paul Pittman Memorial Airport is a general aviation airport centrally located in Walthall County.

No railroads operate within Walthall County.

#### UTILITIES

Electrical power in Walthall County is provided by Entergy Mississippi Inc., Magnolia Electric Power Association, Pearl River Valley Electric Power Association, and South Mississippi Electric Power Association.

Water and sewer service is provided by participating jurisdictions and/or community based associations, but unincorporated areas often rely on septic systems and wells in Walthall County.

### **COMMUNITY FACILITIES**

There are a number of buildings and community facilities located throughout Walthall County. According to the data collected for the vulnerability assessment (Section 6.4.1), there are 7 fire stations, 4 police stations, and 1 school located within the county.

There are also 2 hospitals and medical care facilities located in Walthall County.

The Mississippi River, which runs to the east of the county, has played an integral part in the history of the county. The river acted as a major conduit for trade in the 19<sup>th</sup> century as plantations produced large quantities of cotton that could be easily shipped down to ports such as New Orleans. Today, the river is still an important part of the local economy as products are shipped worldwide out of the Natchez port. Apart from the Mississippi River there are multiple water based refuges, activities, and recreational features focused on local water bodies in the region. There are also numerous other small lakes, creeks, and other water bodies throughout the region that offer the outstanding outdoor recreational opportunities for which the region is known.

## **H.1.5 Land Use**

Walthall County has a blend of old and new development that contributes to physical, cultural, and economic attributes throughout the region. There is one incorporated municipality located in the county. This area is where the county's population is generally concentrated. The incorporated area is also where many of the businesses, commercial uses, and institutional uses are located. Land uses in the balance of the county generally consist of rural residential development, agricultural uses, and recreational areas. There are multiple county- and regional-based agencies that serve to coordinate growth and promote economic development. Local land use and associated regulations are further discussed in *Section 7: Capability Assessment*.

## **H.1.6 Employment and Industry**

According to the U.S. Census Bureau's American Community Survey (ACS), in 2015, Walthall County had an average annual employment of 11,702 workers and an average unemployment rate of 11.1 percent (compared to 10.3 percent for the state). In 2015, the Educational services, and health care and social assistance industry employed 20.7 percent of the workforce followed by Manufacturing (14.6%) and then Agriculture, forestry, fishing, and hunting (12.2%). The average annual median household in 2015 for Walthall County was \$31,384 compared to \$39,665 in the state of Mississippi.

## **H.2 WALTHALL COUNTY RISK ASSESSMENT**

This subsection includes hazard profiles for each of the significant hazards identified in Section 4: *Hazard Identification* as they pertain to Walthall County. Each hazard profile includes a description of the hazard's location and extent, notable historical occurrences, and the probability of future occurrences. Additional information can be found in Section 5: *Hazard Profiles*.

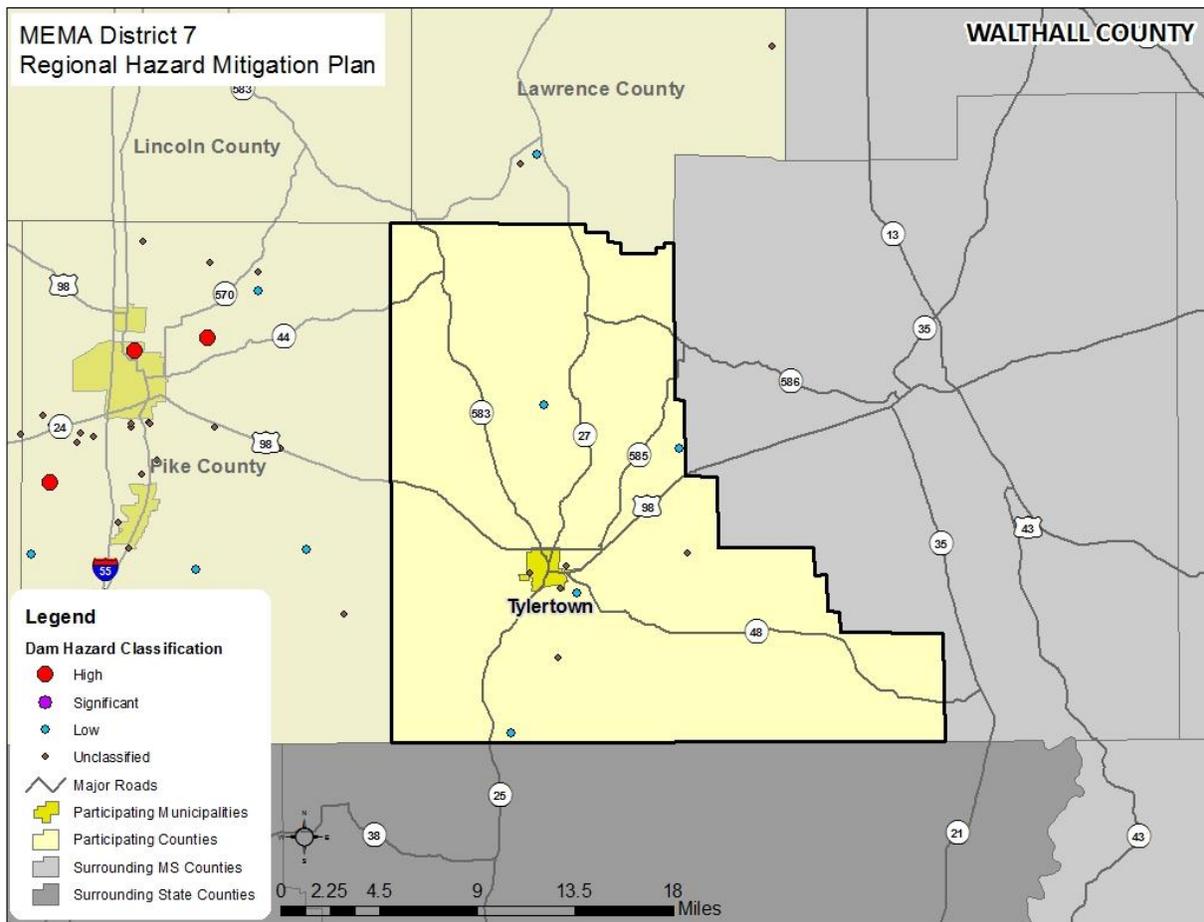
## FLOOD-RELATED HAZARDS

### H.2.1 Dam and Levee Failure

#### LOCATION AND SPATIAL EXTENT

According to the Mississippi Department of Environmental Quality, there are no high hazard dams in Walthall County (Table H.4).<sup>1</sup> Figure H.2 and Figure H.3 show the location of these high hazard dams as well as mapped inundation areas located nearby.

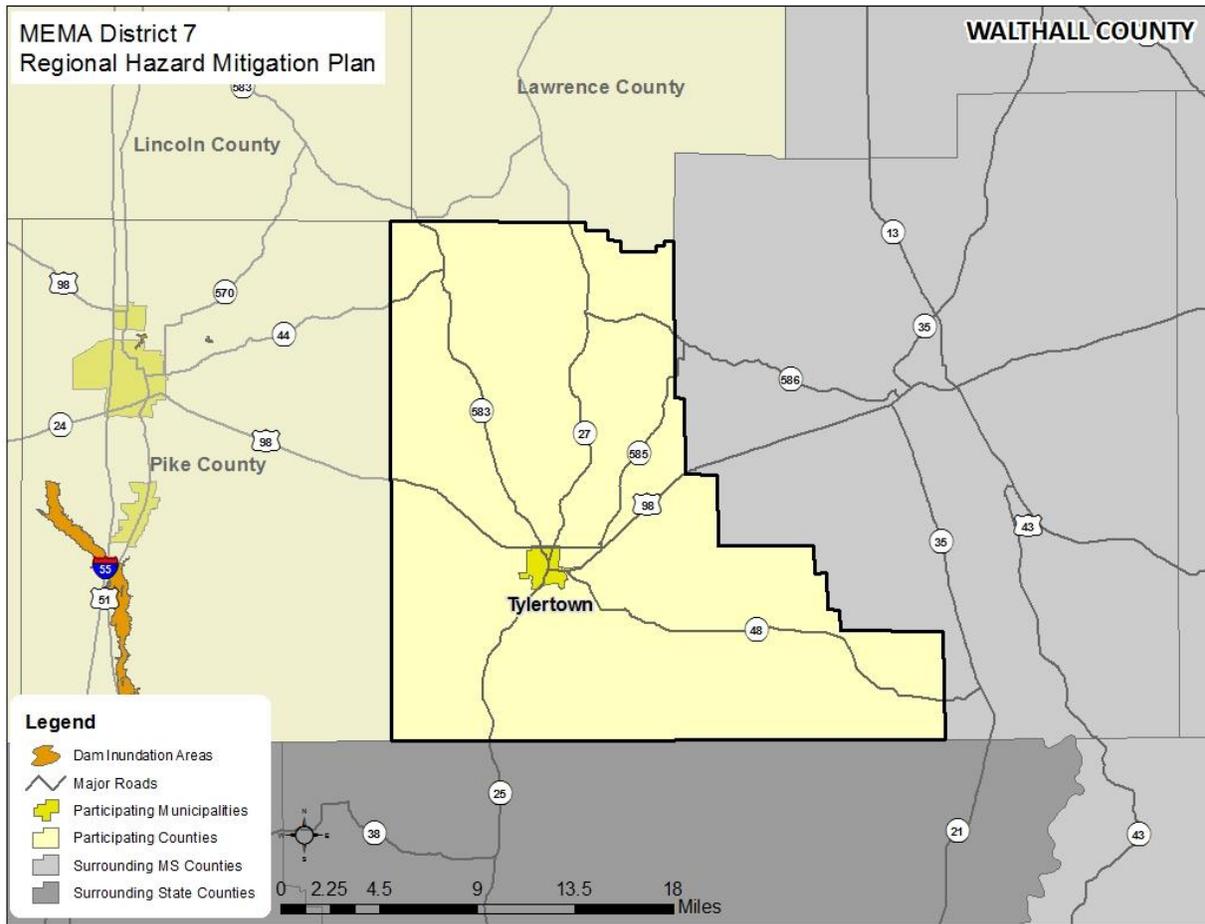
**FIGURE H.2: WALTHALL COUNTY HIGH HAZARD DAM LOCATIONS**



Source: Mississippi Department of Environmental Quality

<sup>1</sup> The list of high hazard dams obtained from the Mississippi Department of Environmental Quality was reviewed and amended by local officials to the best of their knowledge.

**FIGURE H.3: WALTHALL COUNTY DAM INUNDATION AREAS**



Source: Mississippi Department of Environmental Quality

**TABLE H.4: WALTHALL COUNTY HIGH HAZARD DAMS**

| Dam Name               | Hazard Potential | Max Storage (ac/ft) | Dam Height (ft) |
|------------------------|------------------|---------------------|-----------------|
| <b>Walthall County</b> |                  |                     |                 |
| NONE                   | N/A              | N/A                 | N/A             |

Source: Mississippi Department of Environmental Quality

**HISTORICAL OCCURRENCES**

According to the Mississippi State Hazard Mitigation Plan, there have been no dam failures reported in Walthall County (Table H.5). However, several breach scenarios in the region could be catastrophic.

**TABLE H.5: WALTHALL COUNTY DAM FAILURES (1982-2012)**

| Date          | County   | Structure Name | Cause of Failure |
|---------------|----------|----------------|------------------|
| None reported | Walthall | --             | --               |

Source: Mississippi Department of Environmental Quality

## ***PROBABILITY OF FUTURE OCCURRENCES***

Given the current dam inventory and historic data, a dam breach is unlikely (less than 1 percent annual probability) in the future. As has been demonstrated in the past, regular monitoring is necessary to prevent these events.

## **H.2.2 Erosion**

### ***LOCATION AND SPATIAL EXTENT***

Erosion in Walthall County is typically caused by flash flooding events. Unlike coastal areas, areas of concern for erosion in Walthall County are primarily rivers/streams and reservoirs. Generally, vegetation also helps to prevent erosion in the area, but in recent years, erosion has become a growing threat to many of the participating counties and jurisdictions.

At this time, there is no regional or state-level data available on localized areas of erosion so it is a challenge to identify particularly prone areas on a wider geographic scale. However, a few areas of concern were reported by members of the hazard mitigation council and other local sources. Locations along the Mississippi River are known to be especially at-risk, but there are locations in many areas within the region where erosion is prominent.

### ***HISTORICAL OCCURRENCES***

Several sources were vetted to identify areas of erosion in Walthall County. This includes searching local newspapers, interviewing local officials, and reviewing previous hazard mitigation plans. The locations identified above are representative of areas where erosion has taken place in the past.

These incidents have caused major problems as bridges have become damaged in many instances and made unsafe for emergency services vehicles to cross during and after storm events. This delays response times and critical life-safety support. In addition, the shutdown of roads has hurt local communities economically as trade and commerce are temporarily shut down as bridges are repaired. It has also caused disruption to daily activities for local school boards who must re-route buses around affected areas, causing additional fuel resources to be expended and increasing drive times for students.

### ***PROBABILITY OF FUTURE OCCURRENCES***

Erosion remains a natural, dynamic, and continuous process for Walthall County, and it will continue to occur. The annual probability level assigned for erosion is possible (between 1 and 10 percent annually).

## **H.2.3 Flood**

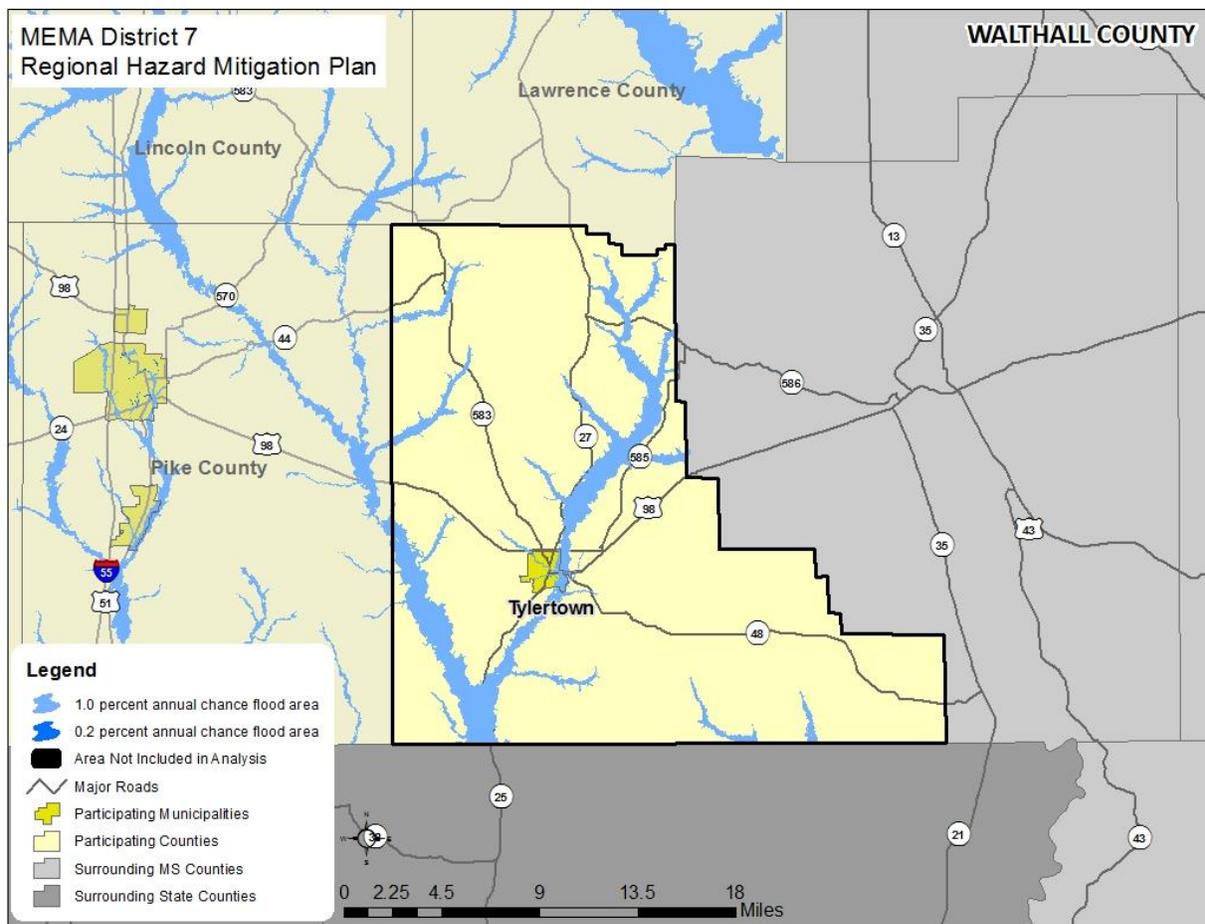
### ***LOCATION AND SPATIAL EXTENT***

There are areas in Walthall County that are susceptible to flood events. Special flood hazard areas in the county were mapped using Geographic Information System (GIS) and FEMA Digital Flood Insurance Rate

Maps (DFIRM).<sup>2</sup> This includes Zone A (1-percent annual chance floodplain), Zone AE (1-percent annual chance floodplain with elevations), and Zone X-500 (0.2-percent annual chance floodplain). According to GIS analysis, of the 404 square miles that make up Walthall County, there are 40.10 square miles of land in zones A and AE (1-percent annual chance floodplain/100-year floodplain) and 0.00 square miles of land in zone X-500 (0.2 percent annual change floodplain/500-year floodplain).

These flood zone values account for 9.9 percent of the total land area in Walthall County. It is important to note that while FEMA digital flood data is recognized as best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Flooding and flood-related losses often do occur outside of delineated special flood hazard areas. **Figure H.4** illustrates the location and extent of currently mapped special flood hazard areas for Walthall County based on best available FEMA Digital Flood Insurance Rate Map (DFIRM) data.

**FIGURE H.4: SPECIAL FLOOD HAZARD AREAS IN WALTHALL COUNTY**



Source: Federal Emergency Management Agency

<sup>2</sup> The county-level DFIRM data used for Walthall County were updated in 2010.

**HISTORICAL OCCURRENCES**

Floods were at least partially responsible for seven disaster declarations in Walthall County in 1972, 1980, 1983, 1990, 2003, 2009, and 2016.<sup>3</sup> Information from the National Climatic Data Center was used to ascertain additional historical flood events. The National Climatic Data Center reported a total of six events in Walthall County since 1997.<sup>4</sup> A summary of these events is presented in **Table H.6**. These events accounted for over \$1.3 million (2017 dollars) in property damage.<sup>5</sup> Specific information on flood events, including date, type of flooding, and deaths and injuries, can be found in **Table H.7**.

**TABLE H.6: SUMMARY OF FLOOD OCCURRENCES IN WALTHALL COUNTY**

| Location                     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Tylertown                    | 1                     | 0/0             | \$15,264               | \$763                      |
| Unincorporated Area          | 5                     | 0/0             | \$1,292,192            | \$68,010                   |
| <b>WALTHALL COUNTY TOTAL</b> | <b>6</b>              | <b>0/0</b>      | <b>\$1,307,456</b>     | <b>\$68,773</b>            |

Source: National Climatic Data Center

**TABLE H.7: HISTORICAL FLOOD EVENTS IN WALTHALL COUNTY**

| Location                   | Date      | Type        | Deaths/Injuries | Property Damage* |
|----------------------------|-----------|-------------|-----------------|------------------|
| <b>Tylertown</b>           |           |             |                 |                  |
| TYLERTOWN                  | 4/27/1997 | Flash Flood | 0/0             | \$15,264         |
| <b>Unincorporated Area</b> |           |             |                 |                  |
| SOUTH PORTION              | 9/20/1998 | Flash Flood | 0/0             | \$0              |
| CENTRAL PORTION            | 7/2/2003  | Flash Flood | 0/0             | \$0              |
| FLOWERS                    | 3/28/2009 | Flash Flood | 0/0             | \$0              |
| DINAN                      | 8/29/2012 | Flash Flood | 0/0             | \$265,350        |
| DILLON                     | 3/10/2016 | Flash Flood | 0/0             | \$1,026,842      |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

**HISTORICAL SUMMARY OF INSURED FLOOD LOSSES**

According to FEMA flood insurance policy records as of March 31, 2017, there have been 149 flood losses reported in Walthall County through the National Flood Insurance Program (NFIP) since 1978, totaling almost \$2.4 million in claims payments. A summary of these figures for the county is provided in **Table H.8**. It should be emphasized that these numbers include only those losses to structures that were insured through the NFIP policies, and for losses in which claims were sought and received. It is likely that many

<sup>3</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>4</sup> These flood events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported. As additional local data becomes available, this hazard profile will be amended.

<sup>5</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

additional instances of flood loss in Walthall County were either uninsured, denied claims payment, or not reported.

**TABLE H.8: SUMMARY OF INSURED FLOOD LOSSES IN WALTHALL COUNTY**

| Location                     | Number of Policies | Flood Losses | Claims Payments       |
|------------------------------|--------------------|--------------|-----------------------|
| Tylertown                    | 17                 | 53           | \$803,871.61          |
| Unincorporated Area          | 79                 | 96           | \$1,554,514.67        |
| <b>WALTHALL COUNTY TOTAL</b> | <b>96</b>          | <b>149</b>   | <b>\$2,358,386.28</b> |

\*These communities do not participate in the NFIP. Therefore, no values are reported.

Source: National Flood Insurance Program

### REPETITIVE LOSS PROPERTIES

According to the Mississippi Emergency Management Agency, there are 27 non-mitigated repetitive loss properties located in Walthall County, which accounted for 62 losses and almost \$1.2 million in claims payments under the NFIP. The average claim amount for these properties is \$18,763. Of the 27 properties, 16 are single family, 1 is 2-4 family, 1 is assumed condominium, and 9 are other non-residential. Without mitigation, these properties will likely continue to experience flood losses. **Table H.9** presents detailed information on repetitive loss properties and NFIP claims and policies for Walthall County.

**TABLE H.9: REPETITIVE LOSS PROPERTIES IN WALTHALL COUNTY**

| Location                     | Number of Properties | Types of Properties  | Number of Losses | Building Payments     | Content Payments    | Total Payments        | Average Payment    |
|------------------------------|----------------------|--|------------------|-----------------------|---------------------|-----------------------|--------------------|
| Tylertown                    | 2                    | 1 2-4 family; 1 other non-residential                      | 4                | \$39,133.56           | \$0.00              | \$39,133.56           | \$9,783.39         |
| Unincorporated Area          | 25                   | 16 single family; 1 assumed condo; 8 other non-residential | 58               | \$986,241.68          | \$137,957.80        | \$1,124,199.48        | \$19,382.75        |
| <b>WALTHALL COUNTY TOTAL</b> | <b>27</b>            |  | <b>62</b>        | <b>\$1,025,375.24</b> | <b>\$137,957.80</b> | <b>\$1,163,333.04</b> | <b>\$18,763.44</b> |

Source: National Flood Insurance Program

### PROBABILITY OF FUTURE OCCURRENCES

Flood events will remain a threat in Walthall County, and the probability of future occurrences will remain highly likely (100 percent annual probability). The probability of future flood events based on magnitude and according to best available data is illustrated in the figure above, which indicates those areas susceptible to the 1-percent annual chance flood (100-year floodplain).

It can be inferred from the floodplain location maps, previous occurrences, and repetitive loss properties that risk varies throughout the county. For example, areas in the southwestern corner and central portion of the county have more floodplain and thus a higher risk of flood than the rest of the county. Flood is not

the greatest hazard of concern but will continue to occur and cause damage. Therefore, mitigation actions may be warranted, particularly for repetitive loss properties.

## ***FIRE-RELATED HAZARDS***

### **H.2.4 Drought**

#### ***LOCATION AND SPATIAL EXTENT***

Drought typically covers a large area and cannot be confined to any geographic or political boundaries. Furthermore, it is assumed that Walthall County would be uniformly exposed to drought, making the spatial extent potentially widespread. It is also notable that drought conditions typically do not cause significant damage to the built environment but may exacerbate wildfire conditions.

#### ***HISTORICAL OCCURRENCES***

According to the U.S. Drought Monitor, Walthall County had drought levels of Severe or worse in 7 of the last 17 years (January 2000-December 2016). **Table H.10** shows the most severe drought classification for each year, according to U.S. Drought Monitor classifications. It should be noted that the U.S. Drought Monitor also estimates what percentage of the county is in each classification of drought severity. For example, the most severe classification reported may be exceptional but a majority of the county may actually be in a less severe condition.

**TABLE H.10: HISTORICAL DROUGHT OCCURRENCES IN WALTHALL COUNTY**

Abnormally Dry (D0) Moderate Drought (D1) Severe Drought (D2) Extreme Drought (D3) Exceptional Drought (D4)



| Year | Walthall County |
|------|-----------------|
| 2000 | EXCEPTIONAL     |
| 2001 | MODERATE        |
| 2002 | MODERATE        |
| 2003 | ABNORMAL        |
| 2004 | ABNORMAL        |
| 2005 | ABNORMAL        |
| 2006 | EXTREME         |
| 2007 | SEVERE          |
| 2008 | MODERATE        |
| 2009 | MODERATE        |
| 2010 | SEVERE          |
| 2011 | EXTREME         |
| 2012 | MODERATE        |
| 2013 | ABNORMAL        |
| 2014 | MODERATE        |
| 2015 | EXTREME         |
| 2016 | SEVERE          |

Source: United States Drought Monitor

No anecdotal information was available from the National Climatic Data Center on droughts in Walthall County.

**PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that Walthall County has a probability level of possible (between 1 and 10 percent annual probability) for future drought events. However, the extent (or magnitude) of drought and the amount of geographic area covered by drought, varies with each year. Historic information indicates that there is a much lower probability for extreme, long-lasting drought conditions.

**H.2.5 Lightning**

**LOCATION AND SPATIAL EXTENT**

Lightning occurs randomly, therefore it is impossible to predict where and with what frequency it will strike. It is assumed that all of Walthall County is uniformly exposed to lightning.

**HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, there have been no recorded lightning events in Walthall County since 1996 (Table H.11).<sup>6 7</sup> Detailed information on historical lightning events can be found in Table H.12.

It is certain that lightning events have impacted the county. Many of the reported events are those that cause damage, and it should be expected that damages are likely much higher for this hazard than what is reported.

**TABLE H.11: SUMMARY OF LIGHTNING OCCURRENCES IN WALTHALL COUNTY**

| Location                     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Tylertown                    | 0                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area          | 0                     | 0/0             | \$0                    | \$0                        |
| <b>WALTHALL COUNTY TOTAL</b> | <b>0</b>              | <b>0/0</b>      | <b>\$0</b>             | <b>\$0</b>                 |

Source: National Climatic Data Center

<sup>6</sup> These lightning events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is certain that additional lightning events have occurred in Walthall County. As additional local data becomes available, this hazard profile will be amended.

<sup>7</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**TABLE H.12: HISTORICAL LIGHTNING OCCURRENCES IN WALTHALL COUNTY**

| Location                   | Date | Deaths/<br>Injuries | Property<br>Damage* | Details |
|----------------------------|------|---------------------|---------------------|---------|
| <b>Tylertown</b>           |      |                     |                     |         |
| <i>None reported</i>       | --   | --                  | --                  | --      |
| <b>Unincorporated Area</b> |      |                     |                     |         |
| <i>None reported</i>       | --   | --                  | --                  | --      |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

### **PROBABILITY OF FUTURE OCCURRENCES**

Although there were no historical lightning events reported in Walthall County via NCDC data, it is a regular occurrence accompanied by thunderstorms. In fact, lightning events will assuredly happen on an annual basis, though not all events will cause damage. According to Vaisala's U.S. National Lightning Detection Network (NLDN), Walthall County is located in an area of the country that experienced an average of 12 to 20 lightning flashes per square mile per year between 2007 and 2016. Therefore, the probability of future events is highly likely (100 percent annual probability). It can be expected that future lightning events will continue to threaten life and cause minor property damages throughout the county.

## **H.2.6 Wildfire**

### **LOCATION AND SPATIAL EXTENT**

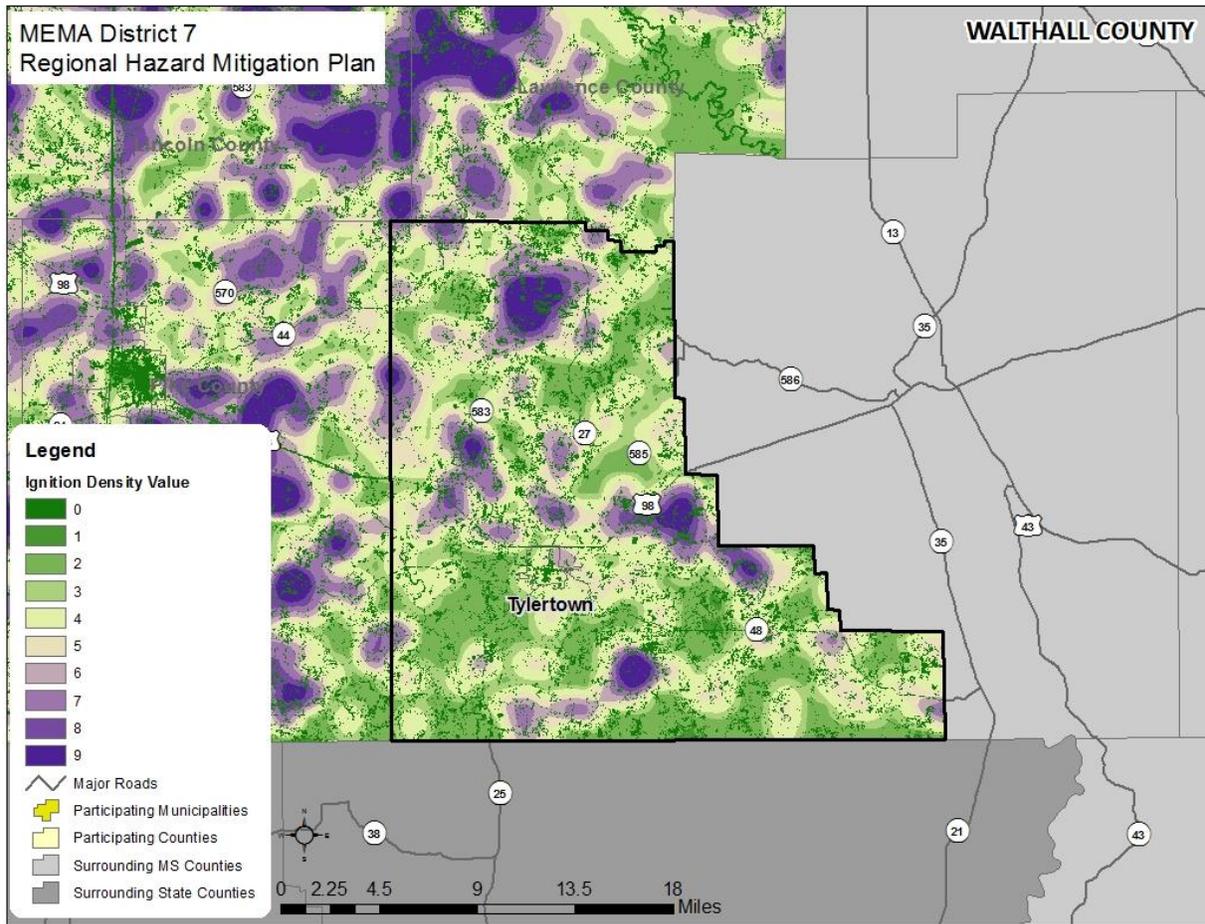
The entire county is at risk to a wildfire occurrence. However, several factors such as drought conditions or high levels of fuel on the forest floor, may make a wildfire more likely. Furthermore, areas in the urban-wildland interface are particularly susceptible to fire hazard as populations abut formerly undeveloped areas. The Wildfire Ignition Density data shown in the figure below give an indication of historic location.

### **HISTORICAL OCCURRENCES**

**Figure H.5** shows the Wildfire Ignition Density in Walthall County based on data from the Southern Wildfire Risk Assessment. This data is based on historical fire ignitions and the likelihood of a wildfire igniting in an area. Occurrence is derived by modeling historic wildfire ignition locations to create an average ignition rate map. This is measured in the number of fires per year per 1,000 acres.<sup>8</sup>

<sup>8</sup> Southern Wildfire Risk Assessment, 2014.

**FIGURE H.5: WILDFIRE IGNITION DENSITY IN WALTHALL COUNTY**



Source: Southern Wildfire Risk Assessment

Based on data from the Mississippi Forestry Commission from 2007 to 2016, Walthall County experienced an average of 30.4 wildfires annually which burned a combined 499.3 acres per year. The data indicate that most of these fires were small to moderate in size, averaging about 16.4 acres per fire. **Table H.13** provides a summary of wildfire occurrences in Walthall County and **Table H.14** lists the number of reported wildfire occurrences in the county between the years 2007 and 2016.

**TABLE H.13: SUMMARY TABLE OF ANNUAL WILDFIRE OCCURRENCES (2007-2016)\***

|   | Walthall County |
|---|-----------------|
| Average Number of Fires per year        | 30.4            |
| Average Number of Acres Burned per year | 499.3           |
| Average Number of Acres Burned per fire | 16.4            |

\*These values reflect averages over a 10-year period.

Source: Mississippi Forestry Commission

**TABLE H.14: HISTORICAL WILDFIRE OCCURRENCES IN WALTHALL COUNTY**

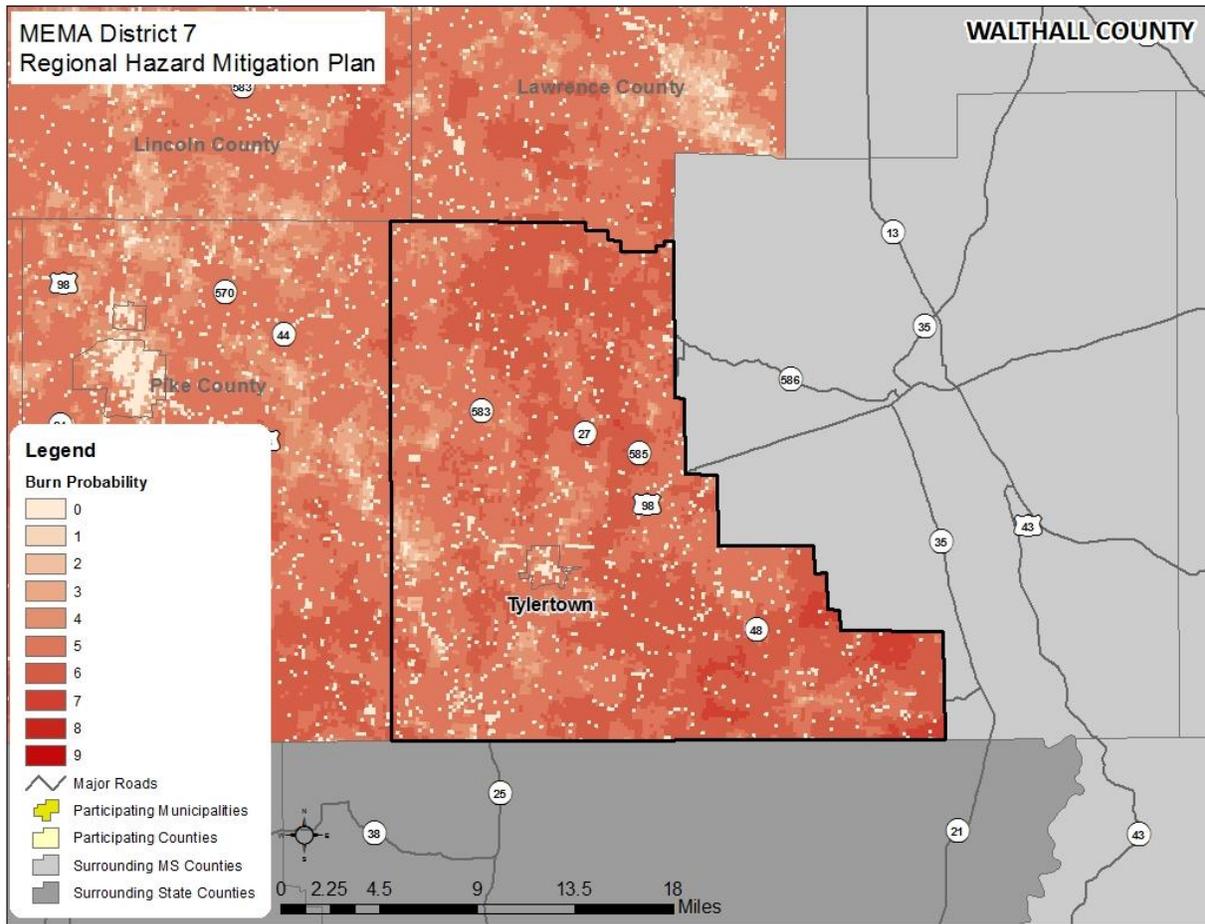
| Year                   | 2007 | 2008 | 2009 | 2010 | 2011  | 2012 | 2013 | 2014 | 2015 | 2016 |
|------------------------|------|------|------|------|-------|------|------|------|------|------|
| <b>Walthall County</b> |      |      |      |      |       |      |      |      |      |      |
| Number of Fires        | 51   | 31   | 39   | 25   | 60    | 23   | 17   | 24   | 15   | 19   |
| Number of Acres Burned | 918  | 350  | 856  | 313  | 1,650 | 198  | 146  | 238  | 153  | 171  |

Source: Mississippi Forestry Commission

### **PROBABILITY OF FUTURE OCCURRENCES**

Wildfire events will be an ongoing occurrence in Walthall County. **Figure H.6** shows that there is some probability a wildfire will occur throughout the county. However, the likelihood of wildfires increases during drought cycles and abnormally dry conditions. Fires are likely to stay small in size but could increase due to local climate and ground conditions. Dry, windy conditions with an accumulation of forest floor fuel (potentially due to ice storms or lack of fire) could create conditions for a large fire that spreads quickly. It should also be noted that some areas do vary somewhat in risk. For example, highly developed areas are less susceptible unless they are located near the urban-wildland boundary. The risk will also vary due to assets. Areas in the urban-wildland interface will have much more property at risk, resulting in increased vulnerability and need to mitigate compared to rural, mainly forested areas. The probability assigned to Walthall County for future wildfire events is highly likely (100 percent annual probability).

**FIGURE H.6: BURN PROBABILITY IN WALTHALL COUNTY**



Source: Southern Wildfire Risk Assessment

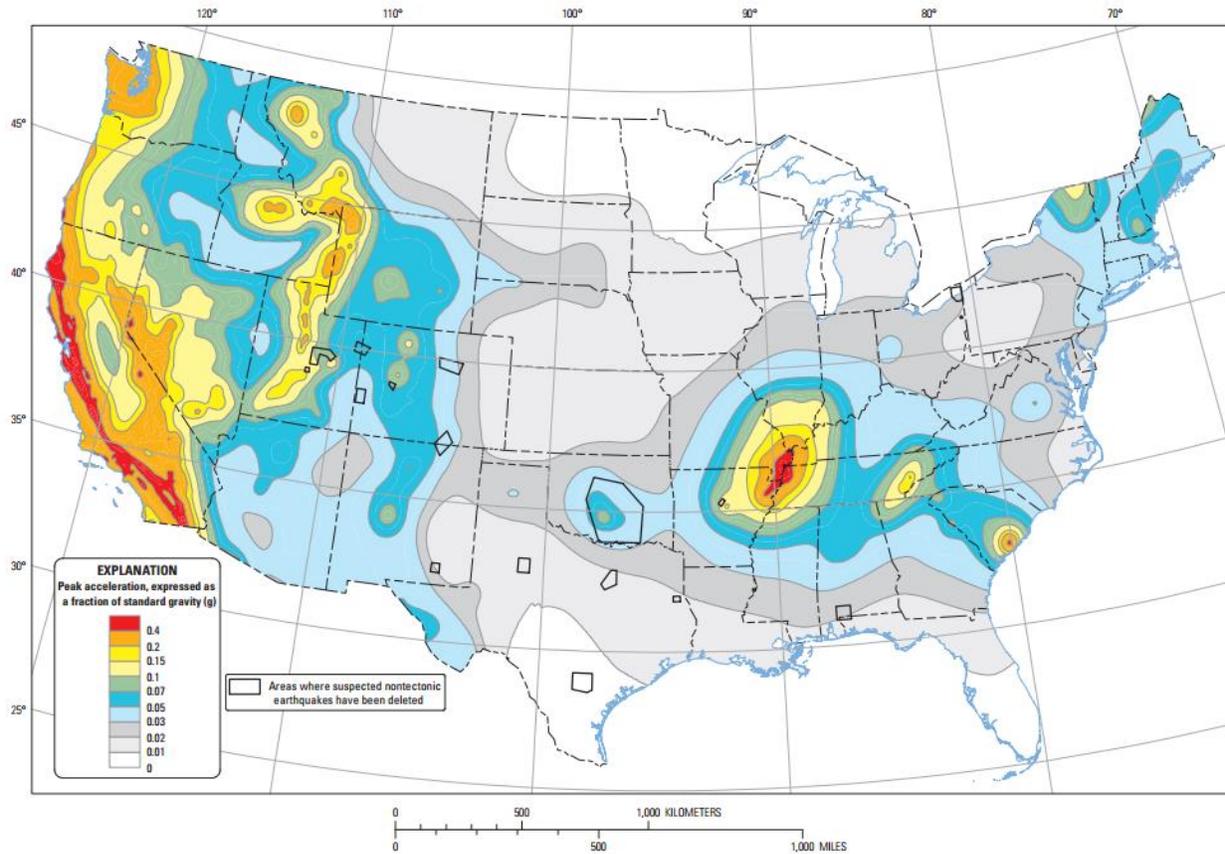
## ***GEOLOGIC HAZARDS***

### **H.2.7 Earthquake**

#### **LOCATION AND SPATIAL EXTENT**

Figure H.7 shows the intensity level associated with Walthall County, based on the national USGS map of peak acceleration with 10 percent probability of exceedance in 50 years. It is the probability that ground motion will reach a certain level during an earthquake. The data show peak horizontal ground acceleration (the fastest measured change in speed, for a particle at ground level that is moving horizontally due to an earthquake) with a 10 percent probability of exceedance in 50 years. The map was compiled by the U.S. Geological Survey (USGS) Geologic Hazards Team, which conducts global investigations of earthquake, geomagnetic, and landslide hazards. According to this map, Walthall County lies within an approximate zone of level “0.01” to “0.03” ground acceleration. This indicates that the county exists within an area of low seismic risk.

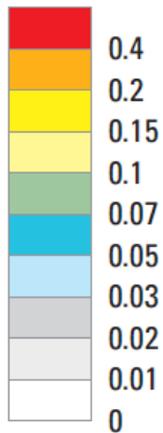
**FIGURE H.7: PEAK ACCELERATION WITH 10 PERCENT PROBABILITY OF EXCEEDANCE IN 50 YEARS**



**Ten-percent probability of exceedance in 50 years map of peak ground acceleration**

**EXPLANATION**

Peak acceleration, expressed as a fraction of standard gravity (g)



**Areas where suspected nontectonic earthquakes have been deleted**

Source: United States Geological Survey, 2014

The primary source of potential damage to Walthall County from an earthquake is the New Madrid Seismic Zone (NMSZ). Historically, a series of earthquakes in 1811 and 1812 demonstrated that this fault zone can produce high magnitude seismic events, sometimes on the scale of a 7.5-8.0 on the Richter scale. The biggest challenge with earthquakes that occur in this area of seismic activity is predicting the recurrence of earthquakes emanating from this zone. Although the magnitude of earthquakes from the NMSZ can be large, they occur very irregularly and fairly infrequently. This makes it extremely difficult to project when they will occur.

It should also be noted that the State of Mississippi Hazard Mitigation Plan identifies certain areas of concern for liquefaction and lists the counties and corresponding zones within those counties that have the highest liquefaction potential. Walthall County does not have any identified liquefaction potential risk.

**HISTORICAL OCCURRENCES**

At least one earthquake is known to have affected Walthall County since 1930. The earthquake measured a III on the Modified Mercalli Intensity (MMI) scale. **Table H.15** provides a summary of earthquake events reported by the National Centers for Environmental Information (formerly National Geophysical Data Center) between 1638 and 1985, and **Figure H.8** presents a map showing earthquakes whose epicenters have occurred near the county between 1985 and 2015 (no earthquakes occurred within the county’s boundaries during this period). **Table H.16** presents a detailed occurrence of each event including the date, distance for the epicenter, magnitude and Modified Mercalli Intensity (if known).<sup>9</sup>

**TABLE H.15: SUMMARY OF SEISMIC ACTIVITY IN WALTHALL COUNTY**

| Location                     | Number of Occurrences | Greatest MMI Reported | Greatest Richter Scale Reported |
|------------------------------|-----------------------|-----------------------|---------------------------------|
| Tylertown                    | 1                     | III                   | Not Available                   |
| Unincorporated Area          | 0                     | --                    | --                              |
| <b>WALTHALL COUNTY TOTAL</b> | <b>1</b>              | <b>III</b>            | <b>--</b>                       |

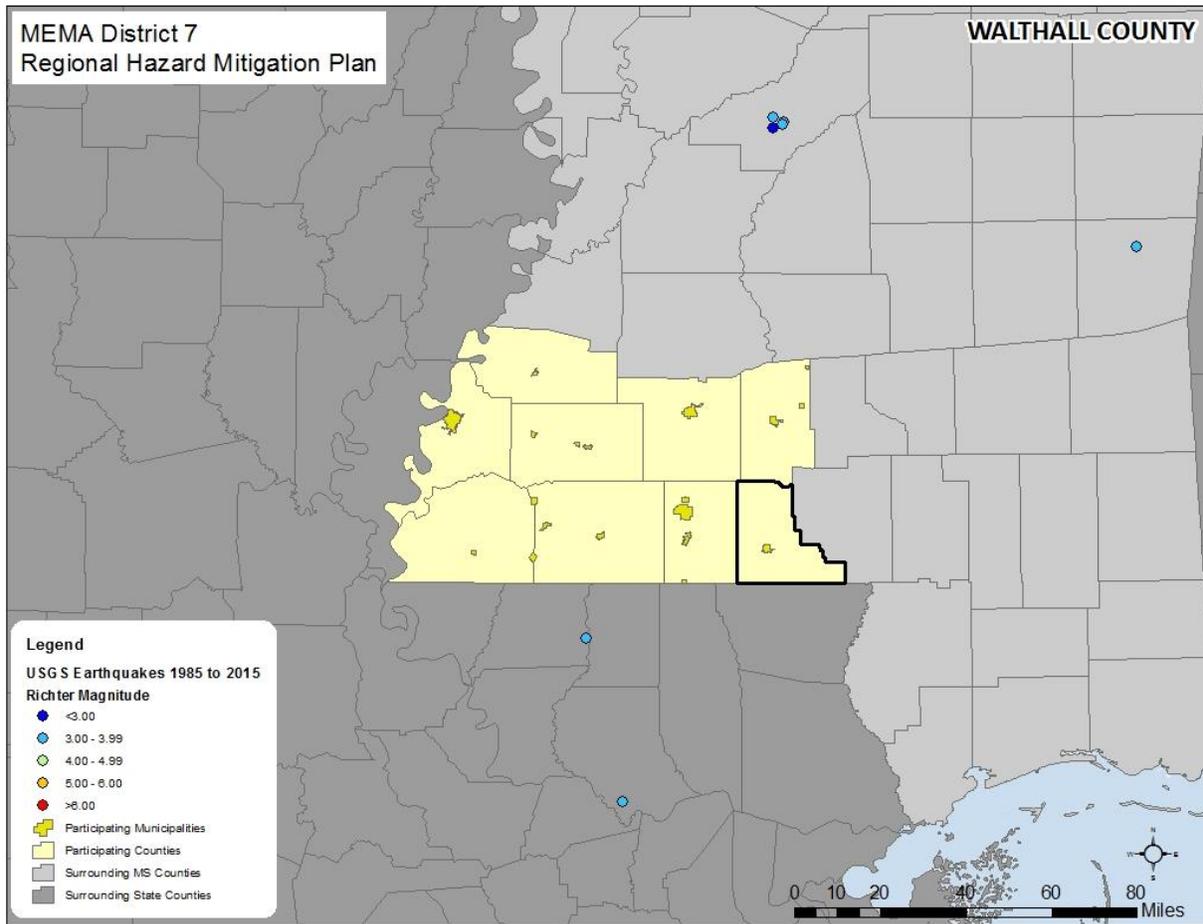
Source: National Centers for Environmental Information

**TABLE H.16: SIGNIFICANT SEISMIC EVENTS IN WALTHALL COUNTY (1638 -1985)**

| Location                   | Date       | Epicentral Distance | Magnitude | MMI |
|----------------------------|------------|---------------------|-----------|-----|
| <b>Tylertown</b>           |            |                     |           |     |
| TYLERTOWN                  | 10/19/1930 | 146.0 km            | Unknown   | III |
| <b>Unincorporated Area</b> |            |                     |           |     |
| None reported              | --         | --                  | --        | --  |

Source: National Centers for Environmental Information

<sup>9</sup> Due to reporting mechanisms, not all earthquakes events were recorded during this time. Furthermore, some are missing data, such as the epicenter location, due to a lack of widely used technology. In these instances, a value of “unknown” is reported.

**FIGURE H.8: HISTORIC EARTHQUAKES WITH EPICENTERS NEAR WALTHALL COUNTY (1985-2015)**

Source: United States Geological Survey

### **PROBABILITY OF FUTURE OCCURRENCES**

The probability of significant, damaging earthquake events affecting Walthall County is unlikely. However, it is certainly possible that future earthquakes resulting in light or moderate perceived shaking and damages will affect the county much more frequently. The annual probability level for the county is estimated to be less than 1 percent (unlikely).

## **WIND-RELATED HAZARDS**

### **H.2.8 Extreme Heat**

#### **LOCATION AND SPATIAL EXTENT**

Heat waves typically impact a large area and cannot be confined to any geographic or political boundaries. Therefore, the entire county is considered to be equally susceptible to extreme heat.

### **HISTORICAL OCCURRENCES**

The National Climatic Data Center was used to determine historical heat wave occurrences in the county. No events specific to Walthall County were reported, however, several events were reported elsewhere in the region. Similar events and impacts can be expected in Walthall County.

**Summer of 2000 Heat Wave** – Hot temperatures persisted from July to September across the South and Plains. Known as the Summer of 2000 Heat Wave, high temperatures commonly peaked over 100 degrees.

**August 2005** – A "HOT" stretch of weather occurred during the middle to later part of August 2005. This "Heat Wave" covered a large portion of the south and lasted for a period of about 10 days. Each of these days had high temperatures consistently between 95 and 100 degrees, with 1 or 2 of these days actually reaching 100 degrees or more. Additionally, overnight lows remained warm with lower and middle 70s recorded. This is the first time since August 2000 where 100 degree temperatures were reached in this area as well as having such an extended period of "HOT" weather.

**July 2006** – A small "heat wave" gripped the region during the middle of July with high temperature ranging from the upper 90s to around 100 degrees for five days with overnight lows only reaching the middle 70s. The hottest temperatures during this period occurred from the Mississippi Delta, across northern Mississippi and then down to the Jackson Metro and toward Meridian. This area peaked between 100 and 102 degrees for at least two days during the hot five day stretch.

**August 2007** – During the first half of August, a heat wave took hold of the region and brought some of the warmest temperatures since the summer of 2000. This heat wave began around August 5th and lasted until the 16th. Between August 10th and 15th, the entire area reached 100 degrees or higher. Twenty-three record highs were also set during this time. As the temperature soared each day, high relative humidities resulted in heat index values between 105 and 112 degrees.

**August 2010** – A four day stretch of extreme temperatures occurred across the region to start off the month of August. High pressure was firmly entrenched across the southeast and allowed temperatures to soar into the triple digits across much of the region. Across the NWS Jackson, MS forecast area, 19 record highs were set between August 1st and 4th. On August 2nd, the 2nd warmest average temperature was recorded. The low was 78 and the high 105, this resulted in an average temperature of 91.5 degrees. Additionally, relatively high humidity levels made conditions even more oppressive, with heat index readings surpassing 110 degrees in many areas. This extreme heat resulted in 3 fatalities across the forecast area.

### **PROBABILITY OF FUTURE OCCURRENCES**

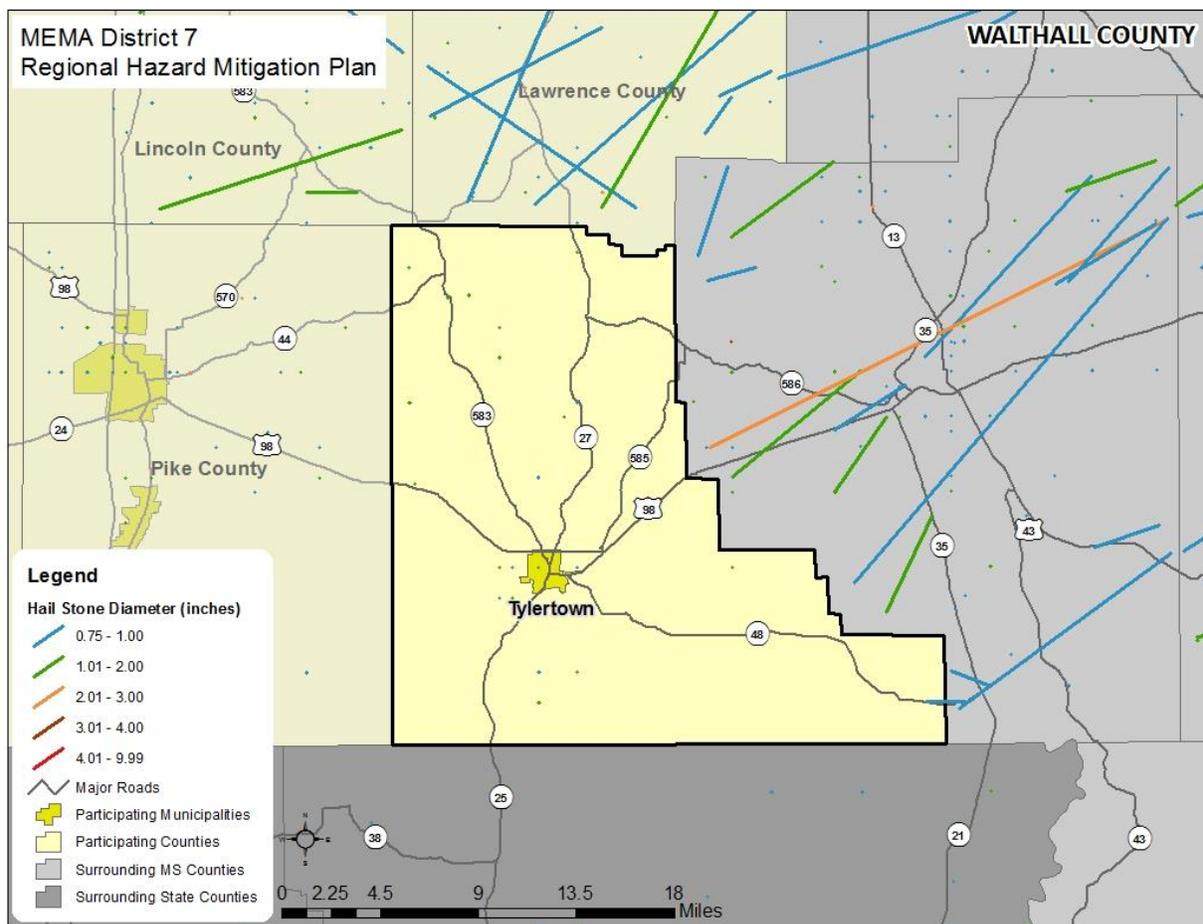
Based on historical occurrence information, it is assumed that all of Walthall County has a probability level of likely (between 10 and 100 percent annual probability) for future heat wave events.

## H.2.9 Hailstorm

### LOCATION AND SPATIAL EXTENT

Hailstorms frequently accompany thunderstorms, so their locations and spatial extents coincide. It is assumed that Walthall County is uniformly exposed to severe thunderstorms; therefore, all areas of the county are equally exposed to hail which may be produced by such storms. With that in mind, **Figure H.9** shows the location of hail events that have impacted the county between 1955 and 2015.

**FIGURE H.9: HAILSTORM TRACKS IN WALTHALL COUNTY**



Source: National Weather Service Storm Prediction Center

### HISTORICAL OCCURRENCES

According to the National Climatic Data Center, 40 recorded hailstorm events have affected Walthall County since 1963.<sup>10</sup> **Table H.17** is a summary of the hail events in Walthall County. **Table H.18** provides detailed information about each event that occurred in the county. In all, hail occurrences resulted in

<sup>10</sup> These hail events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017. It is likely that additional hail events have affected Walthall County. As additional local data becomes available, this hazard profile will be amended.

approximately \$32,000 (2017 dollars) in property damages.<sup>11</sup> Hail ranged in diameter from 0.75 inches to 2.75 inches. It should be noted that hail is notorious for causing substantial damage to cars, roofs, and other areas of the built environment that may not be reported to the National Climatic Data Center. Therefore, it is likely that damages are greater than the reported value.

**TABLE H.17: SUMMARY OF HAIL OCCURRENCES IN WALTHALL COUNTY**

| Location                     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Tylertown                    | 18                    | 0/0             | \$32,302               | \$1,346                    |
| Unincorporated Area          | 22                    | 0/0             | \$0                    | \$0                        |
| <b>WALTHALL COUNTY TOTAL</b> | <b>40</b>             | <b>0/0</b>      | <b>\$32,302</b>        | <b>\$1,346</b>             |

Source: National Climatic Data Center

**TABLE H.18: HISTORICAL HAIL OCCURRENCES IN WALTHALL COUNTY**

| Location                   | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-----------|-----------------|------------------|
| <b>Tylertown</b>           |            |           |                 |                  |
| Tylertown                  | 1/11/1993  | 1.75 in.  | 0/0             | \$0              |
| Tylertown                  | 3/15/1995  | 1.75 in.  | 0/0             | \$32,302         |
| TYLERTOWN                  | 11/1/1997  | 1.25 in.  | 0/0             | \$0              |
| TYLERTOWN                  | 2/26/1998  | 0.75 in.  | 0/0             | \$0              |
| TYLERTOWN                  | 4/17/1998  | 1.75 in.  | 0/0             | \$0              |
| TYLERTOWN                  | 1/22/1999  | 0.75 in.  | 0/0             | \$0              |
| TYLERTOWN                  | 7/26/1999  | 0.75 in.  | 0/0             | \$0              |
| TYLERTOWN                  | 7/6/2001   | 0.75 in.  | 0/0             | \$0              |
| TYLERTOWN                  | 7/22/2002  | 0.75 in.  | 0/0             | \$0              |
| TYLERTOWN                  | 4/7/2003   | 0.88 in.  | 0/0             | \$0              |
| TYLERTOWN                  | 4/7/2003   | 1.00 in.  | 0/0             | \$0              |
| TYLERTOWN                  | 3/26/2005  | 0.88 in.  | 0/0             | \$0              |
| TYLERTOWN                  | 4/3/2007   | 1.75 in.  | 0/0             | \$0              |
| TYLERTOWN                  | 11/21/2007 | 0.75 in.  | 0/0             | \$0              |
| TYLERTOWN                  | 5/16/2009  | 1.00 in.  | 0/0             | \$0              |
| TYLERTOWN                  | 4/24/2010  | 1.75 in.  | 0/0             | \$0              |
| TYLERTOWN                  | 6/7/2011   | 1.75 in.  | 0/0             | \$0              |
| TYLERTOWN                  | 5/31/2012  | 1.75 in.  | 0/0             | \$0              |
| <b>Unincorporated Area</b> |            |           |                 |                  |
| WALTHALL CO.               | 4/12/1963  | 1.50 in.  | 0/0             | \$0              |
| WALTHALL CO.               | 7/8/1968   | 0.75 in.  | 0/0             | \$0              |
| WALTHALL CO.               | 7/15/1969  | 1.75 in.  | 0/0             | \$0              |
| WALTHALL CO.               | 2/6/1974   | 1.25 in.  | 0/0             | \$0              |
| WALTHALL CO.               | 5/7/1975   | 1.75 in.  | 0/0             | \$0              |
| WALTHALL CO.               | 2/21/1983  | 1.75 in.  | 0/0             | \$0              |

<sup>11</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| Location     | Date      | Magnitude | Deaths/Injuries | Property Damage* |
|--------------|-----------|-----------|-----------------|------------------|
| WALTHALL CO. | 4/14/1984 | 1.75 in.  | 0/0             | \$0              |
| WALTHALL CO. | 3/15/1986 | 0.88 in.  | 0/0             | \$0              |
| WALTHALL CO. | 4/12/1986 | 1.75 in.  | 0/0             | \$0              |
| WALTHALL CO. | 5/10/1988 | 1.00 in.  | 0/0             | \$0              |
| WALTHALL CO. | 3/5/1989  | 1.00 in.  | 0/0             | \$0              |
| SALEM        | 1/26/1996 | 0.88 in.  | 0/0             | \$0              |
| SARTINSVILLE | 3/18/1996 | 1.50 in.  | 0/0             | \$0              |
| KIRKLIN      | 4/17/1998 | 1.75 in.  | 0/0             | \$0              |
| ENON         | 4/15/2001 | 1.25 in.  | 0/0             | \$0              |
| KIOTO        | 4/2/2009  | 1.75 in.  | 0/0             | \$0              |
| DINAN        | 3/29/2011 | 1.75 in.  | 0/0             | \$0              |
| ENON         | 3/29/2011 | 2.00 in.  | 0/0             | \$0              |
| SALEM        | 4/15/2011 | 1.75 in.  | 0/0             | \$0              |
| SALEM        | 3/18/2013 | 2.00 in.  | 0/0             | \$0              |
| ENON         | 3/17/2016 | 1.50 in.  | 0/0             | \$0              |
| SARTINSVILLE | 3/17/2016 | 2.75 in.  | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

**PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that the probability of future hail occurrences is highly likely (100 percent annual probability). Since hail is an atmospheric hazard, it is assumed that Walthall County has equal exposure to this hazard. It can be expected that future hail events will continue to cause minor damage to property and vehicles throughout the county.

**H.2.10 Hurricane and Tropical Storm**

**LOCATION AND SPATIAL EXTENT**

Hurricanes and tropical storms threaten the entire Atlantic and Gulf seaboard of the United States. While coastal areas are most directly exposed to the brunt of landfalling storms, their impact is often felt hundreds of miles inland and they can affect Walthall County. All areas in Walthall County are equally susceptible to hurricane and tropical storms.

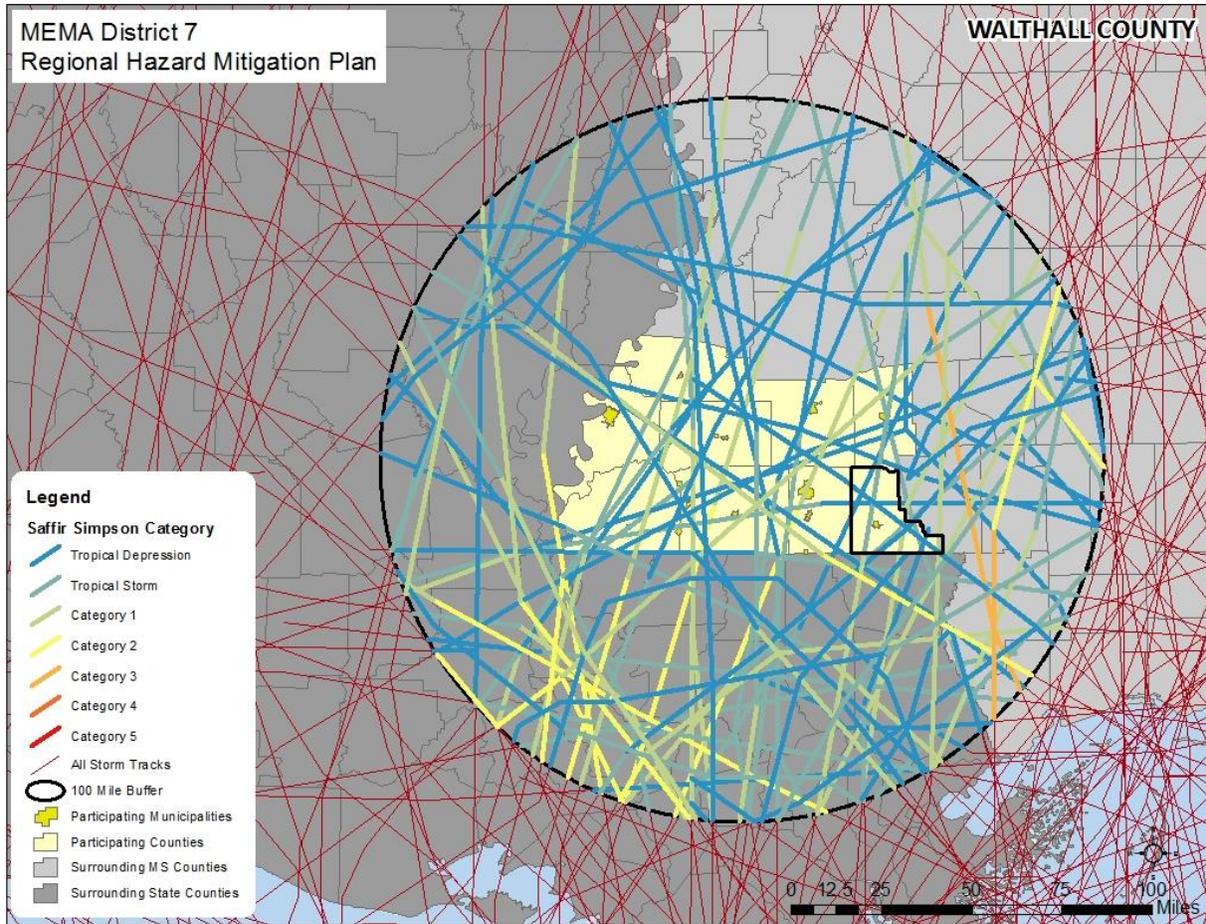
**HISTORICAL OCCURRENCES**

According to the National Hurricane Center’s historical storm track records, 86 hurricane or tropical storm/depression tracks have passed within 100 miles of the MEMA District 7 Region since 1854.<sup>12</sup> This includes: 35 hurricanes, 21 tropical storms, and 30 tropical depressions.

A total of 61 tracks passed directly through the region as shown in **Figure H.10. Table H.19** provides the date of occurrence, name (if applicable), maximum wind speed (as recorded within 100 miles of the MEMA District 7 Region) and category of the storm based on the Saffir-Simpson Scale for each event.

<sup>12</sup> These storm track statistics include tropical depressions, tropical storms, and hurricanes. Lesser events may still cause significant local impact in terms of rainfall and high winds.

**FIGURE H.10: HISTORICAL HURRICANE STORM TRACKS WITHIN 100 MILES OF THE MEMA DISTRICT 7 REGION**



Source: National Oceanic and Atmospheric Administration; National Hurricane Center

**TABLE H.19: HISTORICAL STORM TRACKS WITHIN 100 MILES OF THE MEMA 7 DISTRICT REGION (1850–2016)**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/21/1854          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/5/1855           | NOT NAMED  | Not Available              | Tropical Depression |
| 8/11/1856          | UNNAMED    | 85.03                      | Category 2          |
| 10/2/1860          | UNNAMED    | 89.03                      | Category 2          |
| 8/18/1861          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/16/1862          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/30/1863          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/5/1869           | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/12/1872          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/18/1875          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/1/1879           | UNNAMED    | 89.03                      | Category 2          |

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 10/7/1879          | UNNAMED    | 58.6                       | Tropical Storm      |
| 10/7/1879          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/3/1881           | NOT NAMED  | Not Available              | Tropical Depression |
| 6/15/1886          | UNNAMED    | 69.67                      | Category 1          |
| 8/20/1888          | UNNAMED    | 81.90                      | Category 1          |
| 8/27/1890          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/7/1893           | UNNAMED    | 78.78                      | Category 1          |
| 8/8/1894           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/20/1898          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/29/1905          | UNNAMED    | 42.69                      | Tropical Storm      |
| 10/9/1905          | UNNAMED    | 42.69                      | Tropical Storm      |
| 8/2/1908           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/21/1909          | UNNAMED    | 92.89                      | Category 2          |
| 8/12/1911          | UNNAMED    | 50.35                      | Tropical Storm      |
| 6/13/1912          | UNNAMED    | 64.34                      | Category 1          |
| 7/17/1912          | UNNAMED    | 0.87                       | Tropical Depression |
| 9/18/1914          | UNNAMED    | 32.60                      | Tropical Depression |
| 9/29/1915          | UNNAMED    | 95.53                      | Category 2          |
| 7/6/1916           | UNNAMED    | 85.03                      | Category 2          |
| 9/22/1920          | UNNAMED    | 87.29                      | Category 2          |
| 10/16/1923         | UNNAMED    | 78.78                      | Category 1          |
| 8/26/1926          | UNNAMED    | 78.78                      | Category 1          |
| 9/21/1926          | UNNAMED    | 58.60                      | Tropical Storm      |
| 7/15/1931          | UNNAMED    | 50.35                      | Tropical Storm      |
| 9/19/1932          | UNNAMED    | 64.34                      | Category 1          |
| 10/16/1932         | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/26/1933          | UNNAMED    | 17.56                      | Tropical Depression |
| 6/16/1934          | UNNAMED    | 87.29                      | Category 2          |
| 7/27/1936          | UNNAMED    | 42.69                      | Tropical Storm      |
| 8/23/1936          | UNNAMED    | 4.99                       | Tropical Depression |
| 10/3/1937          | UNNAMED    | 32.6                       | Tropical Depression |
| 9/24/1940          | UNNAMED    | 32.6                       | Tropical Depression |
| 9/6/1945           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/8/1947           | UNNAMED    | 32.6                       | Tropical Depression |
| 9/19/1947          | UNNAMED    | 91.63                      | Category 2          |
| 9/4/1948           | UNNAMED    | 69.67                      | Category 1          |
| 9/4/1949           | UNNAMED    | 58.6                       | Tropical Storm      |
| 8/1/1955           | BRENDA     | 64.34                      | Category 1          |
| 8/27/1955          | UNNAMED    | 50.35                      | Tropical Storm      |
| 6/13/1956          | UNNAMED    | 58.60                      | Tropical Storm      |
| 9/18/1957          | ESTHER     | 64.34                      | Category 1          |
| 5/31/1959          | ARLENE     | 64.34                      | Category 1          |
| 10/4/1964          | HILDA      | 91.63                      | Category 2          |
| 9/10/1965          | BETSY      | 89.03                      | Category 2          |
| 8/18/1969          | CAMILLE    | 99.88                      | Category 3          |
| 8/9/1971           | UNNAMED    | 4.99                       | Tropical Depression |

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/1/1971           | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1971           | FERN       | 4.99                       | Tropical Depression |
| 9/16/1971          | EDITH      | 87.29                      | Category 2          |
| 7/29/1975          | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1977           | BABE       | 58.60                      | Tropical Storm      |
| 7/11/1979          | BOB        | 73.83                      | Category 1          |
| 7/20/1980          | UNNAMED    | 0.87                       | Tropical Depression |
| 8/15/1985          | DANNY      | 78.78                      | Category 1          |
| 9/2/1985           | ELENA      | 92.89                      | Category 2          |
| 10/29/1985         | JUAN       | 73.83                      | Category 1          |
| 8/11/1987          | UNNAMED    | 4.99                       | Tropical Depression |
| 8/9/1988           | BERYL      | 50.35                      | Tropical Storm      |
| 9/10/1988          | FLORENCE   | 69.67                      | Category 1          |
| 8/26/1992          | ANDREW     | 85.03                      | Category 2          |
| 9/20/1998          | HERMINE    | 32.60                      | Tropical Depression |
| 6/11/2001          | ALLISON    | 42.69                      | Tropical Storm      |
| 8/5/2002           | BERTHA     | 32.60                      | Tropical Depression |
| 9/26/2002          | ISIDORE    | 64.34                      | Category 1          |
| 10/3/2002          | LILI       | 69.67                      | Category 1          |
| 6/30/2003          | BILL       | 58.60                      | Tropical Storm      |
| 10/10/2004         | MATTHEW    | 17.56                      | Tropical Depression |
| 8/29/2005          | KATRINA    | 94.63                      | Category 3          |
| 9/13/2007          | HUMBERTO   | 32.60                      | Tropical Depression |
| 8/24/2008          | FAY        | 17.56                      | Tropical Depression |
| 9/1/2008           | GUSTAV     | 87.29                      | Category 2          |
| 7/25/2010          | BONNIE     | 0.87                       | Tropical Depression |
| 8/17/2010          | FIVE       | 4.99                       | Tropical Depression |
| 9/4/2011           | LEE        | 32.60                      | Tropical Depression |
| 8/29/2012          | ISAAC      | 69.67                      | Category 1          |

Source: National Hurricane Center

Federal records indicate that five disaster declarations were made in 1969 (Hurricane Camille), 2004 (Hurricane Ivan), 2005 (Hurricane Katrina), 2008 (Hurricane Gustav), and 2012 (Hurricane Isaac) in Walthall County.<sup>13</sup> Hurricane and tropical storm events can cause substantial damage in the area due to high winds and flooding.

The National Climatic Data Center also reported five hurricane or tropical storm events in Walthall County since 2002.<sup>14</sup> These storms are listed in **Table H.20** and are generally representative of storms with the greatest impact on the county over that time period.

<sup>13</sup> A complete listing of historical disaster declarations can be found in Section 4: Hazard Identification.

<sup>14</sup> These hurricane events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported.

**TABLE H.20: HISTORICAL HURRICANE/TROPICAL STORM OCCURRENCES IN WALTHALL COUNTY**

| Date of Occurrence | Storm Name          | Deaths/Injuries | Property Damage (2017) <sup>15</sup> |
|--------------------|---------------------|-----------------|--------------------------------------|
| 10/2/2002          | Hurricane Lili      | 0/0             | \$2,252,372                          |
| 8/28/2005          | Hurricane Katrina   | 0/0             | \$456,926,212                        |
| 8/24/2008          | Tropical Storm Faye | 0/0             | \$0                                  |
| 9/1/2008           | Hurricane Gustav    | 0/0             | \$223,531                            |
| 8/28/2012          | Hurricane Isaac     | 0/0             | \$265,350                            |

Source: National Climatic Data Center

Flooding and high winds from hurricanes and tropical storms can cause damage throughout the county. Anecdotes are available from NCDC for the major storms that have impacted the county as found below:

#### **Hurricane Katrina – August 29, 2005**

The damage from Hurricane Katrina was devastating and widespread. Damage occurred across all of the Jackson forecast area which includes 9 parishes in Northeast Louisiana, 2 counties in Southeast Arkansas and about 2/3 of Central and Southern Mississippi. As widespread as the damage was, the more concentrated and most significant damage occurred across Southeast and East-Central Mississippi. For other areas, especially those west of Natchez to Yazoo City to Grenada line, damage to trees and power lines was significant and scattered across the landscape. As you move toward Central Mississippi and along Interstate 55 the damage and impacts increase. This portion of the state sustained widespread damage to trees and power lines.

#### **Hurricane Gustav – September 1, 2008**

As the center of Gustav crossed much of southern Louisiana, tropical storm force winds extended into southern Mississippi and portions of east central Louisiana. Sustained winds were between 35 and 45 mph with higher gusts between 70 and 100 mph occurred. Tree and power line damage was extensive across these areas which resulted in widespread power outages, some of which lasted for 3 to 5 days. As Gustav slowed across central Louisiana, the outer rainbands continued to rotate across much of southern and central Mississippi. This kept those portions of Mississippi in the region which was favorable for tornadoes. Over 3 days, 26 tornadoes were confirmed, all of which were in the EF0 to EF1 range.

#### **Hurricane Isaac – August 29, 2012**

Isaac moved very slowly to the north and northwest over the course of August 29th, which made for prolonged impacts. Forward motion of about 5 mph lead to tremendous flooding issues for both Louisiana and portions of Mississippi south of I-20. Around noon on August 29th, Isaac was downgraded to a Tropical Storm, but this was not much relief to the many residents who were being inundated with rain and wind. The worst of the wind was felt generally along and south of an axis from Marion County to Adams County. Numerous trees were down in Adams County, leaving many without power for several days. Eighty percent of the roads were blocked in Franklin County due to downed trees.

<sup>15</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

### **PROBABILITY OF FUTURE OCCURRENCES**

Given the inland location of the county, Walthall County will not be susceptible to many of the sub-hazards that are often associated with hurricanes and tropical storms such as storm surge. Although the probability of experiencing major impacts is somewhat less than coastal areas because of this, hurricanes and tropical storms remain a real threat to Walthall County due to induced events like flooding and high wind. Based on historical evidence, the probability level of future occurrence is likely (between 10 and 100 percent annual probability). Given the regional nature of the hazard, all areas in the county are equally exposed to this hazard. However, when the county is impacted, the damage could be significant, threatening lives and property throughout the planning area.

### **HURRICANE EVACUATIONS**

As discussed above, the MEMA District 7 Region has been directly impacted by a number of hurricane and tropical storm events historically. However, it should be noted that the region is also susceptible to indirect effects from hurricanes and tropical storms, particularly in the form of evacuations from coastal counties. The counties within MEMA District 7 are located far enough inland that they are often the primary recipients of evacuees from counties that will be (or have been) impacted by major storm events.

For example, during Hurricane Katrina in 2005, thousands of evacuees made their way to counties in southwest Mississippi to take temporary refuge from the storm. Due to the severe and devastating effects of the storm, temporary sheltering within these counties was extended much longer than originally anticipated and in some cases, the evacuees ended up staying for weeks or months. This additional population caused a major strain on resources within these relatively rural counties, as local communities with limited resources had an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people.

Caring for all of these evacuees was especially challenging for counties in the MEMA District 7 Region because most had been impacted themselves by the storm and were attempting to help their own citizens recover from the storm. Undoubtedly, recovering from a major disaster while simultaneously attempting to help evacuees from surrounding counties poses a number of difficulties for emergency management personnel and other local officials.

Based on Hurricane Katrina and other major hurricane events that have impacted the Gulf Coast in the past, it is likely that many of the MEMA District 7 counties will be receiver counties when it comes to evacuees. Many of these evacuees will likely come from locations in Louisiana, including New Orleans. Indeed, the State of Louisiana evacuation plan indicates that one of the primary evacuation routes from the City of New Orleans will direct evacuees north along Interstate 55, sending people through Pike County and Lincoln County (**Figure H.11**). Depending on the severity of the event, officials in Louisiana may even change Interstate 55 over to a contraflow traffic pattern to enable quicker evacuations.



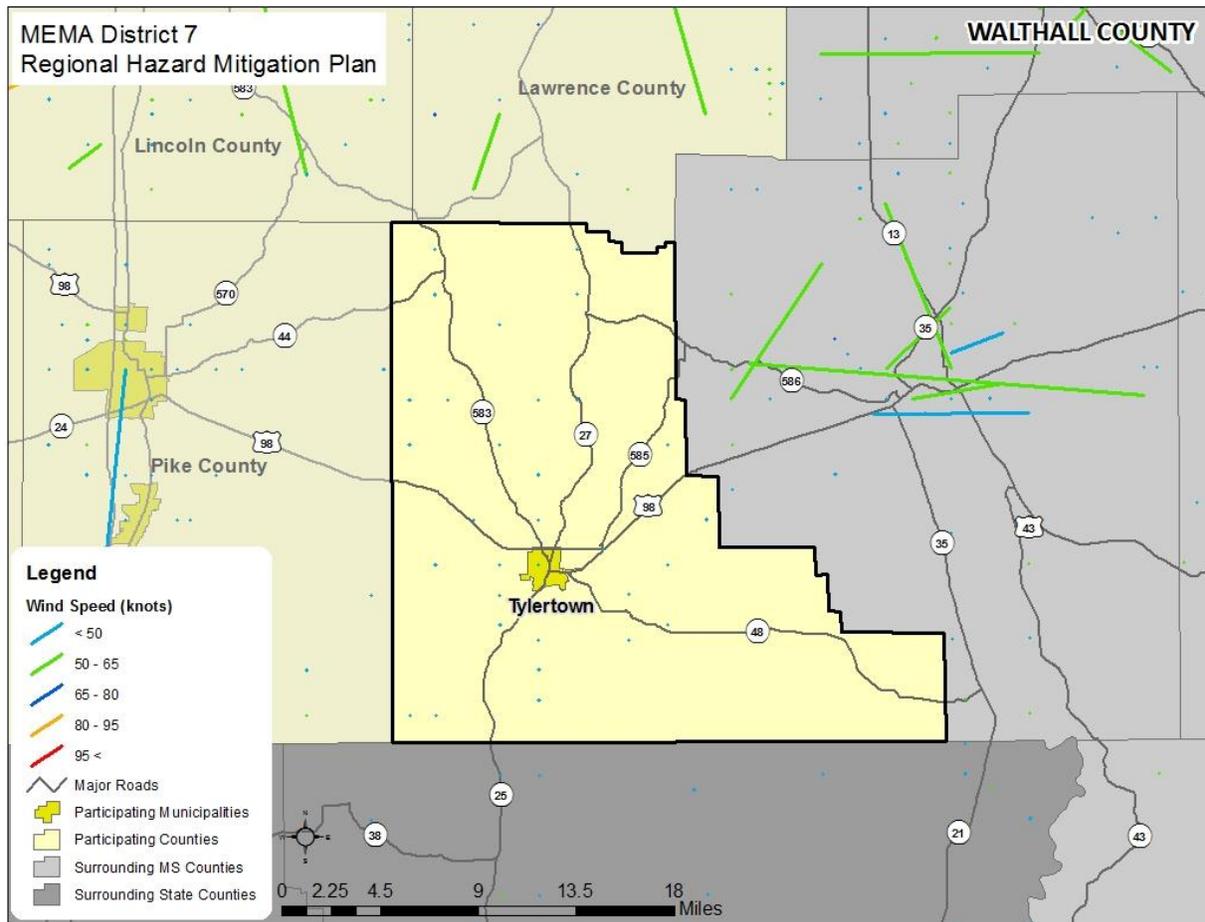
may not be directly impacted by the storm. As in past storms, it is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future storm events.

## H.2.11 Severe Thunderstorm/High Wind

### LOCATION AND SPATIAL EXTENT

A thunderstorm event is an atmospheric hazard, and thus has no geographic boundaries. It is typically a widespread event that can occur in all regions of the United States. However, thunderstorms are most common in the central and southern states because atmospheric conditions in those regions are favorable for generating these powerful storms. It is assumed that Walthall County has uniform exposure to an event and the spatial extent of an impact could be large. With that in mind, **Figure H.12** shows the location of wind events that have impacted the county between 1955 and 2015.

**FIGURE H.12: SEVERE THUNDERSTORM TRACKS IN WALTHALL COUNTY**



Source: National Weather Service Storm Prediction Center

**HISTORICAL OCCURRENCES**

Severe storms were at least partially responsible for seven disaster declarations in Walthall County in 1980, 1983, 1990, 2001, 2003, 2009, and 2016.<sup>16</sup> According to NCDC, there have been 96 reported thunderstorm and high wind events since 1963 in Walthall County.<sup>17</sup> These events caused almost \$623,000 (2017 dollars) in damages.<sup>18</sup> There were also reports of two fatalities. **Table H.21** summarizes this information. **Table H.22** presents detailed thunderstorm and high wind event reports including date, magnitude, and associated damages for each event.

**TABLE H.21: SUMMARY OF THUNDERSTORM/HIGH WIND OCCURRENCES IN WALTHALL COUNTY**

| Location                     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Tylertown                    | 33                    | 2/0             | \$266,586              | \$11,108                   |
| Unincorporated Area          | 63                    | 0/0             | \$356,249              | \$6,597                    |
| <b>WALTHALL COUNTY TOTAL</b> | <b>96</b>             | <b>2/0</b>      | <b>\$622,835</b>       | <b>\$17,705</b>            |

Source: National Climatic Data Center

**TABLE H.22: HISTORICAL THUNDERSTORM/HIGH WIND OCCURRENCES IN WALTHALL COUNTY**

| Location         | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|------------------|------------|-------------------|------------|-----------------|------------------|
| <b>Tylertown</b> |            |                   |            |                 |                  |
| Tylertown        | 2/11/1993  | Thunderstorm Wind | 0 kts.     | 0/0             | \$854            |
| Tylertown        | 6/10/1994  | Thunderstorm Wind | 0 kts.     | 0/0             | \$826            |
| Tylertown        | 5/28/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| TYLERTOWN        | 4/22/1997  | Thunderstorm Wind | 50 kts.    | 0/0             | \$763            |
| TYLERTOWN        | 6/17/1997  | Thunderstorm Wind | --         | 1/0             | \$15,254         |
| TYLERTOWN        | 8/17/1997  | Thunderstorm Wind | --         | 0/0             | \$30,413         |
| TYLERTOWN        | 2/10/1998  | Thunderstorm Wind | --         | 0/0             | \$604            |
| TYLERTOWN        | 1/22/1999  | Thunderstorm Wind | --         | 0/0             | \$372            |
| TYLERTOWN        | 3/13/1999  | Thunderstorm Wind | --         | 0/0             | \$74,098         |
| TYLERTOWN        | 7/14/2000  | Thunderstorm Wind | --         | 0/0             | \$7,075          |
| TYLERTOWN        | 7/17/2000  | Thunderstorm Wind | --         | 0/0             | \$1,415          |
| TYLERTOWN        | 7/20/2000  | Thunderstorm Wind | --         | 0/0             | \$708            |
| TYLERTOWN        | 3/12/2001  | Thunderstorm Wind | --         | 1/0             | \$13,878         |
| TYLERTOWN        | 4/15/2001  | Thunderstorm Wind | --         | 0/0             | \$2,073          |
| TYLERTOWN        | 10/13/2001 | Thunderstorm Wind | --         | 0/0             | \$55,042         |
| TYLERTOWN        | 1/24/2002  | Thunderstorm Wind | --         | 0/0             | \$20,711         |
| TYLERTOWN        | 7/22/2002  | Thunderstorm Wind | --         | 0/0             | \$3,394          |

<sup>16</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>17</sup> These thunderstorm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017 and these high wind events are only inclusive of those reported by NCDC from 1996 through February 2017. It is likely that additional thunderstorm and high wind events have occurred in Walthall County. As additional local data becomes available, this hazard profile will be amended.

<sup>18</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**ANNEX H: WALTHALL COUNTY**

| Location                   | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-------------------|------------|-----------------|------------------|
| TYLERTOWN                  | 8/2/2002   | Thunderstorm Wind | --         | 0/0             | \$1,353          |
| TYLERTOWN                  | 11/27/2003 | Thunderstorm Wind | 60 kts. EG | 0/0             | \$13,253         |
| TYLERTOWN                  | 6/29/2004  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,934          |
| TYLERTOWN                  | 7/2/2004   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,291          |
| TYLERTOWN                  | 7/16/2004  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$968            |
| TYLERTOWN                  | 4/11/2005  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,513          |
| TYLERTOWN                  | 4/30/2005  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| TYLERTOWN                  | 3/1/2007   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,786          |
| TYLERTOWN                  | 6/9/2007   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,760          |
| TYLERTOWN                  | 11/21/2007 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,745          |
| TYLERTOWN                  | 1/10/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,738          |
| TYLERTOWN                  | 3/3/2008   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$5,726          |
| TYLERTOWN                  | 11/24/2008 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,727          |
| TYLERTOWN                  | 5/16/2009  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,143          |
| TYLERTOWN                  | 6/5/2011   | Thunderstorm Wind | 60 kts. EG | 0/0             | \$2,167          |
| TYLERTOWN                  | 12/23/2014 | Thunderstorm Wind | 65 kts. EG | 0/0             | \$0              |
| <b>Unincorporated Area</b> |            |                   |            |                 |                  |
| WALTHALL CO.               | 8/27/1963  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 4/7/1964   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 7/2/1967   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 7/8/1968   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 4/13/1969  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 7/15/1969  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 2/1/1970   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 2/1/1970   | Thunderstorm Wind | 58 kts.    | 0/0             | \$0              |
| WALTHALL CO.               | 5/20/1971  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 3/2/1972   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 3/11/1975  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 7/10/1981  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 3/31/1982  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 2/5/1983   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 2/5/1983   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 12/11/1983 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 2/12/1984  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 4/8/1984   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 6/17/1985  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 3/17/1987  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 7/30/1987  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 9/17/1987  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 5/24/1988  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 5/24/1988  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 6/18/1988  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 10/2/1988  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 2/10/1990  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 4/19/1991  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.               | 3/5/1992   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |

| Location        | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|-----------------|------------|-------------------|------------|-----------------|------------------|
| WALTHALL CO.    | 6/29/1992  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.    | 8/26/1992  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WALTHALL CO.    | 11/21/1992 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| Enon            | 3/9/1994   | Thunderstorm Wind | 0 kts.     | 0/0             | \$831            |
| SARTINSVILLE    | 3/18/1996  | Thunderstorm Wind | --         | 0/0             | \$4,711          |
| SARTINSVILLE    | 4/5/1997   | Thunderstorm Wind | --         | 0/0             | \$1,526          |
| SIMONDS         | 4/17/1998  | Thunderstorm Wind | --         | 0/0             | \$75,238         |
| COUNTYWIDE      | 6/5/1998   | Thunderstorm Wind | --         | 0/0             | \$75,007         |
| LEXIE           | 1/2/1999   | Thunderstorm Wind | --         | 0/0             | \$2,977          |
| SALEM           | 4/2/2000   | Thunderstorm Wind | --         | 0/0             | \$714            |
| COUNTYWIDE      | 4/3/2000   | Thunderstorm Wind | --         | 0/0             | \$714            |
| DINAN           | 7/17/2000  | Thunderstorm Wind | --         | 0/0             | \$7,075          |
| COUNTYWIDE      | 7/22/2000  | Thunderstorm Wind | --         | 0/0             | \$5,660          |
| COUNTYWIDE      | 8/10/2000  | Thunderstorm Wind | --         | 0/0             | \$708            |
| SARTINSVILLE    | 1/29/2001  | Thunderstorm Wind | --         | 0/0             | \$1,396          |
| COUNTYWIDE      | 3/12/2001  | Thunderstorm Wind | --         | 0/0             | \$48,572         |
| COUNTYWIDE      | 7/13/2001  | Thunderstorm Wind | --         | 0/0             | \$34,440         |
| COUNTYWIDE      | 4/8/2002   | Thunderstorm Wind | --         | 0/0             | \$6,800          |
| COUNTYWIDE      | 5/17/2002  | Thunderstorm Wind | --         | 0/0             | \$2,040          |
| SALEM           | 12/31/2002 | Thunderstorm Wind | --         | 0/0             | \$1,014          |
| WALTHALL (ZONE) | 6/30/2003  | Strong Wind       | 45 kts. EG | 0/0             | \$66,555         |
| SARTINSVILLE    | 2/5/2004   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$985            |
| SALEM           | 4/22/2005  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,257          |
| LEXIE           | 11/21/2007 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,745          |
| LEXIE           | 2/17/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,310          |
| DAVO            | 4/4/2011   | Thunderstorm Wind | 60 kts. EG | 0/0             | \$5,436          |
| MESA            | 8/18/2011  | Thunderstorm Wind | 55 kts. EG | 0/0             | \$1,079          |
| DAVO            | 12/22/2011 | Thunderstorm Wind | 52 kts. EG | 0/0             | \$3,251          |
| FLOWERS         | 2/10/2013  | Thunderstorm Wind | 54 kts. EG | 0/0             | \$2,106          |
| KIOTO           | 3/31/2013  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$2,101          |
| SALEM           | 8/8/2015   | Thunderstorm Wind | 56 kts. EG | 0/0             | \$0              |
| DINAN           | 3/17/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| ENON            | 8/6/2016   | Thunderstorm Wind | 55 kts. EG | 0/0             | \$0              |
| MELIS           | 1/2/2017   | Thunderstorm Wind | 65 kts. EG | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

†E = estimated; EG = estimated gust; ES = estimated sustained; M = measured; MG = measured gust; MS = measured sustained

Source: National Climatic Data Center

### **PROBABILITY OF FUTURE OCCURRENCES**

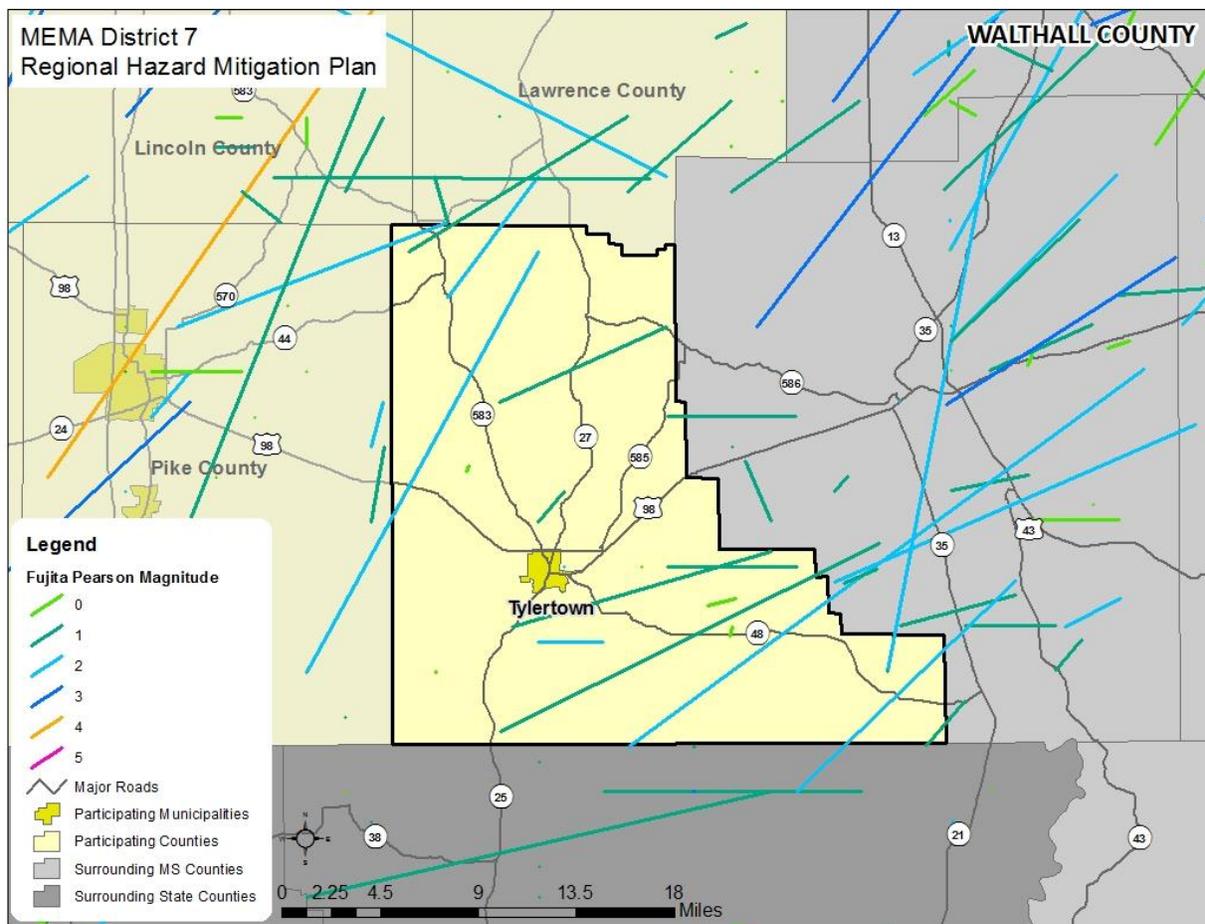
Given the high number of previous events, it is certain that thunderstorm events, including straight-line wind events, will occur in the future. This results in a probability level of highly likely (100 percent annual probability) for the entire county.

## H.2.12 Tornado

### LOCATION AND SPATIAL EXTENT

Tornadoes occur throughout the state of Mississippi, and thus in Walthall County. Tornadoes typically impact a relatively small area, but damage may be extensive. Event locations are completely random and it is not possible to predict specific areas that are more susceptible to tornado strikes over time. Therefore, it is assumed that Walthall County is uniformly exposed to this hazard. With that in mind, **Figure H.13** shows tornado track data for many of the major tornado events that have impacted the county between 1950 and 2015. While no definitive pattern emerges from this data, some areas that have been impacted in the past may be potentially more susceptible in the future.

**FIGURE H.13: HISTORICAL TORNADO TRACKS IN WALTHALL COUNTY**



Source: National Weather Service Storm Prediction Center

### HISTORICAL OCCURRENCES

Tornadoes were at least partially responsible for six disaster declarations in Walthall County in 1980, 1983, 1990, 2001, 2003, and 2009.<sup>19</sup> According to the National Climatic Data Center, there have been a total of

<sup>19</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

28 recorded tornado events in Walthall County since 1957 (**Table H.23**), resulting in more than \$7.3 million (2017 dollars) in property damages.<sup>20 21</sup> In addition, 1 fatality and 14 injuries were reported. The magnitude of these tornadoes ranges from F0 to F2, although an F5 event is possible. Detailed information on historic tornado events can be found in **Table H.24**.

**TABLE H.23: SUMMARY OF TORNADO OCCURRENCES IN WALTHALL COUNTY**

| Location                     | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Tylertown                    | 7                     | 1/0             | \$70,889               | \$3,222                    |
| Unincorporated Area          | 21                    | 0/14            | \$7,273,108            | \$121,218                  |
| <b>WALTHALL COUNTY TOTAL</b> | <b>28</b>             | <b>1/14</b>     | <b>\$7,343,997</b>     | <b>\$124,441</b>           |

Source: National Climatic Data Center

**TABLE H.24: HISTORICAL TORNADO IMPACTS IN WALTHALL COUNTY**

| Location         | Date       | Magnitude | Deaths/Injuries | Property Damage* | Details   |
|------------------|------------|-----------|-----------------|------------------|---|
| <b>Tylertown</b> |            |           |                 |                  |   |
| Tylertown        | 4/11/1995  | F1        | 1/0             | \$0              | A tornado touched down east of Tylertown. A man was killed when a large tree fell on his mobile home. Civil defense reported 12 houses and 2 mobile homes damaged, 4 mobile homes destroyed and numerous trees downed blocking roads across the county. M40MH   |
| Tylertown        | 11/11/1995 | F1        | 0/0             | \$63,678         | A tornado touched down along an intermittent path, destroying a large barn and damaging a shed and two house roofs. Approximately 100 trees were reported knocked down along the tornado path.  |
| TYLERTOWN        | 3/12/2001  | F1        | 0/0             | \$2,082          | A tornado knocked down several trees in extreme eastern Walthall County north of U.S. Highway 98 and east of Mississippi Highway 585. Tornado then moved into Marion County.  |
| TYLERTOWN        | 1/7/2005   | F0        | 0/0             | \$5,129          | A weak tornado that briefly touched down in southwest Walthall County in the Brockdale, Purvis, and Les Blackwell Road area knocked down several trees and a few fences, shifted a trailer off of its blocks, and caused minor roof damage to a few structures. |
| TYLERTOWN        | 4/11/2005  | F0        | 0/0             | \$0              | A weak tornado was observed to briefly touch down causing no damage.  |

<sup>20</sup> These tornado events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1950 through February 2017. It is likely that additional tornadoes have occurred in Walthall County. As additional local data becomes available, this hazard profile will be amended.

<sup>21</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**ANNEX H: WALTHALL COUNTY**

| Location                   | Date       | Magnitude    | Deaths/<br>Injuries | Property<br>Damage* | Details   |
|----------------------------|------------|--------------|---------------------|---------------------|---|
| TYLERTOWN                  | 1/10/2008  | Funnel Cloud | 0/0                 | \$0                 | A funnel cloud was reported.  |
| TYLERTOWN                  | 1/3/2015   | Funnel Cloud | 0/0                 | \$0                 | A rotating wall cloud and funnel cloud were reported northwest of Tylertown.  |
| <b>Unincorporated Area</b> |            |              |                     |                     |   |
| WALTHALL CO.               | 11/18/1957 | F2           | 0/0                 | \$2,152,500         | --  |
| WALTHALL CO.               | 5/6/1960   | F1           | 0/2                 | \$2,072,237         | --  |
| WALTHALL CO.               | 3/1/1965   | F2           | 0/0                 | \$195,307           | --  |
| WALTHALL CO.               | 6/6/1965   | F2           | 0/0                 | \$19,345            | --  |
| WALTHALL CO.               | 4/13/1969  | F1           | 0/2                 | \$168,405           | --  |
| WALTHALL CO.               | 5/8/1969   | F1           | 0/0                 | \$16,794            | --  |
| WALTHALL CO.               | 9/16/1971  | F1           | 0/0                 | \$14,983            | --  |
| WALTHALL CO.               | 4/12/1986  | F1           | 0/0                 | \$562,901           | --  |
| WALTHALL CO.               | 2/15/1987  | F2           | 0/2                 | \$547,769           | --  |
| WALTHALL CO.               | 3/17/1987  | F0           | 0/0                 | \$54,533            | --  |
|                            |            |              |                     |                     | This tornado touched down in Walthall County, 4 miles southwest of Sandy Hook, and moved northeast crossing into Marion County, 2 miles southwest of Sandy Hook. The tornado lifted 1 mile southwest of Sandy Hook. One house was damaged when a tree fell on it. Numerous trees were blown down over a 15 to 20 acre area.   |
| to 1 SW Sandy Hook         | 11/5/1994  | F1           | 0/0                 | \$40,836            |   |
|                            |            |              |                     |                     | Five people sustained minor injuries when their mobile home has demolished. Three other mobile homes were destroyed, 20 houses damaged and numerous trees and power lines downed.   |
| SALEM                      | 3/5/1996   | F1           | 0/5                 | \$235,572           |   |
|                            |            |              |                     |                     | A tornado touched down along an intermittent path in extreme northern Walthall County. Numerous trees were downed or their main trunks snapped. Several buildings and mobile homes were damaged by wind or fallen trees. The tornado continued to move northeast in Lawrence County in southern Mississippi. See additional information in Storm Data entries from the National Weather Service - Jackson, Mississippi. |
| ENON                       | 5/1/2004   | F1           | 0/0                 | \$64,655            |   |
|                            |            |              |                     |                     | A tornado moved out of Pike County and entered Walthall County about 3 miles west northwest of Dinan and continued travelling north northeast until it dissipated approximately 2 miles west of Sartinsville. The tornado caused significant damage to 25 houses, 10 trailers, and 2 businesses in Walthall County.   |
| DINAN                      | 4/6/2005   | F2           | 0/0                 | \$376,964           |   |
|                            |            |              |                     |                     | A tornado, of strong intensity at several locations, entered Walthall County from Washington Parish LA. The tornado moved northeast across the southeast portion of Walthall County before exiting into Marion County. Several mobile homes were  |
| FLOWERS                    | 11/15/2006 | F2           | 0/1                 | \$606,759           |   |

| Location | Date       | Magnitude | Deaths/<br>Injuries | Property<br>Damage* | Details  |
|----------|------------|-----------|---------------------|---------------------|--|
|          |            |           |                     |                     | destroyed and roofs were blown off several frame houses. One injury was reported from an occupant of one of the mobile homes. Trees and power lines were also downed in a number of locations. Overall, the emergency manager reported 11 structures with major damage and 5 structures with minor damage.   |
| MESA     | 8/9/2012   | EF0       | 0/0                 | \$31,842            | Damage reported at St. Francis Animal Sanctuary. An outbuilding that houses dogs was destroyed with numerous dogs injured...one fatally. A large tree was uprooted. Numerous 600 pound dog houses were blown 50 to 120 feet. A facility on piers with straps was moved 6 feet off of the piers. Estimated wind speed was 85 mph. Path length one third of a mile and path width 500 feet.  |
| SIMONDS  | 12/10/2012 | EF1       | 0/0                 | \$106,500           | The tornado initially touched down near the intersection of Highway 27 and Simon Road. The storm moved northeast causing sporadic EF-0 damage for a few miles roughly along Simon and Taylor Roads. Near the intersection of Simon and Allen Hill roads, the tornado destroyed a metal building and threw the debris 200 to 300 yards down its path. The storm strengthened as it neared Highway 48, causing more significant damage. Two homes suffered moderate damage to a brick facade, and roofing and a dairy barn was destroyed near the crossing of Dexter Road and Highway 48. The tornado then crossed Highway 48 and continued to cause significant damage to trees with some minor damage to a few more structures. It also picked up several large hay bales and threw them 75 to 100 feet. The tornado began to weaken as it approached the Walthall/Marion County line, but did continue to cause damage for a few more miles into Marion County per survey results from WFO Jackson MS. Estimated maximum wind speed in Walthall County was 100 mph. |
| FLOWERS  | 2/20/2014  | EF0       | 0/0                 | \$5,207             | A weak tornado touched down in the vicinity of Mississippi Highway 48 and Piggott-Easterling Road. Several large pine trees were uprooted, and large tree branches were snapped. A house roof was damaged by a fallen tree. Damage path was one half mile, path width was 40 yards. The tornado was rated EF0 with an estimated maximum wind of 85 mph. Time   |

| Location | Date       | Magnitude | Deaths/<br>Injuries | Property<br>Damage* | Details  |
|----------|------------|-----------|---------------------|---------------------|--|
|          |            |           |                     |                     | of the tornado was estimated based on radar.   |
| FLOWERS  | 12/15/2014 | EF0       | 0/0                 | \$0                 | A storm survey found a brief tornado touchdown near Dexter that damaged a barn and several chicken coops. Path width was 150 yards. Maximum wind speed was estimated at 85 mph.  |
| LEXIE    | 2/15/2016  | EF1       | 0/2                 | \$0                 | The tornado initially touched down just west of Mississippi Highway 27 southwest of Tylertown, moved northeast across the highway uprooting a few trees and snapping large tree limbs. The tornado moved east-northeast across East Lexie Road with the greatest damage near Ginntown Road. Heavy tree damage was noted in this area with dozens of trees uprooted or snapped. One home had a total loss of the roof and one exterior wall collapsed inward. Two individuals sustained superficial injuries and were treated on scene. A few other mobile homes had minor damage to undercarriage and roofing. A metal building had more than 80 percent of its roof removed. Minor damage also occurred to the roof of a church. The tornado crossed the intersection of Mississippi Highway 48 and Purvis Road before lifting. The tornado was rated EF1 with an estimated peak wind of 105 mph. Path length was 5 miles and maximum width 250 yards. Event time was estimated based on radar. |
| MESA     | 1/2/2017   | EF1       | 0/0                 | \$0                 | A weak tornado...EF1...touched down along and just north of Mississippi Highway 48 west of Tylertown. Some large trees were uprooted and snapped. Power lines were damaged by the fallen trees. Wind speed estimated at 95 mph.  |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

**PROBABILITY OF FUTURE OCCURRENCES**

According to historical information, tornado events pose a significant threat to Walthall County. The probability of future tornado occurrences affecting Walthall County is likely (between 10 and 100 percent annual probability).

## H.2.13 Winter Storm and Freeze

### LOCATION AND SPATIAL EXTENT

Nearly the entire continental United States is susceptible to winter storm and freeze events. Some ice and winter storms may be large enough to affect several states, while others might affect limited, localized areas. The degree of exposure typically depends on the normal expected severity of local winter weather. Walthall County is not accustomed to severe winter weather conditions and seldom receives severe winter weather, even during the winter months. Events tend to be mild in nature; however, this creates a situation where even relatively small accumulations of snow, ice, or other wintery precipitation can lead to losses and damage due to the fact that these events are not commonplace. Given the atmospheric nature of the hazard, the entire county has uniform exposure to a winter storm.

### HISTORICAL OCCURRENCES

According to the National Climatic Data Center, there have been a total of seven recorded winter storm events in Walthall County since 2002 (**Table H.25**).<sup>22</sup> These events did not result in any property damages.<sup>23</sup> Detailed information on the recorded winter storm events can be found in **Table H.26**.

**TABLE H.25: SUMMARY OF WINTER STORM EVENTS IN WALTHALL COUNTY**

| Location        | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-----------------|-----------------------|-----------------|------------------------|----------------------------|
| Walthall County | 7                     | 0/0             | \$0                    | \$0                        |

Source: National Climatic Data Center

**TABLE H.26: HISTORICAL WINTER STORM IMPACTS IN WALTHALL COUNTY**

| Location                   | Date       | Type           | Deaths/Injuries | Property Damage* |
|----------------------------|------------|----------------|-----------------|------------------|
| <b>Tylertown</b>           |            |                |                 |                  |
| None reported              | --         | --             | --              | --               |
| <b>Unincorporated Area</b> |            |                |                 |                  |
| WALTHALL (ZONE)            | 1/1/2002   | Winter Storm   | 0/0             | \$0              |
| WALTHALL (ZONE)            | 12/11/2008 | Heavy Snow     | 0/0             | \$0              |
| WALTHALL (ZONE)            | 12/4/2009  | Winter Storm   | 0/0             | \$0              |
| WALTHALL (ZONE)            | 2/11/2010  | Heavy Snow     | 0/0             | \$0              |
| WALTHALL (ZONE)            | 2/3/2011   | Ice Storm      | 0/0             | \$0              |
| WALTHALL (ZONE)            | 1/23/2014  | Winter Weather | 0/0             | \$0              |
| WALTHALL (ZONE)            | 1/28/2014  | Sleet          | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

<sup>22</sup> These ice and winter storm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional winter storm conditions have affected Walthall County.

<sup>23</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

There have been several severe winter weather events in Walthall County. The text below describes two of the major events and associated impacts on the county. Similar impacts can be expected with severe winter weather.

### **February 2010**

Heavy snow affected a large portion of the region, especially locations across central and southern Mississippi, on Thursday night and Friday, February 11th and 12th. The heavy snow was a result of a low pressure system that tracked eastward across the northern Gulf of Mexico, and a vigorous upper level disturbance that moved across the region while a cold air mass was in place. Light precipitation overspread the region late Thursday afternoon into the evening before becoming heavy Thursday night into early Friday morning. The snow tapered off from west to east during the midday hours Friday.

### **February 2011**

An ice storm developed across the area on February 3rd into the early morning hours of the 4th. While this icing event was not devastating, the impact to travel was a major issue across the region. Thousands of accidents occurred from slick roads. As a result of the accidents, three fatalities occurred along with a handful of injuries. Overall, most areas received 0.25 to 0.5 inches of ice accumulation from freezing rain. Additionally, some areas had a mix of precipitation with sleet accumulating. Some snow did occur, but those were just across select areas and the accumulation was mainly one inch or less.

Winter storms throughout the planning area have several negative externalities including hypothermia, cost of snow and debris cleanup, business and government service interruption, traffic accidents, and power outages. Furthermore, citizens may resort to using inappropriate heating devices that could to fire or an accumulation of toxic fumes.

## ***PROBABILITY OF FUTURE OCCURRENCES***

Winter storm events will continue to occur in Walthall County. Based on historical information, the probability is likely (between 10 and 100 percent annual probability).

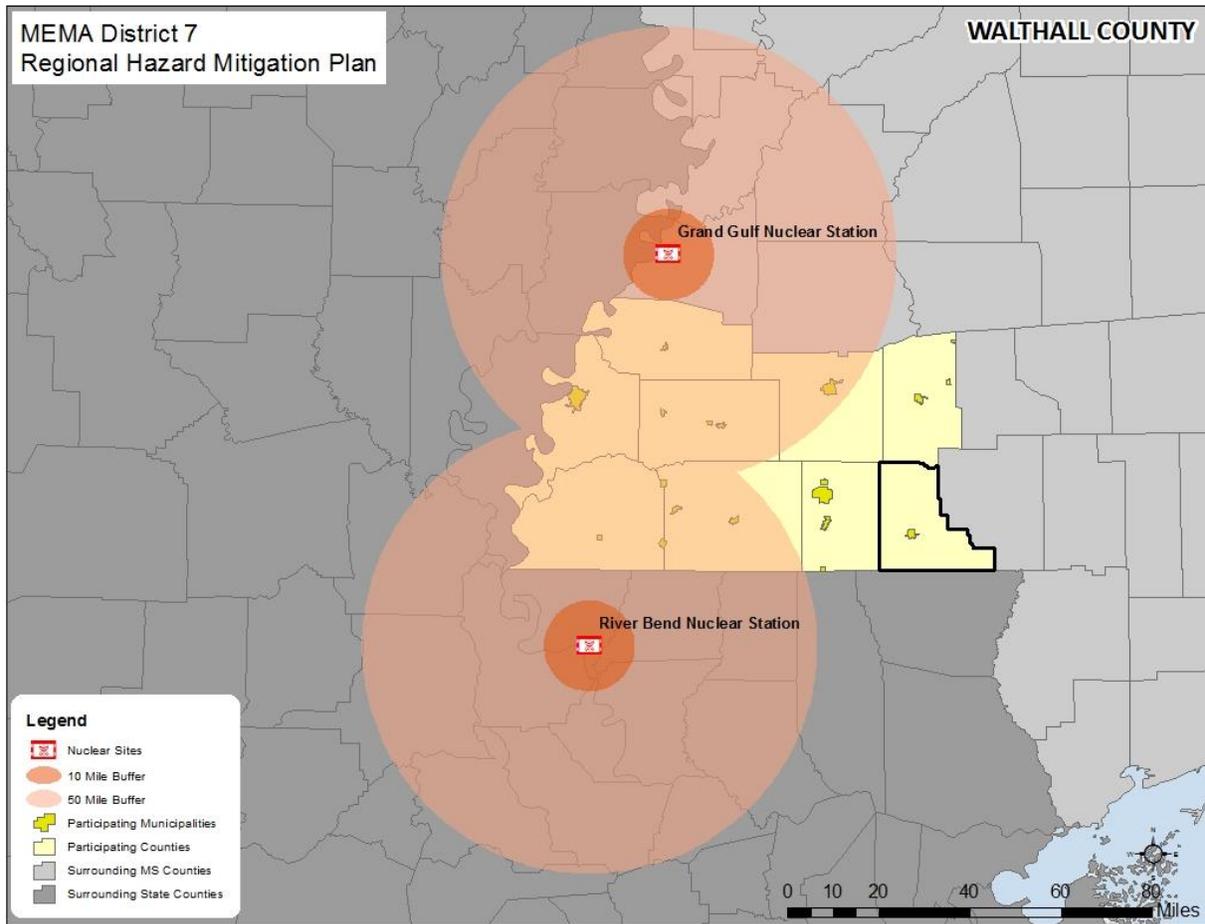
## ***HUMAN-CAUSED HAZARDS***

### **H.2.14 Radiological Event**

#### ***LOCATION AND SPATIAL EXTENT***

The Grand Gulf Nuclear Station and River Bend Nuclear Station are both located within a 50-mile radius of the MEMA District 7 Region. The Nuclear Regulatory Commission defines two emergency planning zones around nuclear plants. Areas located within 10 miles of the station are considered to be within the zone of highest risk to a nuclear incident and this radius is the designated evacuation radius recommended by the Nuclear Regulatory Commission. Within the 10-mile zone, the primary concern is exposure to and inhalation of radioactive contamination. No part of Walthall County is located in the 10-mile radius of a nuclear station. The most concerning effects in the secondary 50-mile zone are related to ingestion of food and liquids that may have been contaminated. No part of Walthall County is located within this 50-mile radius. The 50-mile zone is still considered to be at risk from a nuclear incident, though the impacts may be less severe than in the 10-mile zone (**Figure H.14**).

**FIGURE H.14: NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN WALTHALL COUNTY**



Source: International Atomic Energy Agency

**HISTORICAL OCCURRENCES**

Although there have been no major nuclear events at either the Grand Gulf or River Bend Nuclear Stations, there is some possibility that one could occur as there have been incidents in the past in the United States at other facilities and at facilities around the world. Additionally, a list of minor events/notifications was acquired from reports collected by the Nuclear Regulatory Commission (NRC). The NRC classifies events using the scale found in **Table H.27**. A list of events at Grand Gulf Nuclear Station can be found in **Table H.28** and a list of events at River Bend Nuclear Station can be found in **Table H.29**. It is noteworthy that all of the events were minor in magnitude and many were insignificant enough that they did not register on the classification scale.

**TABLE H.27: NUCLEAR REGULATORY COMMISSION EMERGENCY CLASSIFICATION SCALE FOR EVENTS OCCURRING AT NUCLEAR POWER PLANTS**

| Classification                       | Description   |
|--------------------------------------|---|
| Notification of Unusual Event (NOUE) | Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. [Note: This term is sometimes shortened to Unusual Event (UE). The terms Notification of Unusual Event, NOUE and Unusual Event are used interchangeably.]  |
| Alert                                | Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) protective action guides (PAGs)  |
| Site Area Emergency                  | Site Area Emergency (SAE) – Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile action that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary. |
| General Emergency                    | Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile action that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.  |

Source: Nuclear Regulatory Commission

**TABLE H.28: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT GRAND GULF NUCLEAR STATION**

| Date      | Retrieved From*                  | Classification | Plant             | Description  |
|-----------|----------------------------------|----------------|-------------------|--|
| 8/29/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST         |
| 10/1/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF NUCLEAR STATION SECURITY OFFICER LOCKOUT                  |
| 9/29/2016 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF EXTENDED PLANT SHUTDOWN TO ADDRESS OPERATIONS PERFORMANCE |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lersearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

**TABLE H.29: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT  
RIVER BEND NUCLEAR STATION**

| Date       | Retrieved From*                  | Classification                               | Plant             | Description   |
|------------|----------------------------------|--|-------------------|---|
| 11/26/1985 | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | ECCS Initiation: Improper restoration of a level transmitter causes HPSC injection    |
| 11/27/1985 | Licensee Event Report            | Alert  | River Bend Unit 1 | Failure to Perform Surveillance Tests   |
| 3/5/1992   | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | REACTOR SCRAM CAUSED BY A GENERATOR TRIP DUE TO HIGH WINDS CAUSING TRANSFORMER DAMAGE |
| 9/15/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE IVAN  |
| 10/4/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | Shutdown Greater than 72 Hours  |
| 9/23/2005  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | NRC ENTERS MONITORING MODE DUE TO HURRICANE RITA                                      |
| 5/23/2007  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REACTOR SHUTDOWN DUE TO UNEXPECTED CHANGE IN RECIRCULATION FLOW                       |
| 9/2/2008   | Preliminary Notification Reports | Notification of Unusual Event/Not Applicable | River Bend Unit 1 | NRC RESPONSE TO HURRICANE GUSTAV  |
| 5/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | AUGMENTED INSPECTION TEAM ONSITE AT RIVER BEND STATION                                |
| 8/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST                          |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lsearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

### **PROBABILITY OF FUTURE OCCURRENCES**

A nuclear event is a very rare occurrence in the United States due to the intense regulation of the industry. There have been minor incidents in the past, but it is considered unlikely (less than 1 percent annual probability).

### **RADIOLOGICAL EVACUATIONS**

Similar to the hurricane evacuations discussed above, in many ways the MEMA District 7 Region would potentially be impacted to a greater degree by evacuations caused by a radiological event than by the event itself. Since the region is not directly located within the 10-mile evacuation area but neighboring counties are located within this zone, it is highly likely that populations from those neighboring counties will be evacuated to the counties within the MEMA District 7 Region.

Due to the severe and long-term effects of a major radiological event, temporary sheltering will be an initial concern, but the greater challenge may be in the long-term. As has happened with historical radiological accidents in other locations, the danger in the impacted area will likely extend for a very long period after the event and evacuees may be unable to return to their homes for months or years. This additional influx of population will cause a major strain on resources within these relatively rural counties in the short-term, as local communities with limited resources will have an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people. In the long-term, there may be challenges for local officials as existing infrastructure will likely be inadequate to handle larger populations.

Although there have not been any major radiological events in the region historically, hurricane evacuations (discussed above) provide a similar scenario in terms of what the region might expect. However, one additional concern that officials will need to consider in a radiological event is that evacuees may be contaminated by radioactivity. According to the Centers for Disease Control, radioactive contamination can occur when radioactive materials are released into the environment and become deposited into the air, water, surfaces, soil, plants, buildings, people or animals. This contamination can then be spread when people touch other people, surfaces, or objects. Therefore, when people evacuate a contaminated zone, they pose a potential risk of spreading the contamination to others if they are not properly treated. Local officials in MEMA District 7 may need to be prepared to set up decontamination centers along major evacuation routes to ensure that the contamination is not spread. It is also important for citizens to understand the steps they can take to reduce the risk of spreading contamination such as evacuating quickly after an event and following decontamination instructions as directed by local officials.<sup>24</sup>

Based on the locations of the 10-mile evacuation areas near the region, many of these evacuees will likely come from Claiborne County to the north and West Feliciana and East Feliciana Parishes to the south. The main roads for these evacuees will probably be U.S. Highway 61 and Mississippi State Highway 33 since these are the primary and most direct roads into and out of the aforementioned evacuation counties and into MEMA District 7 (**Figure H.15**). Depending on the severity of the event, officials may even change these roads over to a contraflow traffic pattern to enable quicker evacuations.

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<sup>24</sup> Centers for Disease Control and Prevention. *Emergency Preparedness and Response: Contamination vs. Exposure*. Retrieved on September 1, 2017 from <https://emergency.cdc.gov/radiation/contamination.asp>



**HAZARD EXTENT**

**Table H.30** describes the extent of each natural hazard identified for Walthall County. The extent of a hazard is defined as its severity or magnitude, as it relates to the planning area.

**TABLE H.30: EXTENT OF WALTHALL COUNTY HAZARDS**

| Flood-related Hazards  |  |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                        |  |  |  |  |  |  |  |   |           |       |       |    |    |    |    |                                  |           |       |        |    |    |    |    |                                 |          |       |        |    |    |    |    |
|--|--|-------|-----------------------------------|----------------------------|------------------------|---------------------------------|---------------------------------|--|---------------------------|------|-----------------------------------|----------------------------|------------------|--|--|--|-------------------------|------------------------|---------------------------------|---------------------------------|------------------------|--|--|--|--|--|--|--|---|-----------|-------|-------|----|----|----|----|----------------------------------|-----------|-------|--------|----|----|----|----|---------------------------------|----------|-------|--------|----|----|----|----|
| Dam and Levee Failure  | Dam Failure extent is defined using the Mississippi Department of Environmental Quality classifications which include Low, Significant, and High. No dams are classified as high-hazard in Walthall County.  |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                        |  |  |  |  |  |  |  |   |           |       |       |    |    |    |    |                                  |           |       |        |    |    |    |    |                                 |          |       |        |    |    |    |    |
| Erosion  | The extent of erosion can be defined by the measurable rate of erosion that occurs. There are no official erosion rate records in Walthall County but local estimates are around 0.25 to 0.50 feet per year. Some areas of erosion have been identified by local coordinators.   |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                        |  |  |  |  |  |  |  |   |           |       |       |    |    |    |    |                                  |           |       |        |    |    |    |    |                                 |          |       |        |    |    |    |    |
| Flood  | Flood extent can be measured by the amount of land and property in the floodplain as well as flood height and velocity. The amount of land in the floodplain accounts for 9.9 percent of the total land area in Walthall County.   |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                        |  |  |  |  |  |  |  |   |           |       |       |    |    |    |    |                                  |           |       |        |    |    |    |    |                                 |          |       |        |    |    |    |    |
|  | Flood depth and velocity are recorded via United States Geological Survey stream gages throughout the region. While a gage does not exist for each participating jurisdiction, there is one at or near many areas. The greatest peak discharge recorded for the county was on McGees Creek at Tylertown. Water reached a discharge of 30,000 cubic feet per second (recorded on April 7, 1983). The highest stream gage height was also on McGees Creek at Tylertown with a height that was recorded at 31.38 feet (recorded on April 7, 1983). Additional peak discharge readings, historic crest heights, and the corresponding flood categories (where available) are in the table below.   |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                        |  |  |  |  |  |  |  |   |           |       |       |    |    |    |    |                                  |           |       |        |    |    |    |    |                                 |          |       |        |    |    |    |    |
|  | <table border="1"> <thead> <tr> <th rowspan="2">Location/<br/>Jurisdiction</th> <th rowspan="2">Date</th> <th rowspan="2">Maximum<br/>Historic<br/>Crest (ft)</th> <th rowspan="2">Peak<br/>Discharge<br/>(cfs)</th> <th colspan="4">Flood Categories</th> </tr> <tr> <th>Action<br/>Stage<br/>(ft)</th> <th>Flood<br/>Stage<br/>(ft)</th> <th>Moderate<br/>Flood<br/>Stage (ft)</th> <th>Major<br/>Flood<br/>Stage<br/>(ft)</th> </tr> </thead> <tbody> <tr> <td colspan="8"><b>Walthall County</b></td> </tr> <tr> <td>Middle<br/>Fork<br/>Hickory Flat<br/>near<br/>Tylertown</td> <td>8/22/1953</td> <td>13.95</td> <td>2,300</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>Union<br/>Creek near<br/>Tylertown</td> <td>8/22/1953</td> <td>19.20</td> <td>12,800</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>McGees<br/>Creek at<br/>Tylertown</td> <td>4/7/1983</td> <td>31.38</td> <td>30,000</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> </tbody> </table> |       |                                   |                            |                        |                                 |                                 |  | Location/<br>Jurisdiction | Date | Maximum<br>Historic<br>Crest (ft) | Peak<br>Discharge<br>(cfs) | Flood Categories |  |  |  | Action<br>Stage<br>(ft) | Flood<br>Stage<br>(ft) | Moderate<br>Flood<br>Stage (ft) | Major<br>Flood<br>Stage<br>(ft) | <b>Walthall County</b> |  |  |  |  |  |  |  | Middle<br>Fork<br>Hickory Flat<br>near<br>Tylertown | 8/22/1953 | 13.95 | 2,300 | NA | NA | NA | NA | Union<br>Creek near<br>Tylertown | 8/22/1953 | 19.20 | 12,800 | NA | NA | NA | NA | McGees<br>Creek at<br>Tylertown | 4/7/1983 | 31.38 | 30,000 | NA | NA | NA | NA |
|  | Location/<br>Jurisdiction  | Date  | Maximum<br>Historic<br>Crest (ft) | Peak<br>Discharge<br>(cfs) | Flood Categories       |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                        |  |  |  |  |  |  |  |   |           |       |       |    |    |    |    |                                  |           |       |        |    |    |    |    |                                 |          |       |        |    |    |    |    |
| Action<br>Stage<br>(ft)  |  |       |                                   |                            | Flood<br>Stage<br>(ft) | Moderate<br>Flood<br>Stage (ft) | Major<br>Flood<br>Stage<br>(ft) |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                        |  |  |  |  |  |  |  |   |           |       |       |    |    |    |    |                                  |           |       |        |    |    |    |    |                                 |          |       |        |    |    |    |    |
| <b>Walthall County</b>   |  |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                        |  |  |  |  |  |  |  |   |           |       |       |    |    |    |    |                                  |           |       |        |    |    |    |    |                                 |          |       |        |    |    |    |    |
| Middle<br>Fork<br>Hickory Flat<br>near<br>Tylertown  | 8/22/1953  | 13.95 | 2,300                             | NA                         | NA                     | NA                              | NA                              |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                        |  |  |  |  |  |  |  |   |           |       |       |    |    |    |    |                                  |           |       |        |    |    |    |    |                                 |          |       |        |    |    |    |    |
| Union<br>Creek near<br>Tylertown   | 8/22/1953  | 19.20 | 12,800                            | NA                         | NA                     | NA                              | NA                              |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                        |  |  |  |  |  |  |  |   |           |       |       |    |    |    |    |                                  |           |       |        |    |    |    |    |                                 |          |       |        |    |    |    |    |
| McGees<br>Creek at<br>Tylertown  | 4/7/1983   | 31.38 | 30,000                            | NA                         | NA                     | NA                              | NA                              |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                        |  |  |  |  |  |  |  |   |           |       |       |    |    |    |    |                                  |           |       |        |    |    |    |    |                                 |          |       |        |    |    |    |    |
| NA= Data not available for this particular gage<br>*Occurred on a different date than Maximum Historic Crest |  |       |                                   |                            |                        |                                 |                                 |  |                           |      |                                   |                            |                  |  |  |  |                         |                        |                                 |                                 |                        |  |  |  |  |  |  |  |   |           |       |       |    |    |    |    |                                  |           |       |        |    |    |    |    |                                 |          |       |        |    |    |    |    |

| <b>Fire-related Hazards</b>    |   |
|--------------------------------|---|
| Drought                        | Drought extent is defined by the U.S. Drought Monitor Classifications which include Abnormally Dry, Moderate Drought, Severe Drought, Extreme Drought, and Exceptional Drought. According to the U.S. Drought Monitor Classifications, the most severe drought condition is Exceptional. Walthall County has received this ranking once over the 17-year reporting period.  |
| Lightning                      | According to the Vaisala’s flash density map, Walthall County is located in an area that experiences 12 to 20 lightning flashes per square mile per year. It should be noted that future lightning occurrences may exceed these figures.  |
| Wildfire                       | Wildfire data was provided by the Mississippi Forestry Commission and is reported annually by county from 2007-2016. The greatest number of fires to occur in Walthall County in any year was 60 in 2011 and 2016. The greatest number of acres to burn in the county in a single year occurred in 2011 when 1,650 acres were burned. Although this data lists the extent that has occurred, larger and more frequent wildfires are possible throughout the county. |
| <b>Geologic Hazards</b>        |   |
| Earthquake                     | Earthquake extent can be measured by the Richter Scale or the Modified Mercalli Intensity (MMI) scale. According to data provided by the National Centers for Environmental Information, the greatest earthquake to impact Walthall County had a MMI of III (sight) but no Richter magnitude was available (reported on October 19, 1930).  |
| <b>Wind-related Hazards</b>    |   |
| Extreme Heat                   | The extent of extreme heat can be measured by the record high temperature recorded. Official long term temperature records are not kept for any areas in Walthall County. However, the highest recorded temperature in the region was 106°F in 2007 with heat index values recorded above 115°F.  |
| Hailstorm                      | Hail extent can be defined by the size of the hail stone. The largest hail stone reported in Walthall County was 2.75 inches (reported on March 17, 2016). It should be noted that future events may exceed this.   |
| Hurricane and Tropical Storm   | Hurricane extent is defined by the Saffir-Simpson Scale which classifies hurricanes into Category 1 through Category 5. The greatest classification of hurricane to impact the MEMA District 7 Region was a Category 3 storm. This occurred in 1969 with Hurricane Camille and in 2005 with Hurricane Katrina. The storm track of both storms passed just to the east of the region, but due to the size of these storms, their impact was felt across the region.  |
| Severe Thunderstorm/ High Wind | Thunderstorm extent is defined by the number of thunder events and wind speeds reported. According to a 67-year history from the National Climatic Data Center, the strongest recorded wind event in Walthall County was last reported on January 2, 2017 at 65 knots (approximately 75 mph). It should be noted that future events may exceed these historical occurrences.  |
| Tornado                        | Tornado hazard extent is measured by tornado occurrences in the US provided by FEMA as well as the Fujita/Enhanced Fujita Scale. The greatest magnitude reported in Walthall County was an F2 (last reported on November 15, 2006).   |
| Winter Storm and Freeze        | The extent of winter storms can be measured by the amount of snowfall received (in inches). Official long term snow records are not kept for any areas in Walthall County. However, reports from NCDC of the greatest snowfall in the county has been 4 inches (reported on February 11, 2010).   |
| <b>Human-caused Hazards</b>    |   |
| Radiological Event             | Although there is no history of a nuclear accident at either the Grand Gulf Nuclear Station or River Bend Nuclear Station, other events across the globe and in the United States in particular indicate that an event is possible. Since several national and international events were Level 7 events on the INES, the potential for a Level 7 event at these stations is possible.   |

### PRIORITY RISK INDEX RESULTS

In order to draw some meaningful planning conclusions on hazard risk for Walthall County, the results of the hazard profiling process were used to generate countywide hazard classifications according to a “Priority Risk Index” (PRI). More information on the PRI and how it was calculated can be found in Section 5.17.2.

**Table H.31** summarizes the degree of risk assigned to each category for all initially identified hazards based on the application of the PRI. Assigned risk levels were based on the detailed hazard profiles developed for this subsection, as well as input from the Regional Hazard Mitigation Council. The results were then used in calculating PRI values and making final determinations for the risk assessment.

**TABLE H.31: SUMMARY OF PRI RESULTS FOR WALTHALL COUNTY**

| Hazard                        | Category/Degree of Risk |              |                |                    |                    |            |
|-------------------------------|-------------------------|--------------|----------------|--------------------|--------------------|------------|
|                               | Probability             | Impact       | Spatial Extent | Warning Time       | Duration           | PRI Score  |
| <b>Flood-related Hazards</b>  |                         |              |                |                    |                    |            |
| Dam Failure and Levee Failure | Unlikely                | Critical     | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>2.3</b> |
| Erosion                       | Possible                | Minor        | Small          | More than 24 hours | More than 1 week   | <b>1.8</b> |
| Flood                         | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 24 hours | <b>3.2</b> |
| <b>Fire-related Hazards</b>   |                         |              |                |                    |                    |            |
| Drought                       | Possible                | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.5</b> |
| Lightning                     | Highly Likely           | Limited      | Small          | 6 to 12 hours      | Less than 6 hours  | <b>2.6</b> |
| Wildfire                      | Highly Likely           | Limited      | Moderate       | Less than 6 hours  | Less than 1 week   | <b>3.1</b> |
| <b>Geologic Hazards</b>       |                         |              |                |                    |                    |            |
| Earthquake                    | Unlikely                | Minor        | Small          | Less than 6 hours  | Less than 6 hours  | <b>1.5</b> |
| <b>Wind-related Hazards</b>   |                         |              |                |                    |                    |            |
| Extreme Heat                  | Likely                  | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.8</b> |
| Hailstorm                     | Highly Likely           | Limited      | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>2.8</b> |
| Hurricane and Tropical Storm  | Likely                  | Catastrophic | Large          | More than 24 hours | Less than 1 week   | <b>3.3</b> |
| Severe Thunderstorm/High Wind | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>3.1</b> |
| Tornado                       | Likely                  | Catastrophic | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>3.2</b> |
| Winter Storm and Freeze       | Likely                  | Minor        | Moderate       | More than 24 hours | Less than 1 week   | <b>2.2</b> |
| <b>Human-caused Hazards</b>   |                         |              |                |                    |                    |            |
| Radiological Event            | Unlikely                | Minor        | Moderate       | More than 24 hours | Less than 1 week   | <b>1.6</b> |

### H.2.16 Final Determinations on Hazard Risk

The conclusions drawn from the hazard profiling process for Walthall County, including the PRI results and input from the Regional Hazard Mitigation Council, resulted in the classification of risk for each identified

hazard according to three categories: High Risk, Moderate Risk, and Low Risk (**Table H.32**). For purposes of these classifications, risk is expressed in relative terms according to the estimated impact that a hazard will have on human life and property throughout all of Walthall County. A more quantitative analysis to estimate potential dollar losses for each hazard has been performed separately, and is described in Section 6: *Vulnerability Assessment* and below in Section H.3. It should be noted that although some hazards are classified below as posing low risk, their occurrence of varying or unprecedented magnitudes is still possible in some cases and their assigned classification will continue to be evaluated during future plan updates. In most cases, the hazards of greatest concern did not change much since the last plan update, indicating that the priorities remained relatively stable and there were few changes in priorities.

**TABLE H.32: CONCLUSIONS ON HAZARD RISK FOR WALTHALL COUNTY**

|                      |   |
|----------------------|---|
| <b>HIGH RISK</b>     | Hurricane and Tropical Storm<br>Tornado<br>Flood<br>Wildfire<br>Severe Thunderstorm/High Wind   |
| <b>MODERATE RISK</b> | Extreme Heat<br>Hailstorm<br>Lightning<br>Drought   |
| <b>LOW RISK</b>      | Dam and Levee Failure<br>Winter Storm and Freeze<br>Erosion<br>Radiological Event<br>Earthquake |

### H.3 WALTHALL COUNTY VULNERABILITY ASSESSMENT

This subsection identifies and quantifies the vulnerability of Walthall County to the significant hazards previously identified. This includes identifying and characterizing an inventory of assets in the county and assessing the potential impact and expected amount of damages caused to these assets by each identified hazard event. More information on the methodology and data sources used to conduct this assessment can be found in Section 6: *Vulnerability Assessment*.

#### H.3.1 Asset Inventory

**Table H.33** lists the estimated number of improved properties and the total value of improvements for Walthall County and its participating jurisdictions (study area of vulnerability assessment). Because digital parcel data was not available for most communities, data obtained from Hazus-MH 4.0 inventory was utilized to complete the analysis.

**TABLE H.33: IMPROVED PROPERTY IN WALTHALL COUNTY**

| Location                     | Counts of Improved Property | Total Value of Improvements |
|------------------------------|-----------------------------|-----------------------------|
| Tylertown                    | 962                         | \$224,096                   |
| Unincorporated Area          | 6,547                       | \$1,086,718,904             |
| <b>WALTHALL COUNTY TOTAL</b> | <b>7,509</b>                | <b>\$1,086,943,000</b>      |

Source: Hazus-MH 4.0

**Table H.34** lists the fire stations, police stations, medical care facilities, emergency operation centers, schools, government/public buildings, transportation infrastructure, and private facilities located in Walthall County according to previous plan data and Hazus-MH 4.0 data that was reviewed and updated by local officials.

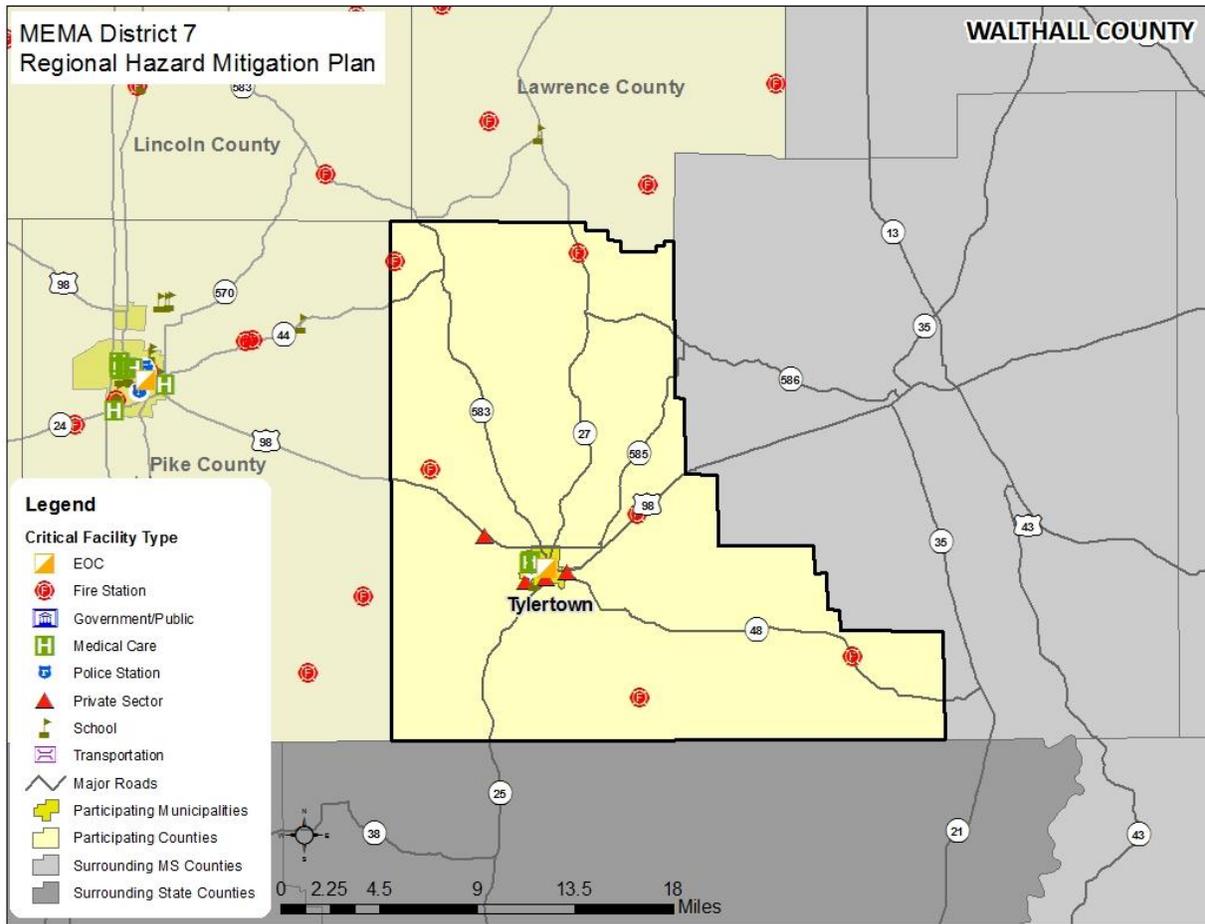
In addition, **Figure H.16** shows the locations of critical facilities in Walthall County. **Table H.45**, at the end of this subsection, shows a complete list of the critical facilities by name, as well as the hazards that affect each facility. As noted previously, this list is not all-inclusive and only includes information provided through Hazus which was updated, as best as possible, with local knowledge.

**TABLE H.34: CRITICAL FACILITY INVENTORY IN WALTHALL COUNTY**

| Location                     | Fire Stations | Police Stations | Medical Care | EOC      | Schools  | Gov't/<br>Public | Trans    | Private Sector |
|------------------------------|---------------|-----------------|--------------|----------|----------|------------------|----------|----------------|
| Tylertown                    | 1             | 4               | 2            | 1        | 1        | 0                | 0        | 3              |
| Unincorporated Area          | 6             | 0               | 0            | 0        | 0        | 0                | 0        | 1              |
| <b>WALTHALL COUNTY TOTAL</b> | <b>7</b>      | <b>4</b>        | <b>2</b>     | <b>1</b> | <b>1</b> | <b>0</b>         | <b>0</b> | <b>4</b>       |

Source: Hazus-MH 4.0; Local Officials

**FIGURE H.16: CRITICAL FACILITY LOCATIONS IN WALTHALL COUNTY**



Source: Hazus-MH 4.0; Local Officials

### H.3.2 Social Vulnerability

In addition to identifying those assets potentially at risk to identified hazards, it is important to identify and assess those particular segments of the resident population in Walthall County that are potentially at risk to these hazards.

**Table H.35** lists the population by jurisdiction according to U.S. Census, American Community Survey 2015 population estimates. The total population in Walthall County according to Census data was 14,978 persons. Additional population estimates are presented above in Section H.1.

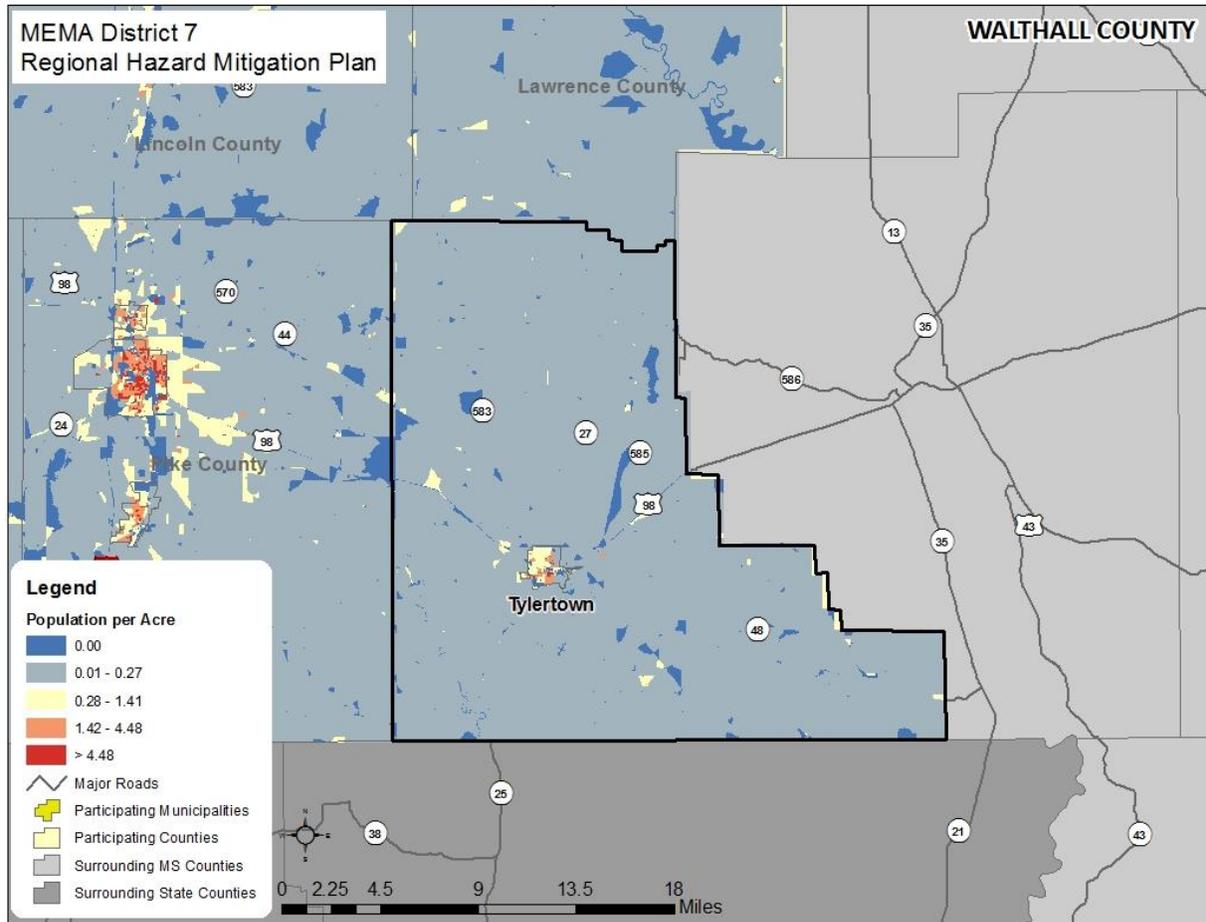
**TABLE H.35: TOTAL POPULATION IN WALTHALL COUNTY**

| Location                     | Total 2015 Population |
|------------------------------|-----------------------|
| Tylertown                    | 1,641                 |
| Unincorporated Area          | 13,337                |
| <b>WALTHALL COUNTY TOTAL</b> | <b>14,978</b>         |

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

In addition, **Figure H.17** illustrates the population density per acre by census block as it was reported by the U.S. Census Bureau in 2010. As can be seen in the figure, the population is spread out with concentrations in municipal areas such as Tylertown.

**FIGURE H.17: POPULATION DENSITY IN WALTHALL COUNTY**



Source: United States Census Bureau, 2010 Census

### H.3.3 Development Trends and Changes in Vulnerability

Since the previous hazard mitigation plan was approved, Walthall County has experienced limited growth and development. **Table H.36** shows the number of building units constructed since 2010 according to the U.S. Census American Community Survey.

**TABLE H.36: BUILDING COUNTS FOR WALTHALL COUNTY**

| Location                     | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|------------------------------|----------------------------|---------------------------|----------------------------------|
| Tylertown                    | 780                        | 0                         | 0.00%                            |
| Unincorporated Area          | 6,367                      | 135                       | 2.12%                            |
| <b>WALTHALL COUNTY TOTAL</b> | <b>7,147</b>               | <b>135</b>                | <b>1.89%</b>                     |

| Location | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|----------|----------------------------|---------------------------|----------------------------------|
|----------|----------------------------|---------------------------|----------------------------------|

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

**Table H.37** shows population growth estimates for the county from 2010 to 2015 based on the U.S. Census American Community Survey.

**TABLE H.37: POPULATION GROWTH FOR WALTHALL COUNTY**

| Location                     | Population Estimates |               |               |               |               |               | % Change 2010-2015 |
|------------------------------|----------------------|---------------|---------------|---------------|---------------|---------------|--------------------|
|                              | 2010                 | 2011          | 2012          | 2013          | 2014          | 2015          |                    |
| Tylertown                    | 2,083                | 2,086         | 1,878         | 1,767         | 1,652         | 1,641         | -21.22%            |
| Unincorporated Area          | 13,447               | 13,409        | 13,527        | 13,498        | 13,474        | 13,337        | -0.82%             |
| <b>WALTHALL COUNTY TOTAL</b> | <b>15,530</b>        | <b>15,495</b> | <b>15,405</b> | <b>15,265</b> | <b>15,126</b> | <b>14,978</b> | <b>-3.55%</b>      |

Source: United States Census Bureau, 2006-2010, 2007-2011, 2008-2012, 2009-2013, and 2010-2014, and 2011-2015 American Community Survey 5-Year Estimates

Based on the data above, there has been a low rate of residential development and population growth in the county since 2010, and the county has actually experienced a population decline. However, it is notable that the unincorporated area of the county has experienced a slightly higher rate of development compared to the rest of the county, resulting in an increased number of structures that are vulnerable to the potential impacts of the identified hazards. Therefore, development has impacted the county's vulnerability since the previous local hazard mitigation plan was approved and there has been a slight increase in the overall vulnerability as well as a larger increase in certain areas and communities.

It is also important to note that as development increases in the future, greater populations and more structures and infrastructure will be exposed to potential hazards if development occurs in the floodplains or other high risk areas.

### H.3.4 Vulnerability Assessment Results

As noted in Section 6: *Vulnerability Assessment*, only hazards with a specific geographic boundary, available modeling tool, or sufficient historical data allow for further analysis. Those results, specific to Walthall County, are presented here. All other hazards are assumed to impact the entire planning region (drought, extreme heat, hailstorm, lightning, severe thunderstorm/high wind, tornado, and winter storm) or, due to lack of data, analysis would not lead to credible results (erosion). The total county exposure, and thus risk to these hazards, was presented in **Table H.33**.

The hazards to be further analyzed in this subsection include: dam/levee failure, flood, wildfire, earthquake, hurricane and tropical storm winds, and radiological event.

The annualized loss estimate for all hazards is presented near the end of this subsection in **Table H.44**.

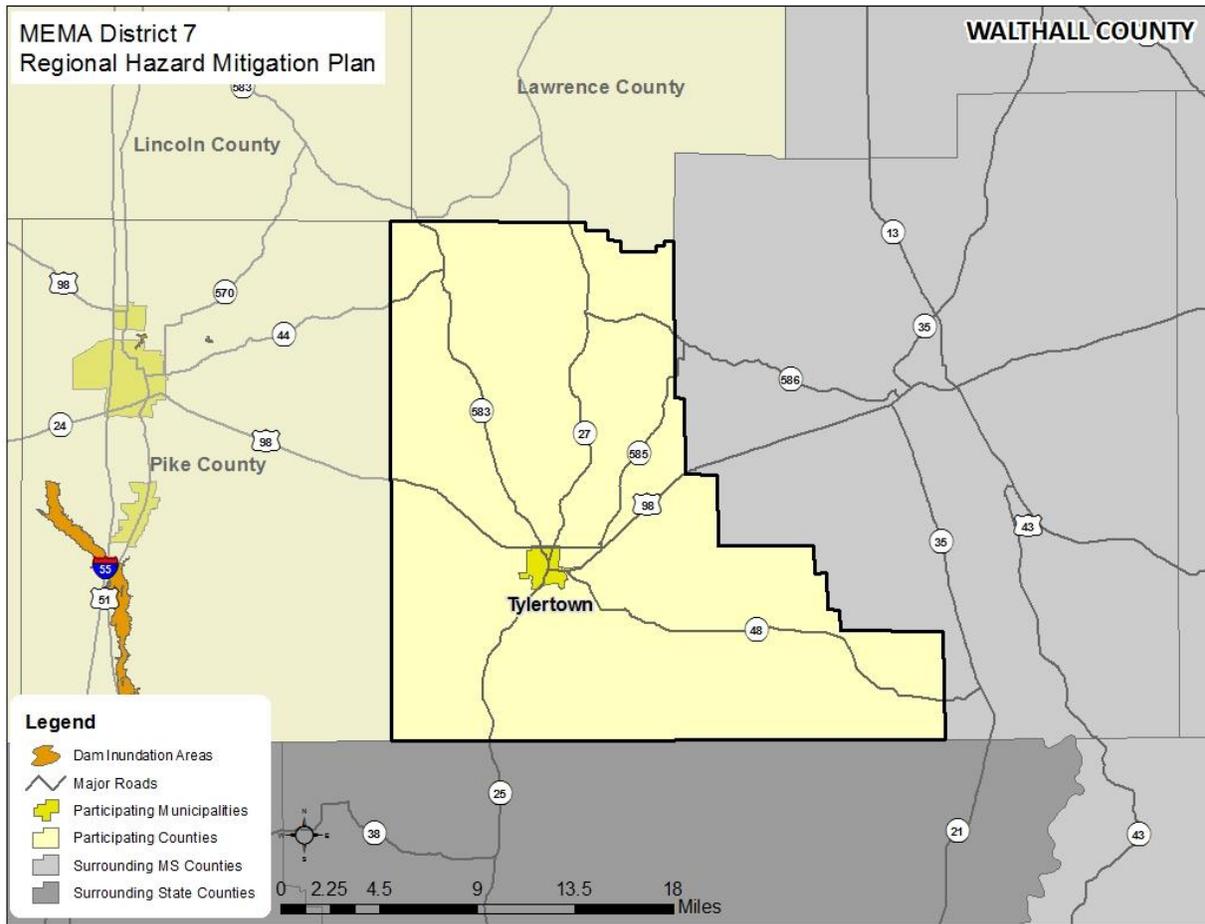
### **DAM/LEVEE FAILURE**

In order to assess risk to a dam or levee failure, a GIS-based analysis was used to estimate exposure to one of the areas delineated by the Mississippi Department of Environmental Quality as a potential inundation area in the event of a failure. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified inundation area. As mentioned previously, this type of inundation mapping has not been completed for every dam/levee in the region, so the results of this analysis likely underestimate the overall vulnerability to a dam or levee failure. However, the analysis is still useful as a sort of baseline minimum of property that is potentially at-risk. The identified inundation areas can be found in **Figure H.18**.

In general, building footprint and parcel data were used in this analysis. However, in some communities, due to a lack of digital parcel data, it was determined that analysis using the inventory from Hazus-MH 4.0 would be used to supplement the building/parcel data. It should be noted that this data will merely be an estimation and may not reflect actual counts or values located in dam inundation areas. Indeed, in almost all cases, this data likely overestimates the amount of property in the identified risk zones.

**Table H.38** presents the potential at-risk property. Both the number of buildings and the approximate improved value are presented.

**FIGURE H.18: DAM INUNDATION AREAS IN WALTHALL COUNTY**



Source: Mississippi Department of Environmental Quality

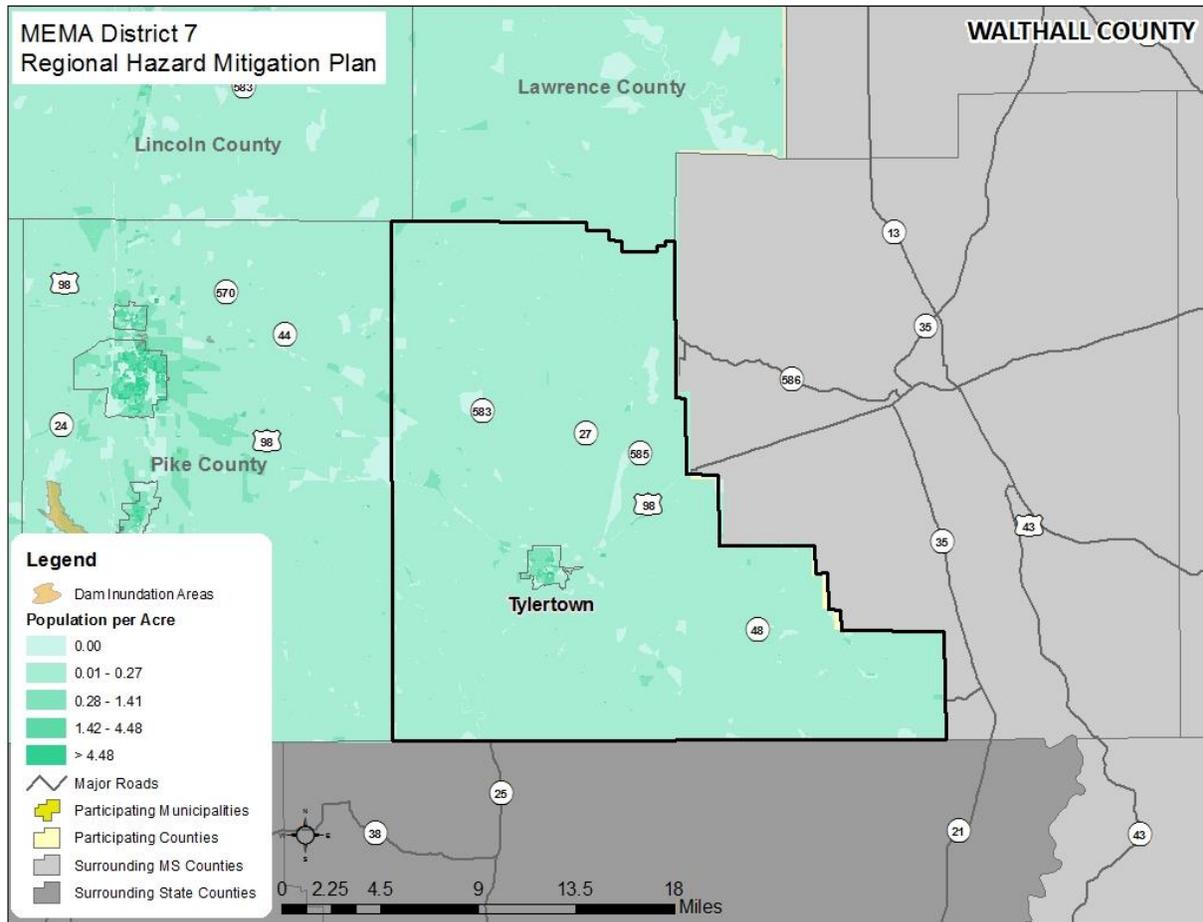
**TABLE H.38: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE DAM/LEEVE FAILURE HAZARD**

| Location                     | Dam Inundation Area            |                        |
|------------------------------|--------------------------------|------------------------|
|                              | Approx. Number of Improvements | Approx. Improved Value |
| Tylertown                    | 0                              | \$0                    |
| Unincorporated Area          | 0                              | \$0                    |
| <b>WALTHALL COUNTY TOTAL</b> | <b>0</b>                       | <b>\$0</b>             |

Source: Mississippi Department of Environmental Quality; Hazus 4.0

**Social Vulnerability**

Figure H.19 is presented to gain a better understanding of at-risk population by evaluating census block level population data against dam inundation areas. Although there are no areas of concern located within the county, this does not indicate that there is no risk to a dam/levee failure, especially considering not all dams have delineated inundation areas.

**FIGURE H.19: POPULATION DENSITY NEAR DAM INUNDATION AREAS IN WALTHALL COUNTY**

Source: Mississippi Department of Environmental Quality; United States Census Bureau, 2010 Census

### Critical Facilities

There are no critical facilities located within the identified dam inundation areas. Although there are no facilities located in the identified areas, this does not indicate that there is no risk to a dam/levee failure, especially considering not all dams have delineated inundation areas. A list of specific critical facilities and their associated risk can be found in **Table H.45** at the end of this section.

In conclusion, a dam/levee failure has the potential to impact existing and future buildings, facilities, and populations in Walthall County, though structures located near or in the dam inundation areas are at highest risk. Specific vulnerabilities for Walthall County assets will be greatly dependent on their individual design and the mitigation measures in place where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates if data becomes available.

### FLOOD

Historical evidence indicates that Walthall County is susceptible to flood events. A total of six flood events have been reported by the National Climatic Data Center resulting in \$1.3 million (2017 dollars) in property damage. On an annualized level, these damages amounted to \$68,773 for Walthall County.

In order to assess flood risk, a GIS-based analysis was used to estimate exposure to flood events using Digital Flood Insurance Rate Map (DFIRM) data in combination with improved property records for the county. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified floodplain. Due to a lack of digital parcel data in most counties, it was determined that an analysis using the inventory from Hazus-MH 4.0 would be used, though it should be noted that the data will merely be an estimation and may not reflect actual counts or values located in the floodplain. Indeed, in almost all cases, this analysis likely overestimates the amount of property at risk. **Table H.39** presents the potential at-risk property. Both the number of parcels and the approximate value are presented.

**TABLE H.39: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE FLOOD HAZARD<sup>25</sup>**

| Location                     | 1.0-percent ACF                |                                | 0.2-percent ACF                |                                |
|------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|                              | Approx. Number of Improvements |
| Tylertown                    | 451                            | \$94,415,000                   | 0                              | \$0                            |
| Unincorporated Area          | 2,252                          | \$299,812,000                  | 0                              | \$0                            |
| <b>WALTHALL COUNTY TOTAL</b> | <b>2,703</b>                   | <b>\$394,227,000</b>           | <b>0</b>                       | <b>\$0</b>                     |

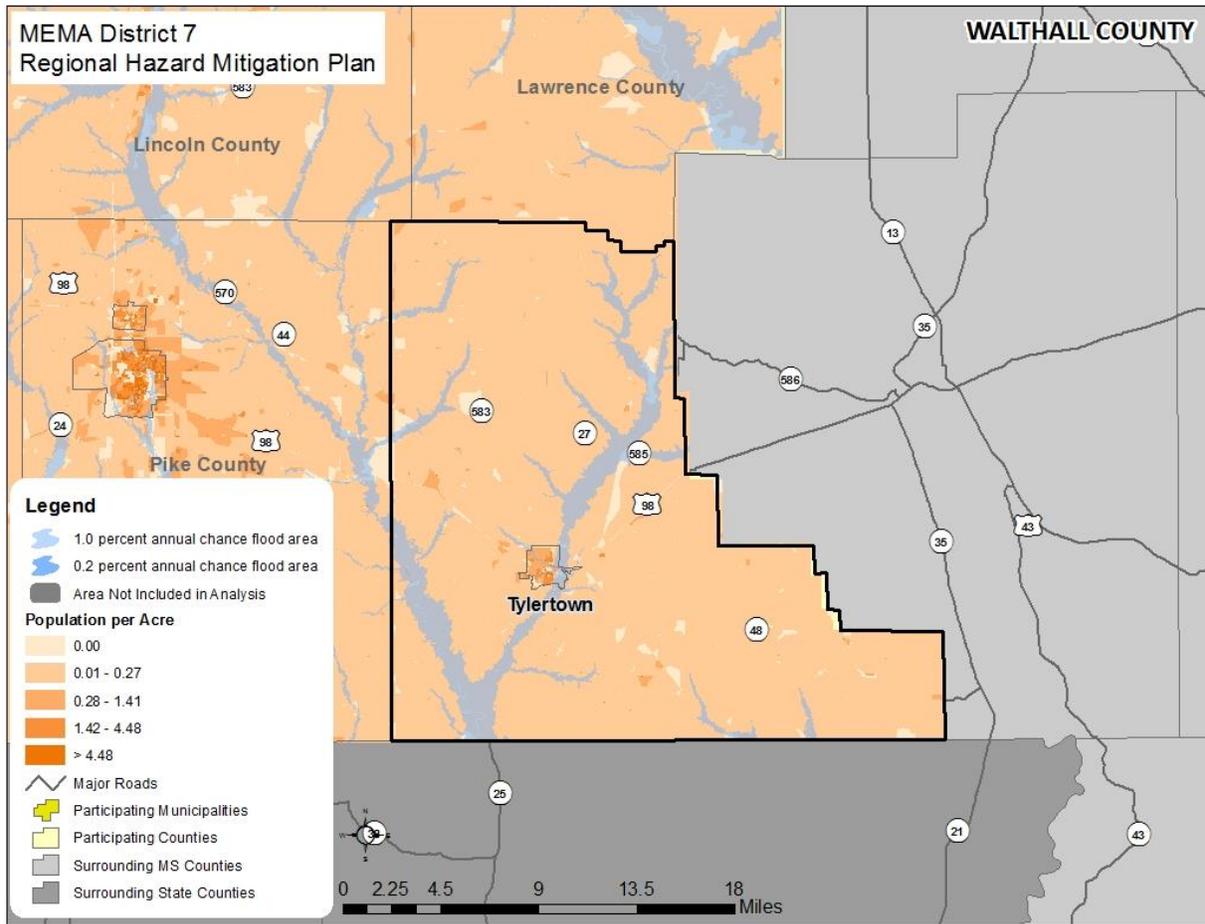
Source: Federal Emergency Management Agency DFIRM; Hazus MH 4.0

**Social Vulnerability**

**Figure H.20** is presented to gain a better understanding of at-risk population by evaluating census block level population data against mapped floodplains. There are areas of concern in several of the population centers. Therefore, further investigation in these areas may be warranted.

<sup>25</sup> As noted in Section 6.4, no building-specific data, such as building footprints, was available to determine buildings at risk. As a result of this data limitation, at-risk census block building counts and values of the structures were used.

**FIGURE H.20 : POPULATION DENSITY NEAR FLOODPLAINS IN WALTHALL COUNTY**



Source: Federal Emergency Management Agency DFIRM; United States Census Bureau, 2010 Census

### Critical Facilities

The critical facility analysis revealed that there is one critical facility located in the floodplain. (Please note, as previously indicated, this analysis does not consider building elevation, which may negate risk.) This facility is a private sector building located in the 1.0 percent annual chance flood zone. A list of specific critical facilities and their associated risk can be found in **Table H.45** at the end of this subsection.

In conclusion, a flood has the potential to impact many existing and future buildings, facilities, and populations in Walthall County, though some areas are at a higher risk than others. All types of structures in a floodplain are at-risk, though elevated structures will have a reduced risk. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. Furthermore, areas subject to repetitive flooding should be analyzed for potential mitigation actions.

### WILDFIRE

Although historical evidence indicates that Walthall County is susceptible to wildfire events, there are few reports which include information on historic dollar losses. Therefore, it is difficult to calculate a reliable

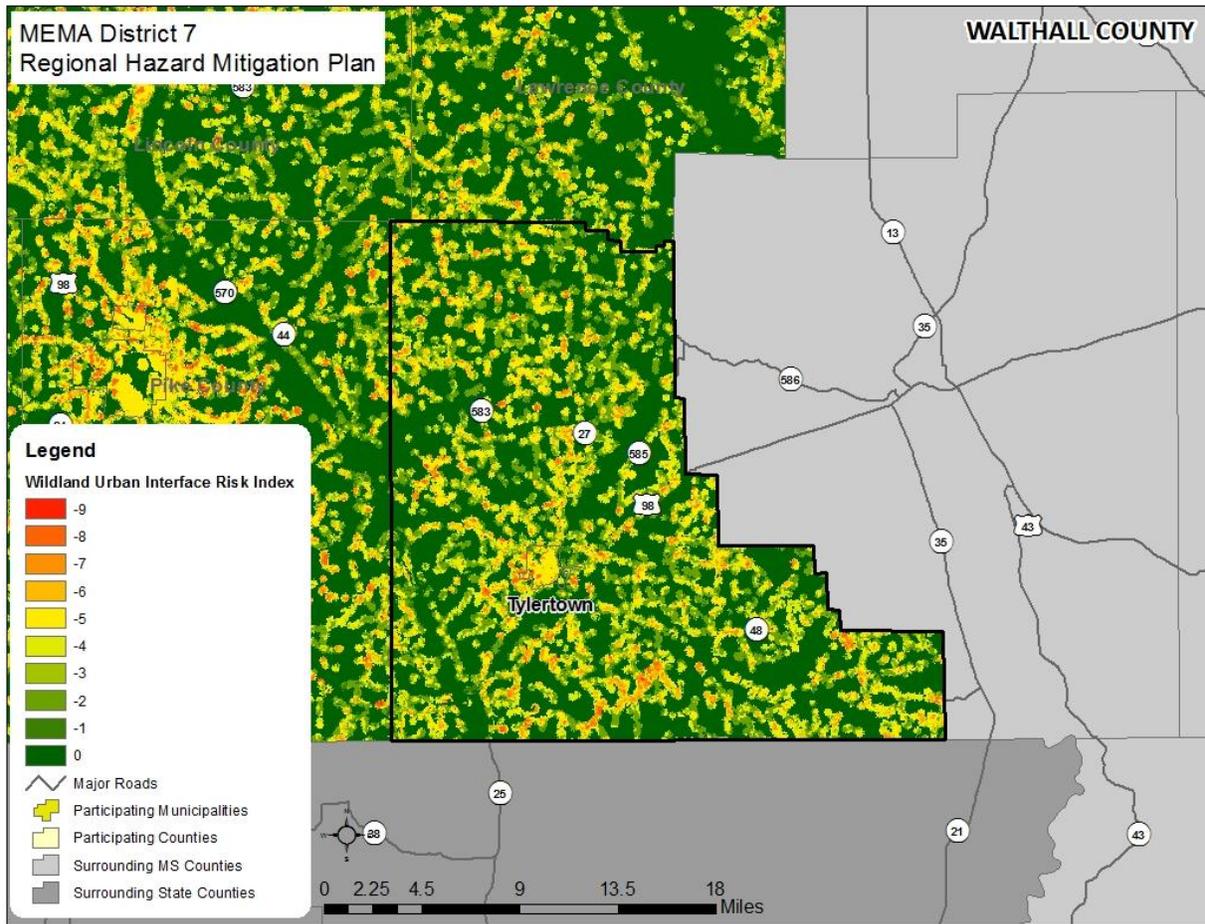
annualized loss figure. Annualized loss is considered negligible though it should be noted that a single event could result in significant damages throughout the county.

To estimate exposure to wildfire, building data was obtained from Hazus-MH 4.0 which includes information that has been aggregated at the census block level and which has been deemed useful for analyzing wildfire vulnerability. However, it should be noted that the accuracy of Hazus data is somewhat lower than that of parcel data. For the critical facility analysis, areas of concern were intersected with critical facility locations.

**Figure H.21** shows the Wildland Urban Interface Risk Index (WUIRI) data, which is a data layer that shows a rating of the potential impact of a wildfire on people and their homes. The key input, Wildland Urban Interface (WUI), reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the WUI and rural areas is key information for defining potential wildfire impacts to people and homes. Initially provided as raster data, it was converted to a polygon to allow for analysis. The Wildland Urban Interface Risk Index data ranges from 0 to -9 with lower values being most severe (as noted previously, this is only a measure of relative risk). **Figure H.22** shows the areas of analysis where any grid cell is less than -4. Areas with a value below -4 were chosen to be displayed as areas of risk because this showed the upper echelon of the scale and the areas at highest risk.

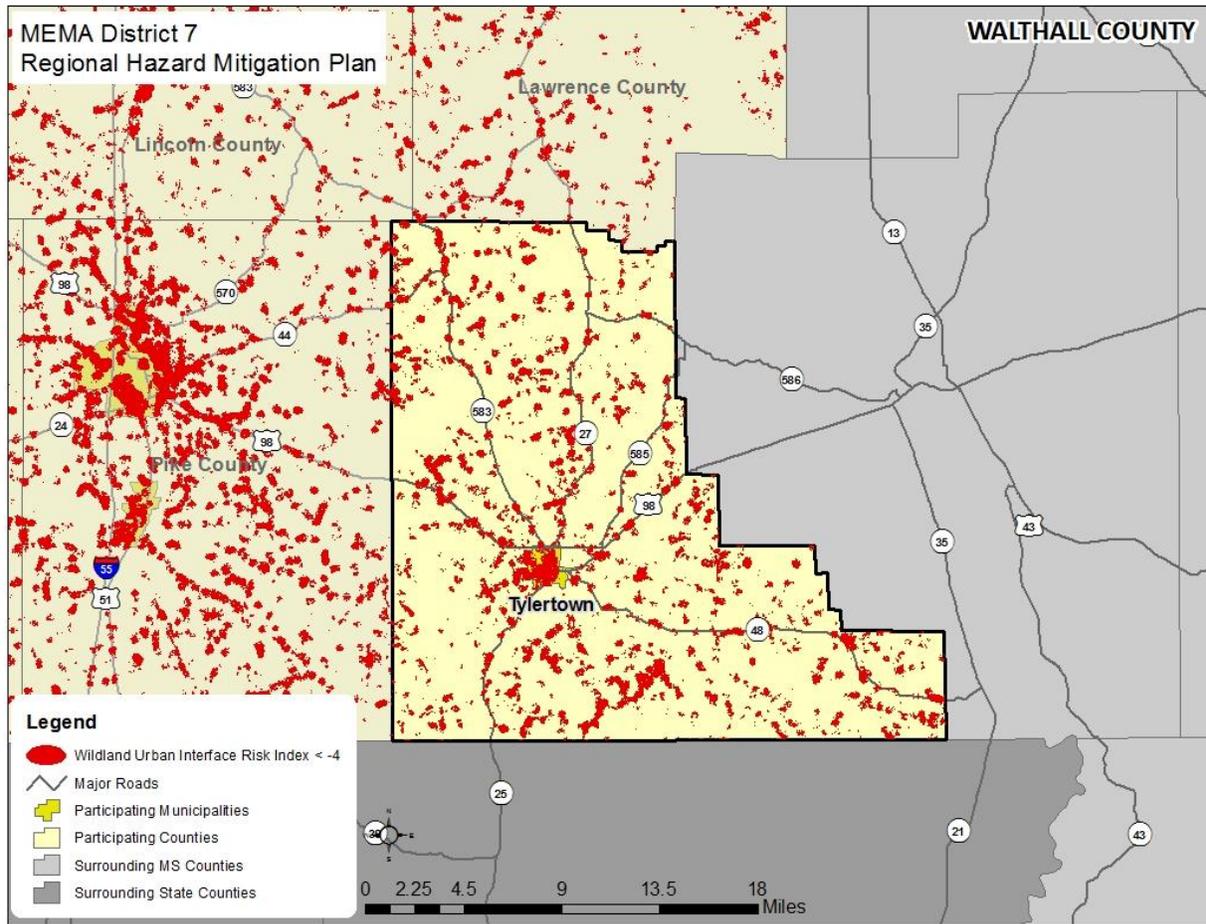
**Table H.40** shows the results of the analysis.

FIGURE H.21: WUI RISK INDEX AREAS IN WALTHALL COUNTY



Source: Southern Wildfire Risk Assessment Data

**FIGURE H.22: WILDFIRE RISK AREAS IN WALTHALL COUNTY**



Source: Southern Wildfire Risk Assessment Data

**TABLE H.40: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO WILDFIRE RISK AREAS<sup>26</sup>**

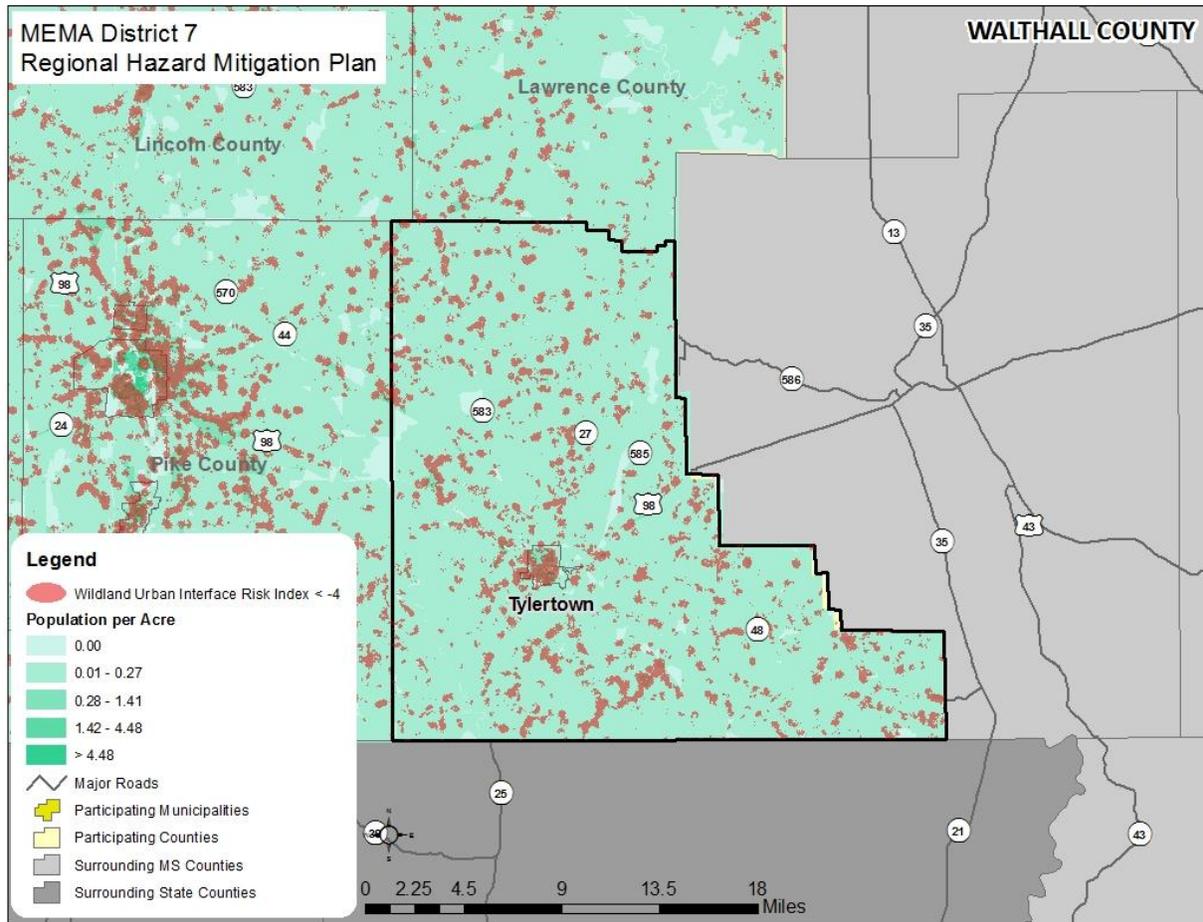
| Location                     | Wildfire Risk Area             |                        |
|------------------------------|--------------------------------|------------------------|
|                              | Approx. Number of Improvements | Approx. Improved Value |
| Tylertown                    | 960                            | \$223,826,000          |
| Unincorporated Area          | 6,491                          | \$855,756,000          |
| <b>WALTHALL COUNTY TOTAL</b> | <b>7,451</b>                   | <b>\$1,079,582,000</b> |

Source: Southern Wildfire Risk Assessment; Hazus-MH 4.0

**Social Vulnerability**

Given some level of susceptibility across the entire county, it is assumed that the total population is at risk to the wildfire hazard. **Figure H.23** shows an overlay of the wildfire risk areas identified above with the population density by census block. This shows that many of the areas of higher population concentration are susceptible to wildfire because of their proximity to the wildland urban interface.

<sup>26</sup> Parcel/Building Footprint data was not available for Walthall County. Therefore, building counts and values were pulled from Hazus-MH at the census block level and approximate improved value was calculated.

**FIGURE H.23: WILDFIRE RISK AREAS IN WALTHALL COUNTY**

Source: Southern Wildfire Risk Assessment Data; United States Census Bureau, 2010 Census

### Critical Facilities

The critical facility analysis revealed that there are 15 critical facilities located in wildfire areas of concern, including 1 EOC, 6 fire stations, 2 medical care facilities, 4 police stations, 1 private sector building, and 1 school. It should be noted, that several factors could impact the spread of a wildfire putting all facilities at risk. A list of specific critical facilities and their associated risk can be found in **Table H.45** at the end of this subsection.

In conclusion, a wildfire event has the potential to impact many existing and future buildings, critical facilities, and populations in Walthall County.

### EARTHQUAKE

As the Hazus-MH model suggests below, and historical occurrences confirm, any significant earthquake activity in the area is likely to inflict minor damage to the county. Hazus-MH 4.0 estimates a total annualized loss of \$7,000 which includes structural and non-structural damage to buildings, contents, and inventory throughout the county.

For the earthquake hazard vulnerability assessment, a probabilistic scenario was created to estimate the average annualized loss<sup>27</sup> for the county. The results of the analysis are generated at the census tract level within Hazus-MH and then aggregated to the county level. Since the scenario is annualized, no building counts are provided. Losses reported included losses due to structure failure, building loss, contents damage, and inventory loss. They do not include losses to business interruption, lost income, or relocation. **Table H.41** summarizes the findings with results rounded to the nearest thousand.

**TABLE H.41: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR EARTHQUAKE HAZARD**

| Location        | Structural Damage | Non-Structural Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|-----------------|-------------------|-----------------------|-----------------|----------------|-----------------------|
| Walthall County | \$2,000           | \$4,000               | \$1,000         | \$0            | \$7,000               |

Source: Hazus-MH 4.0

**Social Vulnerability**

It can be assumed that all existing and future populations are at risk to the earthquake hazard.

**Critical Facilities**

The Hazus-MH probabilistic analysis did not indicate that any critical facilities would sustain measurable damage in an earthquake event. However, all critical facilities should be considered at-risk to minor to moderate damage should an event occur. A list of specific critical facilities and their associated risk can be found in **Table H.45** at the end of this subsection.

In conclusion, an earthquake has the potential to impact all existing and future buildings, facilities, and populations in Walthall County. Specific vulnerabilities for these assets will be greatly dependent on their individual design and the mitigation measures in place. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. The Hazus-MH scenario indicates that minimal to moderate damage is expected from an earthquake occurrence. While Walthall County may not experience a catastrophic earthquake, localized damage is possible with a moderate to larger scale occurrence.

**HURRICANE AND TROPICAL STORM**

Historical evidence indicates that Walthall County has significant risk to the hurricane and tropical storm hazard. There have been five disaster declarations due to hurricanes as noted in pervious sections. Several tracks have come near or traversed through the county, as shown and discussed in Section H.2.10. Hazus-MH 4.0 estimates a total annualized loss of \$675,000 which includes buildings, contents, and inventory throughout the county.

Hurricanes and tropical storms can cause damage through numerous additional hazards such as flooding, erosion, tornadoes, and high winds, thus it is difficult to estimate total potential losses from these cumulative effects. The current Hazus-MH hurricane model only analyzes hurricane winds and is not capable of modeling and estimating cumulative losses from all hazards associated with hurricanes; therefore, only hurricane winds are analyzed in this section. It can be assumed that all existing and future buildings and populations are at risk to the hurricane and tropical storm hazard. Hazus-MH 4.0 was used

<sup>27</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

to determine average annualized losses<sup>28</sup> for the county as shown below in **Table H.42**. Only losses to buildings, inventory, and contents are included in the results.

**TABLE H.42: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR HURRICANE WIND HAZARD**

| Location        | Building Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|-----------------|-----------------|-----------------|----------------|-----------------------|
| Walthall County | \$464,000       | \$210,000       | \$1,000        | \$675,000             |

Source: Hazus-MH 4.0

**Social Vulnerability**

Given some equal susceptibility across the entire county, it is assumed that the total population, both current and future, is at risk to the hurricane and tropical storm hazard.

**Critical Facilities**

Given equal vulnerability across Walthall County, all critical facilities are considered to be at risk. Some buildings may perform better than others in the face of such an event due to construction and age, among other factors. Determining individual building response is beyond the scope of this plan. However, this plan will consider mitigation action for especially vulnerable structures and/or critical facilities to mitigate against the effects of the hurricane hazard. A list of specific critical facilities can be found in **Table H.45** at the end of this subsection.

In conclusion, a hurricane event has the potential to impact many existing and future buildings, critical facilities, and populations in Walthall County.

**RADIOLOGICAL EVENT**

The location of Grand Gulf and River Bend Nuclear Stations north and south of the region, respectively, demonstrate that the county is at some risk to the effects of a nuclear accident. Although there have not been any major events at these plants in the past, there have been major events at other nuclear stations around the country. Additionally, smaller scale incidents at both these nuclear stations have occurred.

In order to assess nuclear risk, a GIS-based analysis was used to estimate exposure during a nuclear event within each of the risk zones described in Section H.2.14. The determination of assessed value at-risk (exposure) was calculated using GIS analysis by summing the total values for those properties that were confirmed to be located within one of the risk zones. **Table H.43** presents potential at-risk properties in the 50-mile buffer zone (no property was located in the 10-mile buffer zone). The number of buildings, parcels, and the approximate value are presented.

**TABLE H.43: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO A NUCLEAR ACCIDENT**

| Location            | 50-mile Nuclear Buffer Area    |                        |
|---------------------|--------------------------------|------------------------|
|                     | Approx. Number of Improvements | Approx. Improved Value |
| Tylertown           | 0                              | \$0                    |
| Unincorporated Area | 0                              | \$0                    |

<sup>28</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

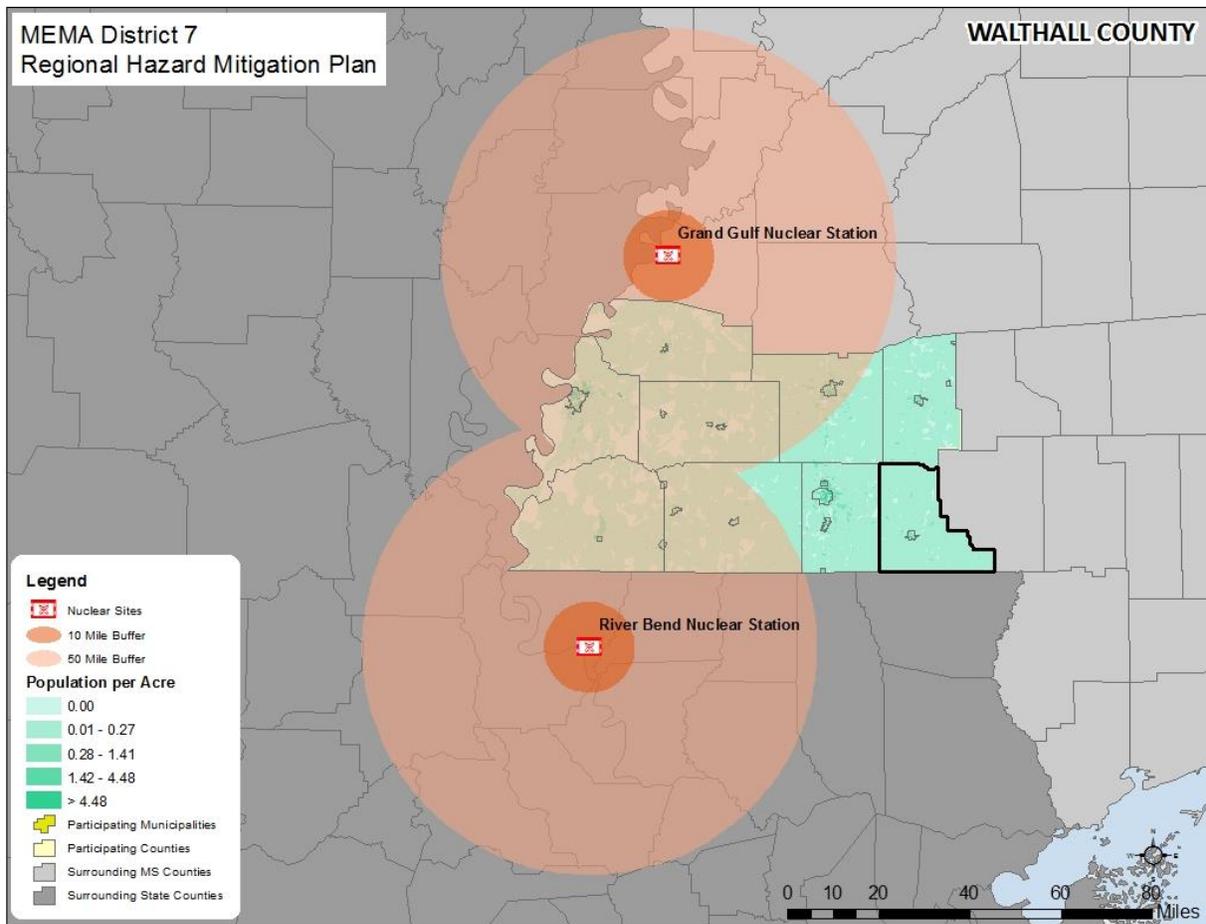
| Location              | 50-mile Nuclear Buffer Area    |                        |
|-----------------------|--------------------------------|------------------------|
|                       | Approx. Number of Improvements | Approx. Improved Value |
| WALTHALL COUNTY TOTAL | 0                              | \$0                    |

Source: International Atomic Energy Agency; Hazus-MH 4.0

**Social Vulnerability**

Although none of the county is within the 50-mile buffer area, the county is located not far from this zone, so the entire population may be at some risk to a radiological event. This risk can be seen in **Figure H.24**.

**FIGURE H.24: POPULATION DENSITY NEAR NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN WALTHALL COUNTY**



Source: International Atomic Energy Agency; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are no critical facilities located in the 50-mile nuclear buffer area. However, the county is located not far from the buffer area, so facilities may be at some risk. No critical facilities are located in the 10-mile buffer area. A list of specific critical facilities and their associated risk can be found in **Table H.45** at the end of this section.

In conclusion, a nuclear accident has the potential to impact existing and future buildings, facilities, and populations in Walthall County.

**CONCLUSIONS ON HAZARD VULNERABILITY**

**Table H.44** presents a summary of annualized loss for each hazard in Walthall County. Due to the reporting of hazard damages primarily at the county level, it was difficult to determine an accurate annualized loss estimate for each municipality. Therefore, an annualized loss was determined through the damage reported through historical occurrences at the county level. These values should be used as an additional planning tool or measure risk for determining hazard mitigation strategies throughout the county.

**TABLE H.44: ANNUALIZED LOSS FOR WALTHALL COUNTY**

| Event                         | Walthall County |
|-------------------------------|-----------------|
| <b>Flood-related Hazards</b>  |                 |
| Dam and Levee Failure         | Negligible      |
| Erosion                       | Negligible      |
| Flood                         | \$68,773        |
| <b>Fire-related Hazards</b>   |                 |
| Drought                       | Negligible      |
| Lightning                     | \$0             |
| Wildfire                      | Negligible      |
| <b>Geologic Hazards</b>       |                 |
| Earthquake*                   | \$2,000         |
| <b>Wind-related Hazards</b>   |                 |
| Extreme Heat                  | Negligible      |
| Hailstorm                     | \$1,346         |
| Hurricane & Tropical Storm    | \$30,644,498    |
| Severe Thunderstorm/High Wind | \$17,705        |
| Tornado                       | \$124,441       |
| Winter Storm & Freeze         | \$0             |
| <b>Human-caused Hazards</b>   |                 |
| Radiological Event            | Negligible      |

\*No historic losses for earthquake were recorded, so Hazus estimates for annualized loss were used.  
 Note: In this table, the term “Negligible” is used to indicate that no records of dollar losses for the particular hazard were recorded. This could be the case either because there were no events that caused dollar damage or because documentation of that particular type of event is not well kept.

As noted previously, all existing and future buildings and populations (including critical facilities) are vulnerable to atmospheric hazards including drought, lightning, extreme heat, hailstorm, hurricane and

tropical storm, severe thunderstorm/high wind, tornado, and winter storm and freeze. Some buildings may be more vulnerable to these hazards based on other factors such as construction and building type. **Table H.45** shows the critical facilities vulnerable to the hazards analyzed in this section. The table lists those assets that are determined to be exposed to each of the identified hazards (marked with an “X”).

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**TABLE H.45: AT-RISK CRITICAL FACILITIES IN WALTHALL COUNTY**

| FACILITY NAME                              | FACILITY TYPE  | FLOOD-RELATED         |         |                | FIRE-RELATED   |         |           | GEO      | WIND-RELATED |              |           |                              |                                    |         | HUM                     |                                 |                                 |
|--|----------------|-----------------------|---------|----------------|----------------|---------|-----------|----------|--------------|--------------|-----------|------------------------------|------------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|  |                | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought | Lightning | Wildfire | Earthquake   | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Linch Wind | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| <b>Walthall County</b>                     |                |                       |         |                |                |         |           |          |              |              |           |                              |                                    |         |                         |                                 |                                 |
| Walthall County EOC                        | EOC            |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| 3rd District Fire Department               | Fire Station   |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| 4th District Fire Department               | Fire Station   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| Enon Volunteer Fire Department             | Fire Station   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| Lexie Volunteer Fire Department            | Fire Station   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| Oak Grove Volunteer Fire Department        | Fire Station   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| Southwest Marion Volunteer Fire Department | Fire Station   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| Tylertown Fire Department                  | Fire Station   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| Beverly Healthcare                         | Medical Care   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| Walthall County Hospital                   | Medical Care   |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| Tylertown Police Dept                      | Police Station |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| Tylertown Police Dept                      | Police Station |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| Walthall County Sheriff                    | Police Station |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| Walthall County Sheriff                    | Police Station |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| Bill Dora Inc.                             | Private Sector |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| Georgia Pacific                            | Private Sector |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| Stringer Industries Inc.                   | Private Sector |                       | X       | X              |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |
| Walthall County Industrial Park            | Private Sector |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                  | X       | X                       |                                 |                                 |

| FACILITY NAME         | FACILITY TYPE | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                                   |         |                         | HUM                             |                                 |
|-----------------------|---------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-----------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|                       |               | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Lightning | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Tylertown High School | School        |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 |                                 |

## H.4 WALTHALL COUNTY CAPABILITY ASSESSMENT

This subsection discusses the capability of Walthall County to implement hazard mitigation activities. More information on the purpose and methodology used to conduct the assessment can be found in Section 7: *Capability Assessment*.

### H.4.1 Planning and Regulatory Capability

**Table H.46** provides a summary of the relevant local plans, ordinances, and programs already in place or under development for Walthall County. A checkmark (✓) indicates that the given item is currently in place and being implemented. An asterisk (\*) indicates that the given item is currently being developed for future implementation. A dagger (†) indicates that the given item is administered for that municipality by the county. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the MEMA District 7 Regional Hazard Mitigation Plan.

**TABLE H.46: RELEVANT PLANS, ORDINANCES, AND PROGRAMS**

| Planning Tool/Regulatory Tool |                        |  |                             |  |  |                                      |                                  |                     |                           |   |                               |                 |                        |                           |                           |                            |                                   |                  |                       |                               |   |               |           |   |  |  |
|-------------------------------|------------------------|--|-----------------------------|--|--|--------------------------------------|----------------------------------|---------------------|---------------------------|---|-------------------------------|-----------------|------------------------|---------------------------|---------------------------|----------------------------|-----------------------------------|------------------|-----------------------|-------------------------------|---|---------------|-----------|---|--|--|
|                               | Hazard Mitigation Plan | Threat and Hazard Identification and Risk Assessment (THIRA) | Comprehensive Land Use Plan | Floodplain Management Plan/Flood Mitigation Plan | Open Space Management Plan (Parks & Rec/Greenway Plan) | Stormwater Management Plan/Ordinance | Natural Resource Protection Plan | Flood Response Plan | Emergency Operations Plan | Emergency Management Accreditation Program (EMAP Accreditation) | Continuity of Operations Plan | Evacuation Plan | Disaster Recovery Plan | Capital Improvements Plan | Economic Development Plan | Historic Preservation Plan | Flood Damage Prevention Ordinance | Zoning Ordinance | Subdivision Ordinance | Unified Development Ordinance | Post-Disaster Redevelopment/ Reconstruction Plan/ Ordinance | Building Code | Fire Code | National Flood Insurance Program (NFIP) | NFIP Community Rating System (CRS Program) |  |
| WALTHALL COUNTY               | ✓                      |  |                             |  |  |                                      |                                  |                     | ✓                         |   |                               |                 |                        |                           | ✓                         |                            | ✓                                 |                  |                       |                               |   |               |           |   | ✓  |  |
| Tylertown                     | †                      |  |                             |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        | †                         |                           |                            | ✓                                 |                  |                       |                               |   |               |           |   | ✓  |  |

A more detailed discussion on the county’s planning and regulatory capabilities follows.

#### Hazard Mitigation Plan

Walthall County has previously adopted a hazard mitigation plan. The Town of Tylertown was also included in this plan.

#### Emergency Operations Plan

Walthall County maintains an emergency operations plan through its Emergency Management Agency. The Town of Tylertown is also covered by this plan.

**FLOODPLAIN MANAGEMENT**

**Table H.47** provides NFIP policy and claim information for each participating jurisdiction in Walthall County.

**TABLE H.47: NFIP POLICY AND CLAIM INFORMATION**

| Jurisdiction     | Date Joined NFIP | Current Effective Map Date | NFIP Policies in Force | Insurance in Force | Closed Claims | Total Payments to Date |
|------------------|------------------|----------------------------|------------------------|--------------------|---------------|------------------------|
| WALTHALL COUNTY† | 08/01/86         | 07/06/10                   | 79                     | \$11,710,400       | 96            | \$1,554,515            |
| Tylertown        | 09/30/88         | 07/06/10                   | 17                     | \$4,400,000        | 53            | \$803,872              |

†Includes unincorporated areas of county only

Source: NFIP Community Status information as of 8/17/2017; NFIP claims and policy information as of 4/30/2017

All jurisdictions listed above that are participants in the NFIP will continue to comply with all required provisions of the program and will work to adequately comply in the future utilizing a number of strategies. For example, the jurisdictions will coordinate with MEMA and FEMA to develop maps and regulations related to special flood hazard areas within their jurisdictional boundaries and, through a consistent monitoring process, will design and improve their floodplain management program in a way that reduces the risk of flooding to people and property.

**Flood Damage Prevention Ordinance**

All communities participating in the NFIP are required to adopt a local flood damage prevention ordinance. Walthall County and the Town of Tylertown both participate in the NFIP and have adopted flood damage prevention regulations.

**H.4.2 Administrative and Technical Capability**

**Table H.48** provides a summary of the capability assessment results for Walthall County with regard to relevant staff and personnel resources. A checkmark (✓) indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill. A dagger (†) indicates a county-level staff member(s) provides the specified knowledge or skill to that municipality.

**TABLE H.48: RELEVANT STAFF/PERSONNEL RESOURCES**

| Staff/Personnel Resource | Planners with knowledge of land development/land management practices | Engineers or professionals trained in construction practices related to buildings and/or infrastructure | Planners or engineers with an understanding of natural and/or human-caused hazards | Emergency Manager | Floodplain Manager | Land Surveyors | Scientists familiar with the hazards of the community | Staff with education or expertise to assess the community's vulnerability to hazards | Personnel skilled in GIS and/or Hazus | Resource development staff or grant writers |
|--------------------------|---|---|--|-------------------|--------------------|----------------|---|--|---------------------------------------|---|
| WALTHALL COUNTY          |   |   |  | ✓                 | ✓                  |                | ✓   | ✓  | ✓                                     |   |
| Tylertown                |   |   |  | †                 | ✓                  |                | †   | †  | †                                     |   |

Credit for having a floodplain manager was given to those jurisdictions that have a flood damage prevention ordinance, and therefore an appointed floodplain administrator, regardless of whether the appointee was dedicated solely to floodplain management. Credit was given for having a scientist familiar with the hazards of the community if a jurisdiction has a Cooperative Extension Service or Soil and Water Conservation Department. Credit was also given for having staff with education or expertise to assess the community's vulnerability to hazards if a staff member from the jurisdiction was a participant on the existing hazard mitigation plan's planning committee.

### H.4.3 Fiscal Capability

**Table H.49** provides a summary of the results for Walthall County with regard to relevant fiscal resources. A checkmark (✓) indicates that the given fiscal resource has previously been used to implement hazard mitigation actions. A dagger (†) indicates that the given fiscal resource is locally available for hazard mitigation purposes (including match funds for state and federal mitigation grant funds).

**TABLE H.49: RELEVANT FISCAL RESOURCES**

| Fiscal Tool/Resource | Capital Improvement Programming | Community Development Block Grants (CDBG) | Special Purpose Taxes (or taxing districts) | Gas/Electric Utility Fees | Water/Sewer Fees | Stormwater Utility Fees | Development Impact Fees | General Obligation, Revenue, and/or Special Tax Bonds | Partnering Arrangements or Intergovernmental Agreements | Other: FEMA Hazard Mitigation Grants, Homeland Security Grants, USDA Rural Development Agency Grants, and US Economic Development Administration Grants |
|----------------------|---------------------------------|---|---|---------------------------|------------------|-------------------------|-------------------------|---|---|---|
| WALTHALL COUNTY      |                                 | +   |   |                           |                  |                         |                         |   |   | +   |
| Tylertown            |                                 | +   |   |                           |                  |                         |                         |   |   | +   |

### H.4.4 Political Capability

During the months immediately following a disaster, local public opinion in Walthall County is more likely to shift in support of hazard mitigation efforts.

Table H.50 provides a summary of the results for Walthall County with regard to political capability. A checkmark (✓) indicates the expected degree of political support by local elected officials in terms of adopting/funding information.

**TABLE H.50: LOCAL POLITICAL SUPPORT**

| Political Support | Limited | Moderate | High |
|-------------------|---------|----------|------|
| WALTHALL COUNTY   |         | ✓        |      |
| Tylertown         |         | ✓        |      |

### H.4.5 Conclusions on Local Capability

Table H.51 shows the results of the capability assessment using the designed scoring methodology described in Section 7: *Capability Assessment*. The capability score is based solely on the information found in existing hazard mitigation plans and readily available on the jurisdictions’ government websites. This information was reviewed by all jurisdictions and each jurisdiction provided feedback on the information included in the capability assessment. Local government input was vital to identifying capabilities. According to the assessment, the average local capability score for the county and its jurisdictions is 20.0, which falls into the limited capability ranking.

**TABLE H.51: CAPABILITY ASSESSMENT RESULTS**

| Jurisdiction    | Overall Capability Score | Overall Capability Rating |
|-----------------|--------------------------|---------------------------|
| WALTHALL COUNTY | 22                       | Limited                   |
| Tylertown       | 18                       | Limited                   |

## H.5 WALTHALL COUNTY MITIGATION STRATEGY

This subsection provides the blueprint for Walthall County to follow in order to become less vulnerable to its identified hazards. It is based on general consensus of the Regional Hazard Mitigation Council and the findings and conclusions of the capability assessment and risk assessment. Additional Information can be found in Section 8: *Mitigation Strategy* and Section 9: *Mitigation Action Plan*.

### H.5.1 Mitigation Goals

Walthall County developed six mitigation goals in coordination with the other participating MEMA District 7 Region jurisdictions. The regional mitigation goals are presented in **Table H.52**.

**TABLE H.52: MEMA DISTRICT 7 REGIONAL MITIGATION GOALS**

|         | Goal   |
|---------|--|
| Goal #1 | Increase the overall public awareness of natural hazards that face the region.   |
| Goal #2 | Retrofit of critical facilities and/or critical infrastructure to lower the risk of damage from natural hazards.   |
| Goal #3 | General improvement of regional or local mitigation planning and capability.   |
| Goal #4 | Support State Identified Mitigation Initiatives such as saferooms and storm shelters, severe weather warning systems for universities and colleges, and severe weather notification systems for local communities. |
| Goal #5 | Reduce loss of life, damage and loss of property and infrastructure, economic costs, including response, recovery and disruption of economic activity.   |
| Goal #6 | Foster cooperation among all levels of governments and the private sector with respect to improving, updating, and implementing the hazard mitigation plan.  |

### H.5.2 Mitigation Action Plan

The mitigation actions proposed by Walthall County and the Town of Tylertown are listed in the following individual Mitigation Action Plans.

## Walthall County Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------------|-------------------|---|---|-------------------------|---|
| <b>Prevention</b> |  |                           |                   |   |   |                         |   |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning</b> – The Walthall County Board of Supervisors/Town of Tylertown should have a Comprehensive Plan developed to guide long term recovery and development.   | Hurricane or other hazard | High              | Walthall County Board of Supervisors/ Town of Tylertown       | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Walthall County Board of Supervisors/Town of Tylertown recognize that comprehensive land use planning yields many benefits for both the county and town. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. The county and town have not developed a Comprehensive Plan. Therefore, this action will remain in the plan. |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction. | Flood                     | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-4 since they were duplicate actions. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.                         | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | Deleted                 | This action is a duplicate of P-3, so it has been combined with P-3 and removed from the plan.  |

| Action #                   | Description  | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department                                 | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------------------------|--|---|-------------------|---|---|-------------------------|--|
| <b>Property Protection</b> |  |   |                   |   |   |                         |  |
| PP-1                       | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Walthall County Board of Supervisors/Town of Tylertown should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Walthall County Board of Supervisors/ Town of Tylertown | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Walthall County Board of Supervisors/Town of Tylertown recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/town government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |

| Action #                           | Description  | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                                 | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|------------------------------------|--|--|-------------------|---|---|-------------------------|---|
| PP-2                               | <b>Bury Electric Power Cables</b> – The Walthall County Board of Supervisors/Town of Tylertown should implement a program to bury electric power cables serving critical facilities. | Hurricane, Tornado or other hazard affecting Electric Power distribution | High              | Walthall County Board of Supervisors/ Town of Tylertown | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Electric power cables to critical facilities have not been buried. Therefore, this action will remain in the plan to reduce potential loss of power to those facilities. |
| <b>Natural Resource Protection</b> |  |  |                   |   |   |                         |   |
| NRP-1                              |  |  |                   |   |   |                         |   |

| Action #                   | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------------------------|--|---------------------|-------------------|--------------------------------------|---|-------------------------|--|
| <b>Structural Projects</b> |  |                     |                   |                                      |   |                         |  |
| SP-1                       | <b>Drainage Improvements (Whitmore Road)</b> – Install a culvert to provide for adequate water flow and raise the road bed.  | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Whitmore Road repeatedly washes out during intense storm events. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan.  |
| SP-2                       | <b>Drainage Improvements (Hinson Road)</b> – Install a culvert to provide for adequate water flow and raise the road bed.    | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Hinson Road repeatedly washes out during intense storm events. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan.    |
| SP-3                       | <b>Drainage Improvements (Tom Woods Road)</b> – Install a culvert to provide for adequate water flow and raise the road bed. | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Tom Woods Road repeatedly washes out during intense storm events. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|--------------------------------------|---|-------------------------|--|
| SP-4     | <b>Drainage Improvements (Ryans Road)</b> – Install a culvert to provide for adequate water flow and raise the road bed.       | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Ryans Road repeatedly washes out during intense storm events. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan.       |
| SP-5     | <b>Drainage Improvements (Dillon Hill Road)</b> – Install a culvert to provide for adequate water flow and raise the road bed. | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Dillon Hill Road repeatedly washes out during intense storm events. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan. |
| SP-6     | <b>Drainage Improvements (Brandon Bay Road)</b> – Install a culvert to provide for adequate water flow and raise the road bed. | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Brandon Bay Road repeatedly washes out during intense storm events. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan. |

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|--------------------------------------|---|-------------------------|---|
| SP-7     | <b>Drainage Improvements (East Centerville Road)</b> – Install a culvert to provide for adequate water flow and raise the road bed.   | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along East Centerville Road repeatedly washes out during intense storm events. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan.   |
| SP-8     | <b>Drainage Improvements (Settlement Road)</b> – Install a bridge to provide for adequate water flow and raise the road bed.          | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Settlement Road repeatedly washes out during intense storm events because an existing culvert is not able to handle the volume of water. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan.       |
| SP-9     | <b>Drainage Improvements (East Centerville Road)</b> – Install two bridges to provide for adequate water flow and raise the road bed. | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along East Centerville Road repeatedly washes out during intense storm events because an existing culvert is not able to handle the volume of water. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|--------------------------------------|---|-------------------------|---|
| SP-10    | <b>Drainage Improvements (Huey Road)</b> – Install a bridge to provide for adequate water flow and raise the road bed.   | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Huey Road repeatedly washes out during intense storm events because an existing culvert is not able to handle the volume of water. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan.   |
| SP-11    | <b>Drainage Improvements (Howell Road)</b> – Install a bridge to provide for adequate water flow and raise the road bed. | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Howell Road repeatedly washes out during intense storm events because an existing culvert is not able to handle the volume of water. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan. |
| SP-12    | <b>Drainage Improvements (Carter Road)</b> – Install a bridge to provide for adequate water flow and raise the road bed. | Flood               | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | An area along Carter Road repeatedly washes out during intense storm events because an existing culvert is not able to handle the volume of water. Walthall County will continue to seek funding to complete drainage improvements, so this action will remain in the plan. |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-8 since they were duplicate actions.</p> |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Walthall County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2020</p>             | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Walthall County will continue to purchase critical facility generators as funding permits, so this action will remain in the plan.</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department              | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|--------------------------------------|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Walthall County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Walthall County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                     | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|---|--|-------------------------|---|
| ES-4     | <p><b>Construct New Emergency Shelter</b><br/>                     – The county should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions.</p> | <p>Hurricane, Tornado or other hazard requiring the use of emergency shelters</p> | <p>High</p>       | <p>Walthall County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2022</p>             | <p>The Walthall County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short- term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. Since a new emergency shelter has not been constructed in Walthall County, this action will remain in the plan.</p> |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                 | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|---|---|-------------------------|---|
| ES-5     | <b>Purchase Integrated Voice Mail System</b> – The Walthall County Board of Supervisors/Town of Tylertown should purchase an Integrated Voice Mail System for emergency notification of government authorities and citizens during times of natural disasters. | Hurricane, Tornado or other hazard affecting communications | High              | Walthall County Board of Supervisors/ Town of Tylertown | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Walthall County Board of Supervisors/Town of Tylertown understand the need for emergency notification of government authorities and citizens during times of natural disasters. Timely information is critical for government authorities during and in the aftermath of natural disasters to facilitate rescue and recovery operations. The ability to notify citizens of impending natural disasters and to communicate information concerning recovery efforts gives government authorities a powerful tool to manage a disaster and assist the citizenry to the maximum extent possible. This action will remain in the plan to improve emergency notification. |
| ES-6     | <b>Renovate or Construct Emergency Supply Storage and Distribution Facility</b> – The Walthall County Board of Supervisors/Town of Tylertown should renovate or construct adequate facilities for the storage and distribution of emergency supplies.          | Hurricane or other hazard                                   | High              | Walthall County Board of Supervisors/ Town of Tylertown | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | During certain natural disasters which cause long-term electric power outages or other widespread damage, the county may need to distribute emergency supplies to the citizens. The facilities where these supplies are stored and distributed should have adequate space for safe storage and be located in accessible areas for orderly distribution. This action will remain in the plan to improve the storage and distribution of emergency supplies.  |

**ANNEX H: WALTHALL COUNTY**

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---------------------|-------------------|---|--|-------------------------|--|
| ES-7     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system  | Tornado             | High              | Walthall County Board of Supervisors    | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County General Fund | 2022                    | Many citizens in Walthall County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. A warning system needs to be installed in Walthall County, so this action will remain in the plan. |
| ES-8     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA   | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department              | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|--------------------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                                      |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Walthall County Board of Supervisors | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau               | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division            | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Walthall County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Tylertown Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions.</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---|---|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | Town of Tylertown Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Tylertown will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                 | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|---|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Tyllertown Board of Aldermen and Mayor          | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Tyllertown continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Tyllertown/Walthall County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | 2022                    | In the event of inclement weather, it is essential that residents of the Town of Tyllertown receive timely warnings. A warning system needs to be installed in the Town of Tyllertown, so this action will remain in the plan.  |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency       | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Tylertown Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Tylertown         | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Tylertown will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

# ANNEX I

## WILKINSON COUNTY

This annex includes jurisdiction-specific information for Wilkinson County and its participating municipalities. It consists of the following five subsections:

- I.1 Wilkinson County Community Profile
  - I.2 Wilkinson County Risk Assessment
  - I.3 Wilkinson County Vulnerability Assessment
  - I.4 Wilkinson County Capability Assessment
  - I.5 Wilkinson County Mitigation Strategy
- 

### I.1 WILKINSON COUNTY COMMUNITY PROFILE

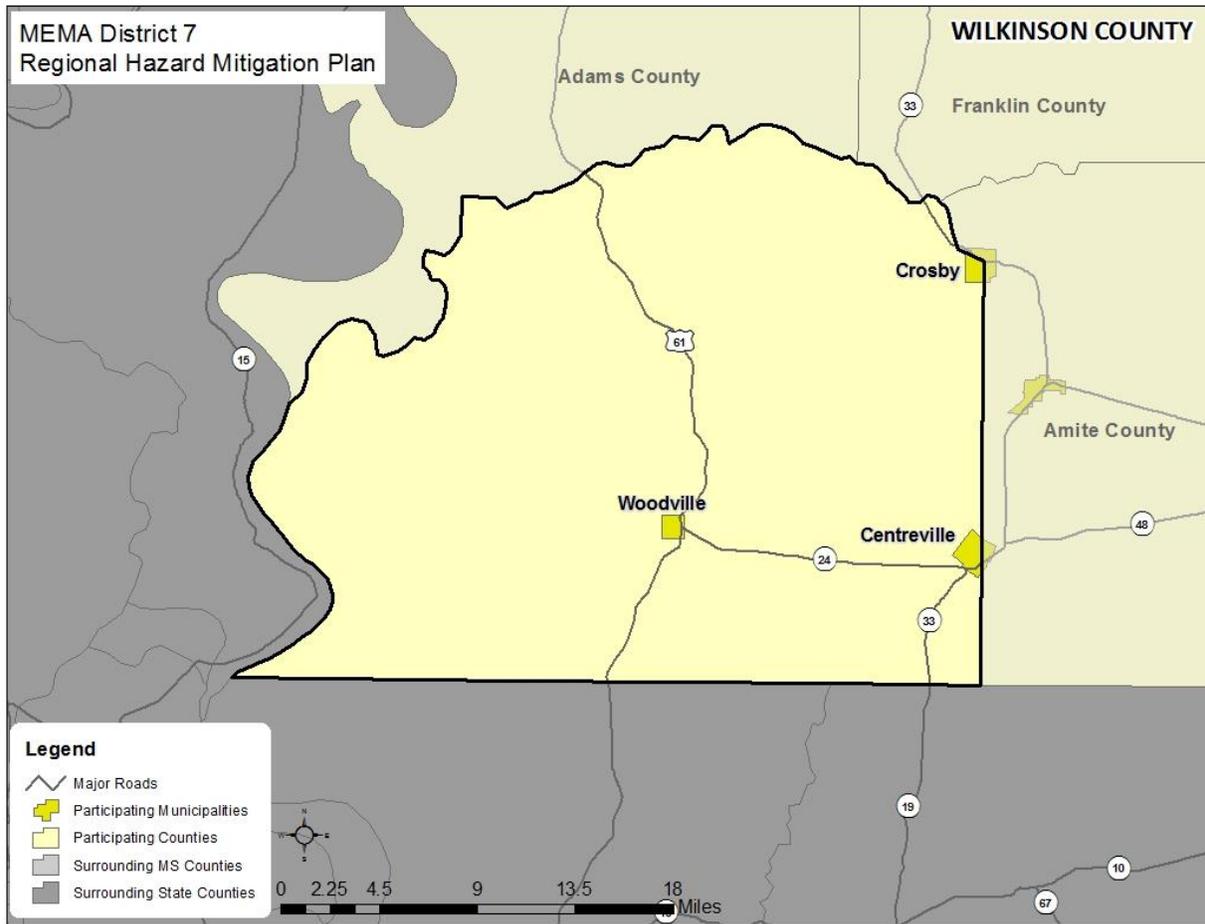
#### I.1.1 Geography and the Environment

Wilkinson County is located in southwestern Mississippi. It comprises three towns, Town of Centreville, Town of Crosby, and Town of Woodville, as well as many small unincorporated communities. An orientation map is provided as **Figure I.1**.

The county is located adjacent to the Mississippi River supplying diverse recreational activities. The total area of the county is 688 square miles, 678 square miles of which is water area.

Wilkinson County enjoys four distinct seasons but the climate in the region is generally hot and humid compared to the rest of the United States given its latitude and relative proximity to the Gulf Coast. Precipitation is generally highest in winter months when the temperatures are moderately lower, but the likelihood of precipitation remains relatively constant throughout the year. Summers in the region can become fairly hot with average highs in the nineties and lows in the seventies. The region is also often susceptible to turbulent weather when warm, wet air from the Gulf of Mexico is pushed up into the region to mix with cooler air coming down from across the continent which can result in severe weather conditions. This is particularly true in the spring when seasons are changing and diverse weather patterns interact.

**FIGURE I.1: WILKINSON COUNTY ORIENTATION MAP**



### I.1.2 Population and Demographics

According to the 2015 American Community Survey, Wilkinson County has a population of 9,345 people. The county has seen a decrease in population between 2000 and 2015, and the population density is 14 people per square mile. Population counts from the U.S. Census Bureau for 2000 and 2010 and from the American Community Survey for 2015 for the county and participating jurisdictions are presented in **Table I.1**.

**TABLE I.1: POPULATION COUNTS FOR WILKINSON COUNTY**

| Jurisdiction            | 2000 Census Population | 2010 Census Population | 2015 American Community Survey Estimate | % Change 2000-2015 |
|-------------------------|------------------------|------------------------|---|--------------------|
| <b>Wilkinson County</b> | <b>10,312</b>          | <b>9,878</b>           | <b>9,345</b>                            | <b>-9.4%</b>       |
| Centreville*            | 1,680                  | 1,684                  | 1,765                                   | 5.1%               |
| Crosby*                 | 360                    | 318                    | 413                                     | 14.7%              |
| Woodville               | 1,192                  | 1,096                  | 1,245                                   | 4.4%               |

\*The population counts of Centreville and Crosby include population residing in Amite County. Note: these populations are not included in the Wilkinson County total.

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

Based on the 2010 Census, the median age of residents of Wilkinson County is 37.5 years. The racial characteristics of the county are presented in **Table I.2**. Blacks or African Americans make up the majority of the population in the county, accounting for almost 71 percent of the population.

**TABLE I.2: DEMOGRAPHICS OF WILKINSON COUNTY**

| Jurisdiction            | White, Percent | Black or African American, Percent | American Indian or Alaska Native, Percent | Asian, Percent | Native Hawaiian or Other Pacific Islander, Percent | Other Race, Percent | Two or More Races, percent | Persons of Hispanic Origin, Percent* |
|-------------------------|----------------|------------------------------------|---|----------------|--|---------------------|----------------------------|--------------------------------------|
| <b>Wilkinson County</b> | <b>28.9%</b>   | <b>70.7%</b>                       | <b>0.0%</b>                               | <b>0.0%</b>    | <b>0.0%</b>  | <b>0.5%</b>         | <b>0.0%</b>                | <b>0.1%</b>                          |
| Centreville             | 29.2%          | 70.7%                              | 0.0%                                      | 0.0%           | 0.0%   | 0.0%                | 0.1%                       | 0.0%                                 |
| Crosby                  | 8.2%           | 90.1%                              | 0.0%                                      | 0.0%           | 0.0%   | 0.0%                | 1.7%                       | 0.0%                                 |
| Woodville               | 20.6%          | 79.4%                              | 0.0%                                      | 0.0%           | 0.0%   | 0.0%                | 0.0%                       | 0.0%                                 |

\*Hispanics may be of any race, so also are included in applicable race categories

Source: 2011-2015 American Community Survey 5-Year Estimates

### I.1.3 Housing

According to the 2010 U.S. Census, there are 5,037 housing units in Wilkinson County, the majority of which are single family homes or mobile homes. Housing information for the county and three municipalities is presented in **Table I.3**. As shown in the table, the incorporated municipalities have a significantly lower percentage of seasonal housing units compared to the unincorporated county.

**TABLE I.3: HOUSING CHARACTERISTICS OF WILKINSON COUNTY**

| Jurisdiction            | Housing Units (2000) | Housing Units (2010) | Seasonal Units, Percent (2010) | Median Home Value (2011-2015) |
|-------------------------|----------------------|----------------------|--------------------------------|-------------------------------|
| <b>Wilkinson County</b> | <b>5,106</b>         | <b>5,037</b>         | <b>18.4%</b>                   | <b>\$59,600</b>               |
| Centreville*            | 704                  | 741                  | 2.0%                           | \$70,700                      |
| Crosby*                 | 157                  | 155                  | 4.5%                           | \$69,400                      |
| Woodville               | 569                  | 518                  | 2.7%                           | \$72,200                      |

\*The housing unit counts for Centreville and Crosby include units located in Amite County. Note: these housing units are not included in the Wilkinson County total.

Source: United States Census Bureau, 2000 and 2010 Census, 2011-2015 American Community Survey 5-Year Estimates

### I.1.4 Infrastructure

#### TRANSPORTATION

In Wilkinson County, U.S. Highway 61 provides access to the north and south and Mississippi Highway 24 provides access to the east and west.

Forest Home Airport, Fred Netterville Lumber Company/Wilkinson Community Airport, and Green Acres Airport are all general aviation airports located in Wilkinson County.

A major freight rail line operates within Wilkinson County. The Gloster Southern Railroad is a Class III Local railway that operates and runs north to south along a portion of the eastern county border.

### **UTILITIES**

Electrical power in Wilkinson County is provided by Entergy Mississippi Inc., South Mississippi Electric Power Association, and Southwest Mississippi Electric Power Association.

Water and sewer service is provided by participating jurisdictions and/or community based associations, but unincorporated areas often rely on septic systems and wells in Wilkinson County.

### **COMMUNITY FACILITIES**

There are a number of buildings and community facilities located throughout Wilkinson County. According to the data collected for the vulnerability assessment (Section 6.4.1), there are 3 fire stations, 5 police stations, and 6 schools located within the county.

There are also 4 hospitals and medical care facilities located in Wilkinson County.

Museums based around the history and culture of the region are prevalent throughout the area. For example, in Centreville, the Camp Van Dorn World War II Museum highlights the achievements of soldiers who were trained at Camp Van Dorn during the war.

Recreational opportunities exist throughout Wilkinson County. The Homochitto National Forest comprises almost 200,000 acres of land and is partially located in Wilkinson County. Visitors can camp, hike, hunt, and fish in the forest. In addition, St. Catherine Creek National Wildlife Refuge sits on roughly 25,000 acres and functions as a habitat for migratory waterfowl, birds, and other wildlife. This refuge is located almost completely in Adams County but it does extend into Wilkinson County.

The Mississippi River, which runs along the western border of the county, has played an integral part in the history of the county. The river acted as a major conduit for trade in the 19<sup>th</sup> century as plantations produced large quantities of cotton that could be easily shipped down to ports such as New Orleans. Today, the river is still an important part of the local economy as products are shipped worldwide out of the Natchez port. Apart from the Mississippi River there are multiple water based refuges, activities, and recreational features focused on local water bodies in the region. For instance, in Wilkinson County, Lake Mary is an oxbow lake formed by the Mississippi River and well-known for boating, fishing, and hunting. There are also numerous other small lakes, creeks, and other water bodies throughout the region that offer the outstanding outdoor recreational opportunities for which the region is known.

## **I.1.5 Land Use**

Wilkinson County has a blend of old and new development that contributes to physical, cultural, and economic attributes throughout the region. There are three incorporated municipalities located in the county. These areas are where the county's population is generally concentrated. The incorporated areas are also where many of the businesses, commercial uses, and institutional uses are located. Land uses in the balance of the county generally consist of rural residential development, agricultural uses, and recreational areas. There are multiple county- and regional-based agencies that serve to coordinate

growth and promote economic development. Local land use and associated regulations are further discussed in *Section 7: Capability Assessment*.

## **I.1.6 Employment and Industry**

According to the U.S. Census Bureau's American Community Survey (ACS), in 2015, Wilkinson County had an average annual employment of 7,481 workers and an average unemployment rate of 9.7 percent (compared to 10.3 percent for the state). In 2015, the Public administration industry employed 21.2 percent of the workforce. Educational Services, health care and social assistance was the second largest industry, employing 19.5 percent of workers, and Retail trade followed behind (12.0%). The average annual median household in 2015 for Wilkinson County was \$29,931 compared to \$39,665 in the state of Mississippi.

## **I.2 WILKINSON COUNTY RISK ASSESSMENT**

This subsection includes hazard profiles for each of the significant hazards identified in Section 4: *Hazard Identification* as they pertain to Wilkinson County. Each hazard profile includes a description of the hazard's location and extent, notable historical occurrences, and the probability of future occurrences. Additional information can be found in Section 5: *Hazard Profiles*.

### ***FLOOD-RELATED HAZARDS***

#### **I.2.1 Dam and Levee Failure**

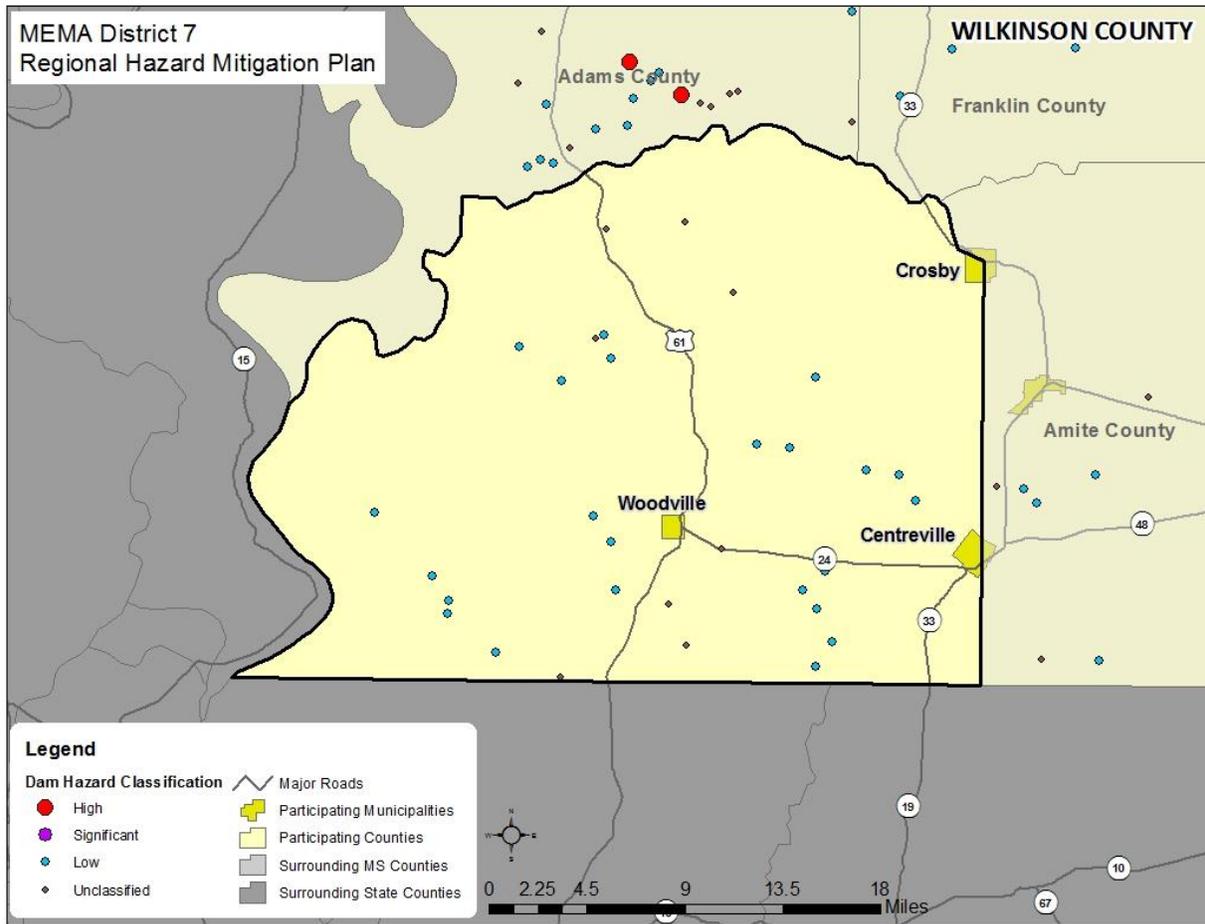
##### ***LOCATION AND SPATIAL EXTENT***

According to the Mississippi Department of Environmental Quality, there are no high hazard dams in Wilkinson County (**Table I.4**).<sup>1</sup> **Figure I.2** and **Figure I.3** show the location of these high hazard dams as well as mapped inundation areas located nearby.

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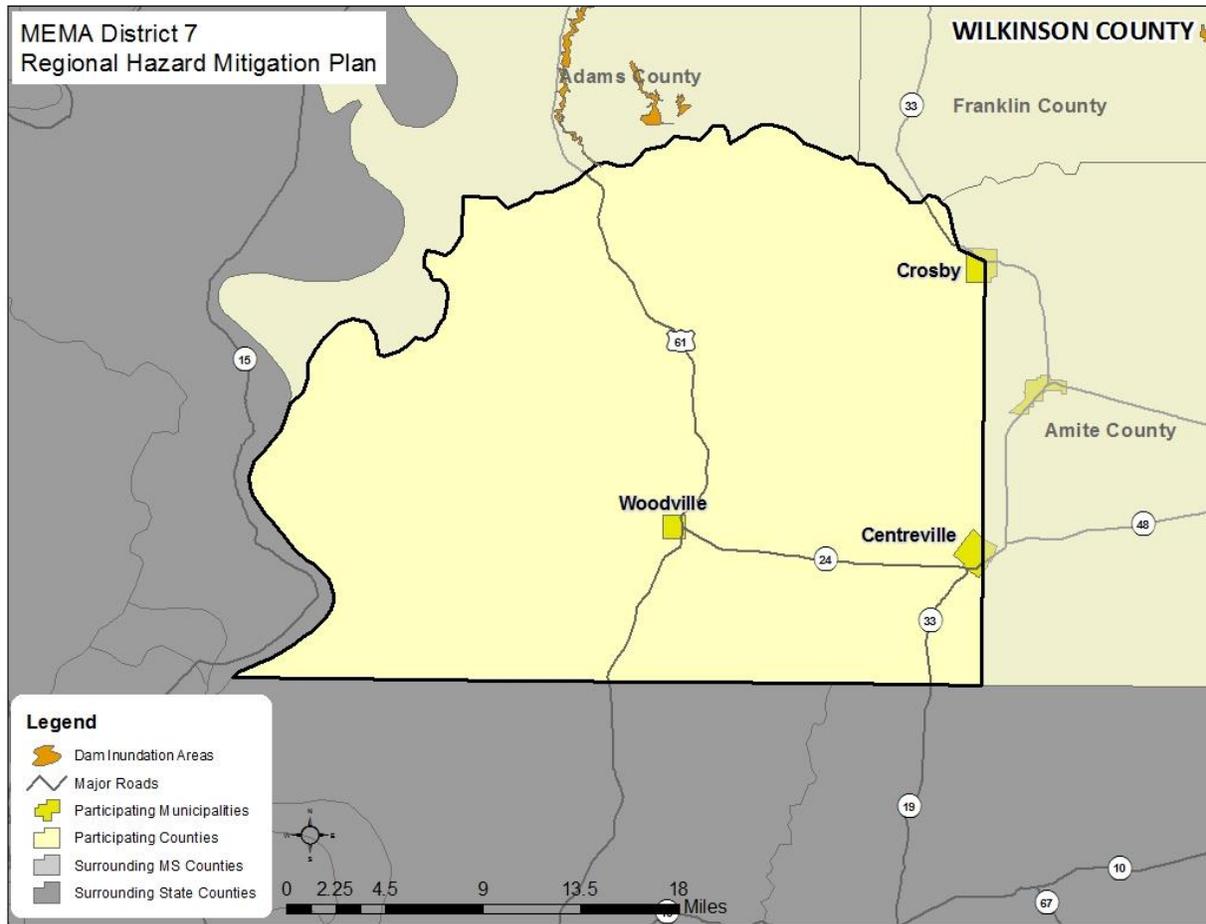
<sup>1</sup> The list of high hazard dams obtained from the Mississippi Department of Environmental Quality was reviewed and amended by local officials to the best of their knowledge.

FIGURE I.2: WILKINSON COUNTY HIGH HAZARD DAM LOCATIONS



Source: Mississippi Department of Environmental Quality

**FIGURE I.3: WILKINSON COUNTY DAM INUNDATION AREAS**



Source: Mississippi Department of Environmental Quality

**TABLE I.4: WILKINSON COUNTY HIGH HAZARD DAMS**

| Dam Name                | Hazard Potential | Max Storage (ac/ft) | Dam Height (ft) |
|-------------------------|------------------|---------------------|-----------------|
| <b>Wilkinson County</b> |                  |                     |                 |
| NONE                    | N/A              | N/A                 | N/A             |

Source: Mississippi Department of Environmental Quality

**HISTORICAL OCCURRENCES**

According to the Mississippi State Hazard Mitigation Plan, there have been no dam failures reported in Wilkinson County (Table I.5). However, several breach scenarios in the region could be catastrophic.

**TABLE I.5: WILKINSON COUNTY DAM FAILURES (1982-2012)**

| Date          | County    | Structure Name | Cause of Failure |
|---------------|-----------|----------------|------------------|
| None reported | Wilkinson | --             | --               |

Source: Mississippi Department of Environmental Quality

## **PROBABILITY OF FUTURE OCCURRENCES**

Given the current dam inventory and historic data, a dam breach is unlikely (less than 1 percent annual probability) in the future. As has been demonstrated in the past, regular monitoring is necessary to prevent these events.

### **I.2.2 Erosion**

#### **LOCATION AND SPATIAL EXTENT**

Erosion in Wilkinson County is typically caused by flash flooding events. Unlike coastal areas, areas of concern for erosion in Wilkinson County are primarily rivers/streams and reservoirs. Generally, vegetation also helps to prevent erosion in the area, but in recent years, erosion has become a growing threat to many of the participating counties and jurisdictions.

At this time, there is no regional or state-level data available on localized areas of erosion so it is a challenge to identify particularly prone areas on a wider geographic scale. However, a few areas of concern were reported by members of the hazard mitigation council and other local sources. Locations along the Mississippi River in Wilkinson County are known to be especially at-risk, but there are locations in many areas within the region where erosion is prominent.

#### **HISTORICAL OCCURRENCES**

Several sources were vetted to identify areas of erosion in Wilkinson County. This includes searching local newspapers, interviewing local officials, and reviewing previous hazard mitigation plans. The locations identified above are representative of areas where erosion has taken place in the past.

These incidents have caused major problems as bridges have become damaged in many instances and made unsafe for emergency services vehicles to cross during and after storm events. This delays response times and critical life-safety support. In addition, the shutdown of roads has hurt local communities economically as trade and commerce are temporarily shut down as bridges are repaired. It has also caused disruption to daily activities for local school boards who must re-route buses around affected areas, causing additional fuel resources to be expended and increasing drive times for students.

#### **PROBABILITY OF FUTURE OCCURRENCES**

Erosion remains a natural, dynamic, and continuous process for Wilkinson County, and it will continue to occur. The annual probability level assigned for erosion is likely (between 10 and 100 percent annually).

### **I.2.3 Flood**

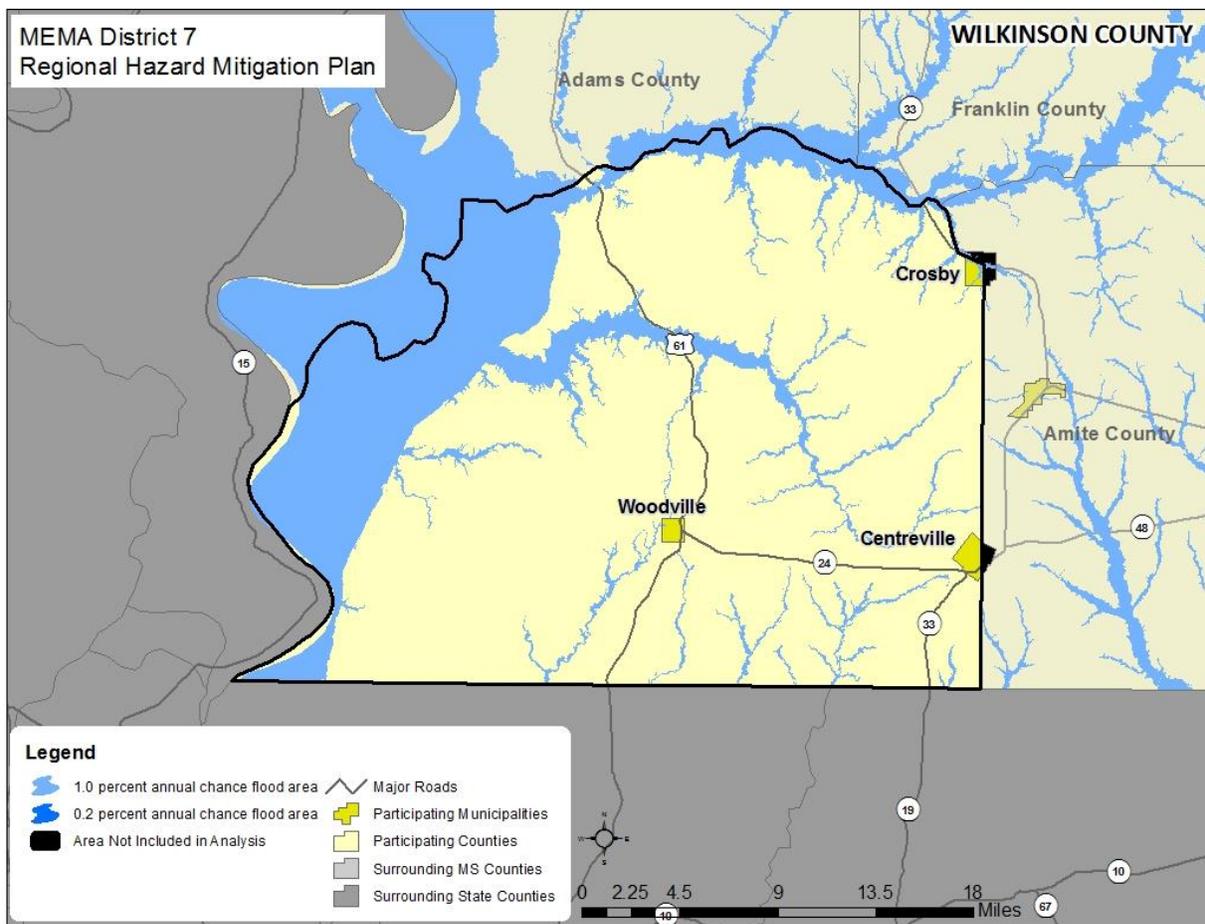
#### **LOCATION AND SPATIAL EXTENT**

There are areas in Wilkinson County that are susceptible to flood events. Special flood hazard areas in the county were mapped using Geographic Information System (GIS) and FEMA Digital Flood Insurance Rate

Maps (DFIRM).<sup>2</sup> This includes Zone A (1-percent annual chance floodplain), Zone AE (1-percent annual chance floodplain with elevations), and Zone X-500 (0.2-percent annual chance floodplain). According to GIS analysis, of the 689 square miles that make up Wilkinson County, there are 149.45 square miles of land in zones A and AE (1-percent annual chance floodplain/100-year floodplain) and 0.00 square miles of land in zone X-500 (0.2 percent annual change floodplain/500-year floodplain).

These flood zone values account for 21.7 percent of the total land area in Wilkinson County. It is important to note that while FEMA digital flood data is recognized as best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Flooding and flood-related losses often do occur outside of delineated special flood hazard areas. **Figure I.4** illustrates the location and extent of currently mapped special flood hazard areas for Wilkinson County based on best available FEMA Digital Flood Insurance Rate Map (DFIRM) data.

**FIGURE I.4: SPECIAL FLOOD HAZARD AREAS IN WILKINSON COUNTY**



Source: Federal Emergency Management Agency

<sup>2</sup> The county-level DFIRM data used for Wilkinson County were updated in 2010.

**HISTORICAL OCCURRENCES**

Floods were at least partially responsible for eight disaster declarations in Wilkinson County in 1972, 1973, 1979, 1983, 1990, 2008, 2009, and 2011.<sup>3</sup> Information from the National Climatic Data Center was used to ascertain additional historical flood events. The National Climatic Data Center reported a total of 10 events in Wilkinson County since 1997.<sup>4</sup> A summary of these events is presented in **Table I.6**. These events accounted for over \$6.9 million (2017 dollars) in property damage.<sup>5</sup> Specific information on flood events, including date, type of flooding, and deaths and injuries, can be found in **Table I.7**.

**TABLE I.6: SUMMARY OF FLOOD OCCURRENCES IN WILKINSON COUNTY**

| Location                      | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Centreville                   | 0                     | 0/0             | \$0                    | \$0                        |
| Crosby                        | 0                     | 0/0             | \$0                    | \$0                        |
| Woodville                     | 2                     | 0/0             | \$98,492               | \$7,576                    |
| Unincorporated Area           | 8                     | 0/0             | \$6,838,379            | \$341,919                  |
| <b>WILKINSON COUNTY TOTAL</b> | <b>10</b>             | <b>0/0</b>      | <b>\$6,936,871</b>     | <b>\$349,495</b>           |

Source: National Climatic Data Center

**TABLE I.7: HISTORICAL FLOOD EVENTS IN WILKINSON COUNTY**

| Location                   | Date      | Type        | Deaths/Injuries | Property Damage* |
|----------------------------|-----------|-------------|-----------------|------------------|
| <b>Centreville</b>         |           |             |                 |                  |
| None reported              | --        | --          | --              | --               |
| <b>Crosby</b>              |           |             |                 |                  |
| None reported              | --        | --          | --              | --               |
| <b>Woodville</b>           |           |             |                 |                  |
| WOODVILLE                  | 2/5/2004  | Flash Flood | 0/0             | \$98,492         |
| WOODVILLE                  | 3/27/2009 | Flash Flood | 0/0             | \$0              |
| <b>Unincorporated Area</b> |           |             |                 |                  |
| WILKINSON (ZONE)           | 3/5/1997  | Flood       | 0/0             | \$0              |
| WILKINSON (ZONE)           | 4/1/1997  | Flood       | 0/0             | \$0              |
| FT ADAMS                   | 2/5/2004  | Flash Flood | 0/0             | \$65,662         |
| FT ADAMS                   | 8/18/2010 | Flash Flood | 0/0             | \$0              |
| DOLOROSO                   | 8/18/2010 | Flash Flood | 0/0             | \$0              |
| FT ADAMS                   | 5/1/2011  | Flood       | 0/0             | \$270,534        |
| ROSETTA                    | 3/28/2014 | Flash Flood | 0/0             | \$776,125        |
| DOLOROSO                   | 8/12/2016 | Flash Flood | 0/0             | \$5,726,058      |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

<sup>3</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>4</sup> These flood events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported. As additional local data becomes available, this hazard profile will be amended.

<sup>5</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| Location | Date | Type | Deaths/Injuries | Property Damage* |
|----------|------|------|-----------------|------------------|
|----------|------|------|-----------------|------------------|

Source: National Climatic Data Center

**HISTORICAL SUMMARY OF INSURED FLOOD LOSSES**

According to FEMA flood insurance policy records as of March 31, 2017, there have been 1,588 flood losses reported in Wilkinson County through the National Flood Insurance Program (NFIP) since 1978, totaling over \$20.3 million in claims payments. A summary of these figures for the county is provided in **Table I.8**. It should be emphasized that these numbers include only those losses to structures that were insured through the NFIP policies, and for losses in which claims were sought and received. It is likely that many additional instances of flood loss in Wilkinson County were either uninsured, denied claims payment, or not reported.

**TABLE I.8: SUMMARY OF INSURED FLOOD LOSSES IN WILKINSON COUNTY**

| Location                      | Number of Policies | Flood Losses | Claims Payments        |
|-------------------------------|--------------------|--------------|------------------------|
| Centreville                   | 0                  | 0            | \$0.00                 |
| Crosby                        | 0                  | 2            | \$15,459.05            |
| Woodville                     | 1                  | 0            | \$0.00                 |
| Unincorporated Area           | 88                 | 1,586        | \$20,305,199.03        |
| <b>WILKINSON COUNTY TOTAL</b> | <b>89</b>          | <b>1,588</b> | <b>\$20,320,658.08</b> |

\*These communities do not participate in the NFIP. Therefore, no values are reported.

Source: National Flood Insurance Program

**REPETITIVE LOSS PROPERTIES**

According to the Mississippi Emergency Management Agency, there are 25 non-mitigated repetitive loss properties located in Wilkinson County, which accounted for 58 losses and more than \$1.1 million in claims payments under the NFIP. The average claim amount for these properties is \$19,383. Of the 25 properties, 16 are single family, 1 is assumed condominium, and 8 are other non-residential. Without mitigation, these properties will likely continue to experience flood losses. **Table I.9** presents detailed information on repetitive loss properties and NFIP claims and policies for Wilkinson County.

**TABLE I.9: REPETITIVE LOSS PROPERTIES IN WILKINSON COUNTY**

| Location            | Number of Properties | Types of Properties  | Number of Losses | Building Payments | Content Payments | Total Payments | Average Payment |
|---------------------|----------------------|--|------------------|-------------------|------------------|----------------|-----------------|
| Centreville         | 3                    | 2 single family; 1 other non-residential                   | 7                | \$94,060.25       | \$51,986.28      | \$146,046.50   | \$20,863.79     |
| Crosby              |                      |  |                  |                   |                  |                |                 |
| Woodville           | 0                    | --   | 0                | \$0.00            | \$0.00           | \$0.00         | \$0.00          |
| Unincorporated Area | 25                   | 16 single family; 1 assumed condo; 8 other non-residential | 58               | \$986,241.68      | \$137,957.80     | \$1,124,199.48 | \$19,382.75     |

| Location               | Number of Properties | Types of Properties | Number of Losses | Building Payments | Content Payments | Total Payments | Average Payment |
|------------------------|----------------------|---------------------|------------------|-------------------|------------------|----------------|-----------------|
| WILKINSON COUNTY TOTAL | 19                   |                     | 61               | \$1,327,366.62    | \$1,486,070.38   | \$2,813,436.97 | \$100,880.97    |

Source: National Flood Insurance Program

**PROBABILITY OF FUTURE OCCURRENCES**

Flood events will remain a threat in Wilkinson County, and the probability of future occurrences will remain highly likely (100 percent annual probability). The probability of future flood events based on magnitude and according to best available data is illustrated in the figure above, which indicates those areas susceptible to the 1-percent annual chance flood (100-year floodplain).

It can be inferred from the floodplain location maps, previous occurrences, and repetitive loss properties that risk varies throughout the county. For example, areas along the western border of the county have more floodplain and thus a higher risk of flood than the rest of the county. Flood is not the greatest hazard of concern but will continue to occur and cause damage. Therefore, mitigation actions may be warranted, particularly for repetitive loss properties.

**FIRE-RELATED HAZARDS**

**I.2.4 Drought**

**LOCATION AND SPATIAL EXTENT**

Drought typically covers a large area and cannot be confined to any geographic or political boundaries. Furthermore, it is assumed that Wilkinson County would be uniformly exposed to drought, making the spatial extent potentially widespread. It is also notable that drought conditions typically do not cause significant damage to the built environment but may exacerbate wildfire conditions.

**HISTORICAL OCCURRENCES**

According to the U.S. Drought Monitor, Wilkinson County had drought levels of Severe or worse in 7 of the last 17 years (January 2000-December 2016). **Table I.10** shows the most severe drought classification for each year, according to U.S. Drought Monitor classifications. It should be noted that the U.S. Drought Monitor also estimates what percentage of the county is in each classification of drought severity. For example, the most severe classification reported may be exceptional but a majority of the county may actually be in a less severe condition.

**TABLE I.10: HISTORICAL DROUGHT OCCURRENCES IN WILKINSON COUNTY**

Abnormally Dry (D0) Moderate Drought (D1) Severe Drought (D2) Extreme Drought (D3) Exceptional Drought (D4)



| Year | Wilkinson County |
|------|------------------|
| 2000 | EXCEPTIONAL      |
| 2001 | MODERATE         |
| 2002 | SEVERE           |

| Year | Wilkinson County |
|------|------------------|
| 2003 | MODERATE         |
| 2004 | ABNORMAL         |
| 2005 | MODERATE         |
| 2006 | EXTREME          |
| 2007 | MODERATE         |
| 2008 | MODERATE         |
| 2009 | MODERATE         |
| 2010 | SEVERE           |
| 2011 | EXCEPTIONAL      |
| 2012 | ABNORMAL         |
| 2013 | MODERATE         |
| 2014 | MODERATE         |
| 2015 | EXTREME          |
| 2016 | SEVERE           |

Source: United States Drought Monitor

No anecdotal information was available from the National Climatic Data Center on droughts in Wilkinson County.

**PROBABILITY OF FUTURE OCCURRENCES**

Based on historical occurrence information, it is assumed that Wilkinson County has a probability level of possible (between 1 and 10 percent annual probability) for future drought events. However, the extent (or magnitude) of drought and the amount of geographic area covered by drought, varies with each year. Historic information indicates that there is a much lower probability for extreme, long-lasting drought conditions.

**I.2.5 Lightning**

**LOCATION AND SPATIAL EXTENT**

Lightning occurs randomly, therefore it is impossible to predict where and with what frequency it will strike. It is assumed that all of Wilkinson County is uniformly exposed to lightning.

**HISTORICAL OCCURRENCES**

According to the National Climatic Data Center, there has been one recorded lightning event in Wilkinson County since 2008.<sup>6</sup> This event did not result in any property damages, as listed in summary **Table I.11**.<sup>7</sup>

<sup>6</sup> These lightning events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is certain that additional lightning events have occurred in Wilkinson County. As additional local data becomes available, this hazard profile will be amended.

<sup>7</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

However, lightning has caused one fatality and two reported injuries in Wilkinson County. Detailed information on historical lightning events can be found in **Table I.12**.

It is certain that more than one event has impacted the county. Many of the reported events are those that cause damage, and it should be expected that damages are likely much higher for this hazard than what is reported.

**TABLE I.11: SUMMARY OF LIGHTNING OCCURRENCES IN WILKINSON COUNTY**

| Location                      | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Centreville                   | 1                     | 1/2             | \$0                    | \$0                        |
| Crosby                        | 0                     | 0/0             | \$0                    | \$0                        |
| Woodville                     | 0                     | 0/0             | \$0                    | \$0                        |
| Unincorporated Area           | 0                     | 0/0             | \$0                    | \$0                        |
| <b>WILKINSON COUNTY TOTAL</b> | <b>1</b>              | <b>1/2</b>      | <b>\$0</b>             | <b>\$0</b>                 |

Source: National Climatic Data Center

**TABLE I.12: HISTORICAL LIGHTNING OCCURRENCES IN WILKINSON COUNTY**

| Location                   | Date      | Deaths/Injuries | Property Damage* | Details  |
|----------------------------|-----------|-----------------|------------------|--|
| <b>Centreville</b>         |           |                 |                  |  |
| CENTREVILLE                | 7/13/2008 | 1/2             | \$0              | One person was killed and at least two others were injured when lightning struck a tree that they were standing under. |
| <b>Crosby</b>              |           |                 |                  |  |
| None reported              | --        | --              | --               | --   |
| <b>Woodville</b>           |           |                 |                  |  |
| None reported              | --        | --              | --               | --   |
| <b>Unincorporated Area</b> |           |                 |                  |  |
| None reported              | --        | --              | --               | --   |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

**PROBABILITY OF FUTURE OCCURRENCES**

Although there was not a high number of historical lightning events reported in Wilkinson County via NCDC data, it is a regular occurrence accompanied by thunderstorms. In fact, lightning events will assuredly happen on an annual basis, though not all events will cause damage. According to Vaisala’s U.S. National Lightning Detection Network (NLDN), Wilkinson County is located in an area of the country that experienced an average of 12 to 28 lightning flashes per square mile per year between 2007 and 2016. Therefore, the probability of future events is highly likely (100 percent annual probability). It can be expected that future lightning events will continue to threaten life and cause minor property damages throughout the county.

## I.2.6 Wildfire

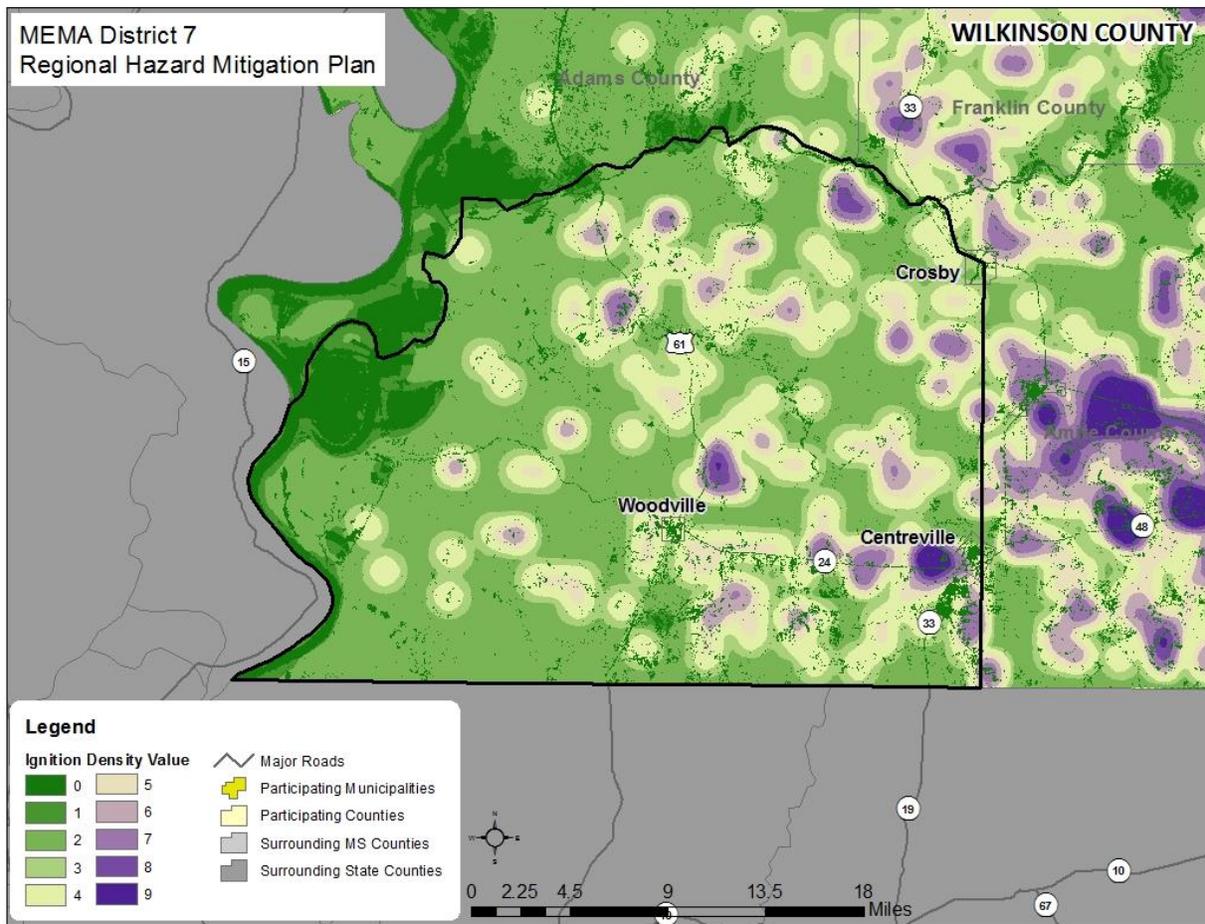
### LOCATION AND SPATIAL EXTENT

The entire county is at risk to a wildfire occurrence. However, several factors such as drought conditions or high levels of fuel on the forest floor, may make a wildfire more likely. Furthermore, areas in the urban-wildland interface are particularly susceptible to fire hazard as populations abut formerly undeveloped areas. The Wildfire Ignition Density data shown in the figure below give an indication of historic location.

### HISTORICAL OCCURRENCES

Figure I.5 shows the Wildfire Ignition Density in Wilkinson County based on data from the Southern Wildfire Risk Assessment. This data is based on historical fire ignitions and the likelihood of a wildfire igniting in an area. Occurrence is derived by modeling historic wildfire ignition locations to create an average ignition rate map. This is measured in the number of fires per year per 1,000 acres.<sup>8</sup>

**FIGURE I.5: WILDFIRE IGNITION DENSITY IN WILKINSON COUNTY**



Source: Southern Wildfire Risk Assessment

<sup>8</sup> Southern Wildfire Risk Assessment, 2014.

Based on data from the Mississippi Forestry Commission from 2007 to 2016, Wilkinson County experienced an average of 13.1 wildfires annually which burned a combined 136.7 acres per year. The data indicate that most of these fires were small to moderate in size, averaging about 10.4 acres per fire. **Table I.13** provides a summary of wildfire occurrences in Wilkinson County and **Table I.14** lists the number of reported wildfire occurrences in the county between the years 2007 and 2016.

**TABLE I.13: SUMMARY TABLE OF ANNUAL WILDFIRE OCCURRENCES (2007-2016)\***

|   | Wilkinson County |
|---|------------------|
| Average Number of Fires per year        | 13.1             |
| Average Number of Acres Burned per year | 136.7            |
| Average Number of Acres Burned per fire | 10.4             |

\*These values reflect averages over a 10-year period.

Source: Mississippi Forestry Commission

**TABLE I.14: HISTORICAL WILDFIRE OCCURRENCES IN WILKINSON COUNTY**

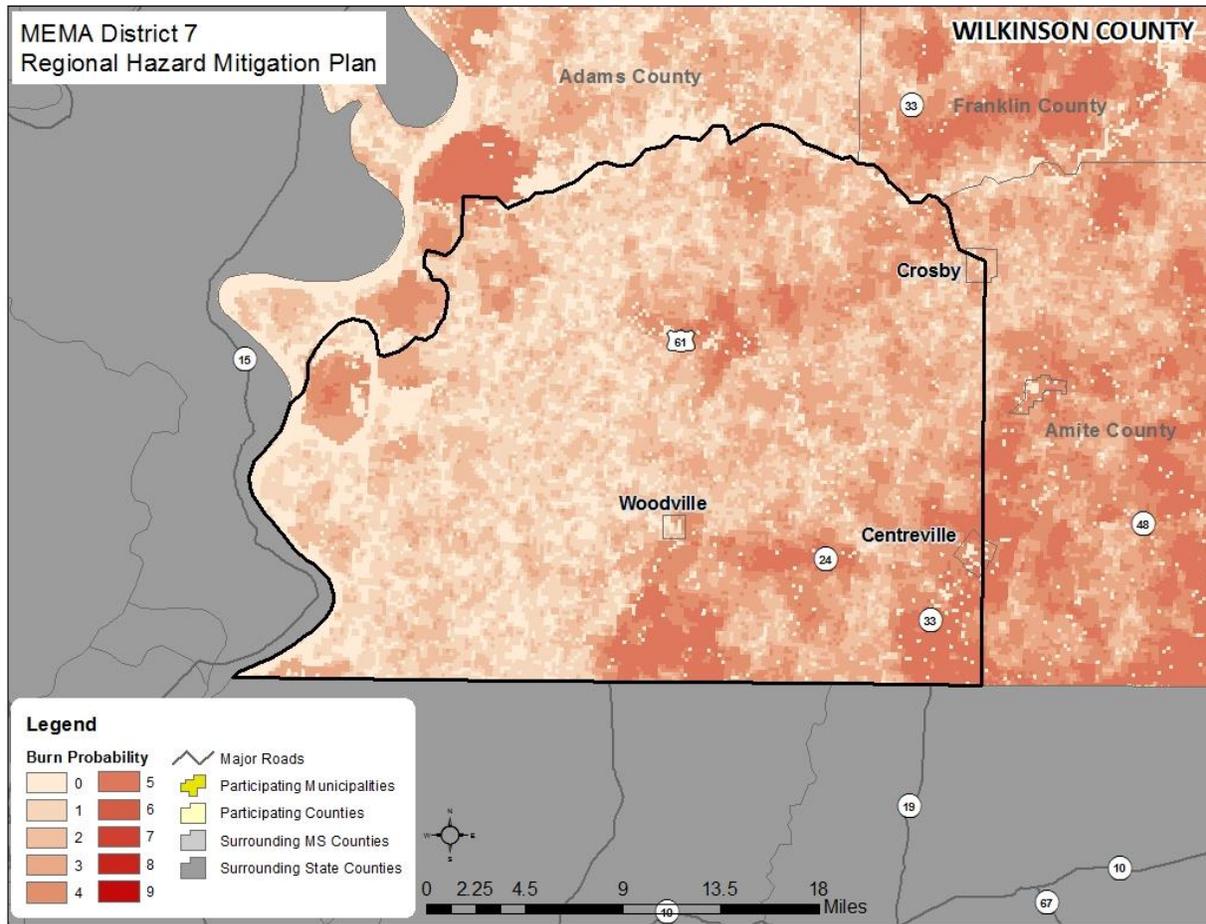
| Year                    | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|-------------------------|------|------|------|------|------|------|------|------|------|------|
| <b>Wilkinson County</b> |      |      |      |      |      |      |      |      |      |      |
| Number of Fires         | 15   | 21   | 15   | 19   | 27   | 8    | 9    | 12   | 3    | 2    |
| Number of Acres Burned  | 47   | 336  | 169  | 233  | 276  | 41   | 46   | 147  | 36   | 36   |

Source: Mississippi Forestry Commission

**PROBABILITY OF FUTURE OCCURRENCES**

Wildfire events will be an ongoing occurrence in Wilkinson County. **Figure I.6** shows that there is some probability a wildfire will occur throughout the county. However, the likelihood of wildfires increases during drought cycles and abnormally dry conditions. Fires are likely to stay small in size but could increase due to local climate and ground conditions. Dry, windy conditions with an accumulation of forest floor fuel (potentially due to ice storms or lack of fire) could create conditions for a large fire that spreads quickly. It should also be noted that some areas do vary somewhat in risk. For example, highly developed areas are less susceptible unless they are located near the urban-wildland boundary. The risk will also vary due to assets. Areas in the urban-wildland interface will have much more property at risk, resulting in increased vulnerability and need to mitigate compared to rural, mainly forested areas. The probability assigned to Wilkinson County for future wildfire events is possible (between 1 and 10 percent annual probability).

**FIGURE I.6: BURN PROBABILITY IN WILKINSON COUNTY**



Source: Southern Wildfire Risk Assessment

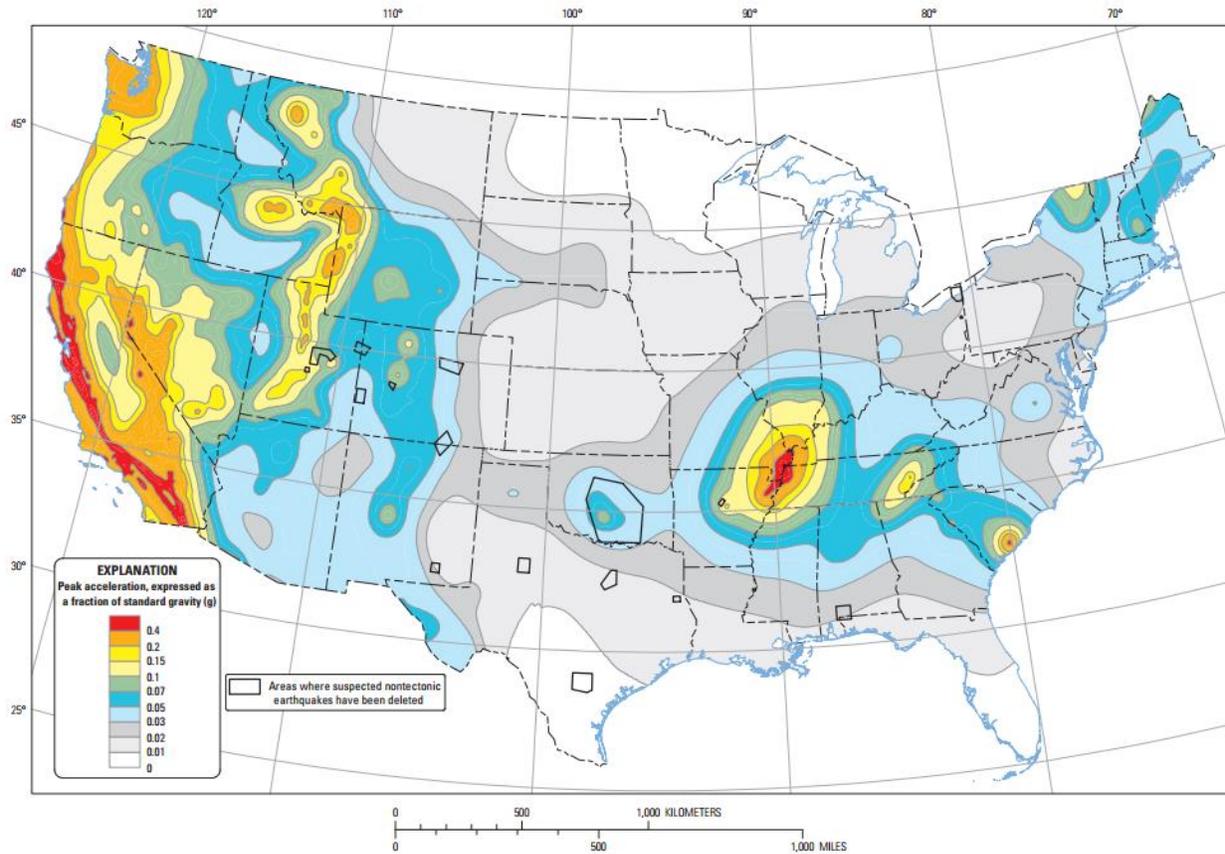
## ***GEOLOGIC HAZARDS***

### **I.2.7 Earthquake**

#### ***LOCATION AND SPATIAL EXTENT***

Figure I.7 shows the intensity level associated with Wilkinson County, based on the national USGS map of peak acceleration with 10 percent probability of exceedance in 50 years. It is the probability that ground motion will reach a certain level during an earthquake. The data show peak horizontal ground acceleration (the fastest measured change in speed, for a particle at ground level that is moving horizontally due to an earthquake) with a 10 percent probability of exceedance in 50 years. The map was compiled by the U.S. Geological Survey (USGS) Geologic Hazards Team, which conducts global investigations of earthquake, geomagnetic, and landslide hazards. According to this map, Wilkinson County lies within an approximate zone of level “0.01” to “0.03” ground acceleration. This indicates that the county exists within an area of low seismic risk.

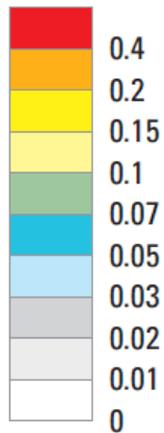
**FIGURE I.7: PEAK ACCELERATION WITH 10 PERCENT PROBABILITY OF EXCEEDANCE IN 50 YEARS**



**Ten-percent probability of exceedance in 50 years map of peak ground acceleration**

**EXPLANATION**

Peak acceleration, expressed as a fraction of standard gravity (g)



Areas where suspected nontectonic earthquakes have been deleted

Source: United States Geological Survey, 2014

The primary source of potential damage to Wilkinson County from an earthquake is the New Madrid Seismic Zone (NMSZ). Historically, a series of earthquakes in 1811 and 1812 demonstrated that this fault zone can produce high magnitude seismic events, sometimes on the scale of a 7.5-8.0 on the Richter scale. The biggest challenge with earthquakes that occur in this area of seismic activity is predicting the recurrence of earthquakes emanating from this zone. Although the magnitude of earthquakes from the NMSZ can be large, they occur very irregularly and fairly infrequently. This makes it extremely difficult to project when they will occur.

It should also be noted that the State of Mississippi Hazard Mitigation Plan identifies certain areas of concern for liquefaction and lists the counties and corresponding zones within those counties that have the highest liquefaction potential. Wilkinson County does not have any identified liquefaction potential risk.

**HISTORICAL OCCURRENCES**

No earthquakes are known to have affected Wilkinson County since 1638. **Table I.15** provides a summary of earthquake events reported by the National Centers for Environmental Information (formerly National Geophysical Data Center) between 1638 and 1985, and **Figure I.8** presents a map showing earthquakes whose epicenters have occurred near the county between 1985 and 2015 (no earthquakes occurred within the county’s boundaries during this period). **Table I.16** presents a detailed occurrence of each event including the date, distance for the epicenter, magnitude and Modified Mercalli Intensity (if known).<sup>9</sup>

**TABLE I.15: SUMMARY OF SEISMIC ACTIVITY IN WILKINSON COUNTY**

| Location                      | Number of Occurrences | Greatest MMI Reported | Greatest Richter Scale Reported |
|-------------------------------|-----------------------|-----------------------|---------------------------------|
| Centreville                   | 0                     | --                    | --                              |
| Crosby                        | 0                     | --                    | --                              |
| Woodville                     | 0                     | --                    | --                              |
| Unincorporated Area           | 0                     | --                    | --                              |
| <b>WILKINSON COUNTY TOTAL</b> | <b>0</b>              | <b>--</b>             | <b>--</b>                       |

Source: National Centers for Environmental Information

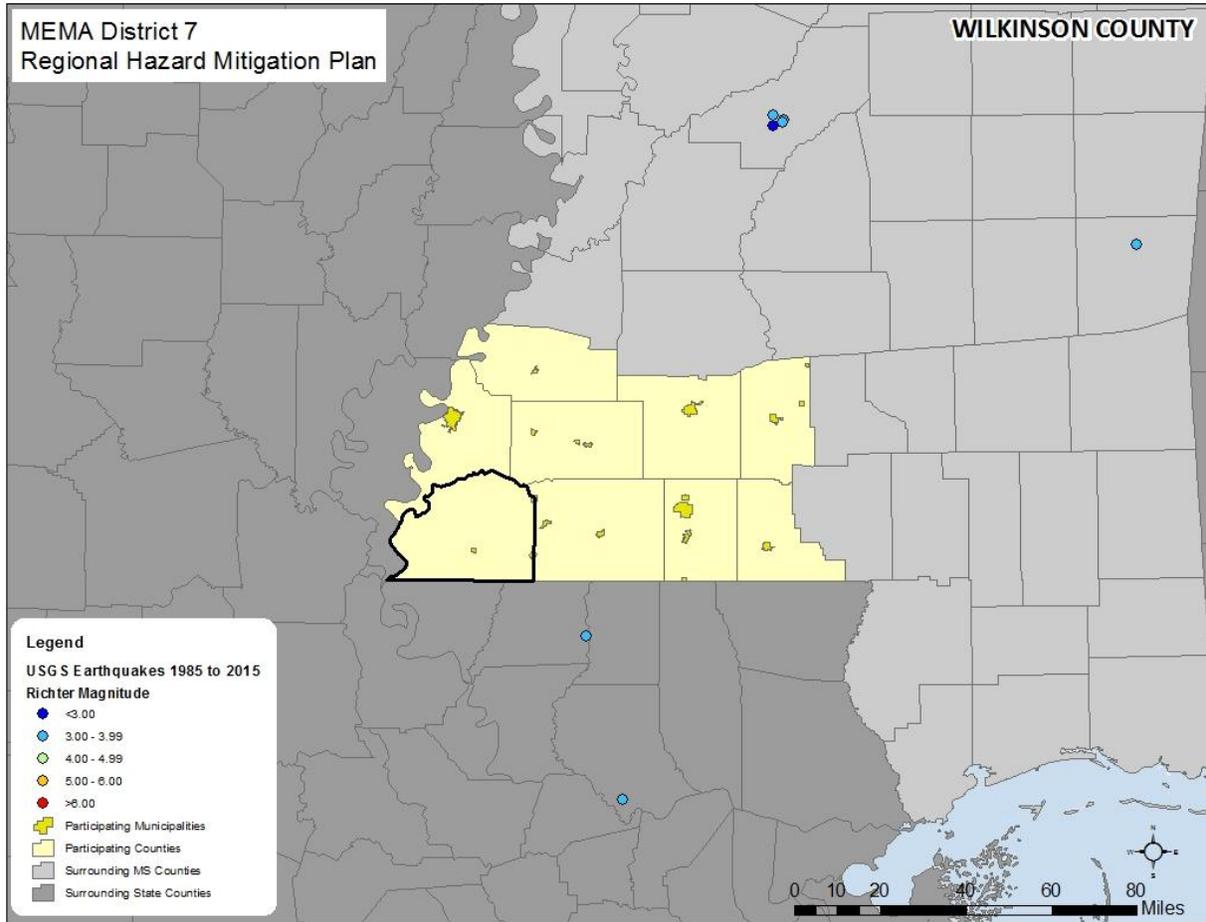
**TABLE I.16: SIGNIFICANT SEISMIC EVENTS IN WILKINSON COUNTY (1638 -1985)**

| Location                   | Date | Epicentral Distance | Magnitude | MMI |
|----------------------------|------|---------------------|-----------|-----|
| <b>Centreville</b>         |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |
| <b>Crosby</b>              |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |
| <b>Woodville</b>           |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |
| <b>Unincorporated Area</b> |      |                     |           |     |
| None reported              | --   | --                  | --        | --  |

Source: National Centers for Environmental Information

<sup>9</sup> Due to reporting mechanisms, not all earthquakes events were recorded during this time. Furthermore, some are missing data, such as the epicenter location, due to a lack of widely used technology. In these instances, a value of “unknown” is reported.

**FIGURE I.8: HISTORIC EARTHQUAKES WITH EPICENTERS NEAR WILKINSON COUNTY (1985-2015)**



Source: United States Geological Survey

**PROBABILITY OF FUTURE OCCURRENCES**

The probability of significant, damaging earthquake events affecting Wilkinson County is unlikely. However, it is certainly possible that future earthquakes resulting in light or moderate perceived shaking and damages will affect the county much more frequently. The annual probability level for the county is estimated to be less than 1 percent (unlikely).

**WIND-RELATED HAZARDS**

**I.2.8 Extreme Heat**

**LOCATION AND SPATIAL EXTENT**

Heat waves typically impact a large area and cannot be confined to any geographic or political boundaries. Therefore, the entire county is considered to be equally susceptible to extreme heat.

### **HISTORICAL OCCURRENCES**

The National Climatic Data Center was used to determine historical heat wave occurrences in the county. No events specific to Wilkinson County were reported, however, several events were reported elsewhere in the region. Similar events and impacts can be expected in Wilkinson County.

**Summer of 2000 Heat Wave** – Hot temperatures persisted from July to September across the South and Plains. Known as the Summer of 2000 Heat Wave, high temperatures commonly peaked over 100 degrees.

**August 2005** – A "HOT" stretch of weather occurred during the middle to later part of August 2005. This "Heat Wave" covered a large portion of the south and lasted for a period of about 10 days. Each of these days had high temperatures consistently between 95 and 100 degrees, with 1 or 2 of these days actually reaching 100 degrees or more. Additionally, overnight lows remained warm with lower and middle 70s recorded. This is the first time since August 2000 where 100 degree temperatures were reached in this area as well as having such an extended period of "HOT" weather.

**July 2006** – A small "heat wave" gripped the region during the middle of July with high temperature ranging from the upper 90s to around 100 degrees for five days with overnight lows only reaching the middle 70s. The hottest temperatures during this period occurred from the Mississippi Delta, across northern Mississippi and then down to the Jackson Metro and toward Meridian. This area peaked between 100 and 102 degrees for at least two days during the hot five day stretch.

**August 2007** – During the first half of August, a heat wave took hold of the region and brought some of the warmest temperatures since the summer of 2000. This heat wave began around August 5th and lasted until the 16th. Between August 10th and 15th, the entire area reached 100 degrees or higher. Twenty-three record highs were also set during this time. As the temperature soared each day, high relative humidities resulted in heat index values between 105 and 112 degrees.

**August 2010** – A four day stretch of extreme temperatures occurred across the region to start off the month of August. High pressure was firmly entrenched across the southeast and allowed temperatures to soar into the triple digits across much of the region. Across the NWS Jackson, MS forecast area, 19 record highs were set between August 1st and 4th. On August 2nd, the 2nd warmest average temperature was recorded. The low was 78 and the high 105, this resulted in an average temperature of 91.5 degrees. Additionally, relatively high humidity levels made conditions even more oppressive, with heat index readings surpassing 110 degrees in many areas. This extreme heat resulted in 3 fatalities across the forecast area.

### **PROBABILITY OF FUTURE OCCURRENCES**

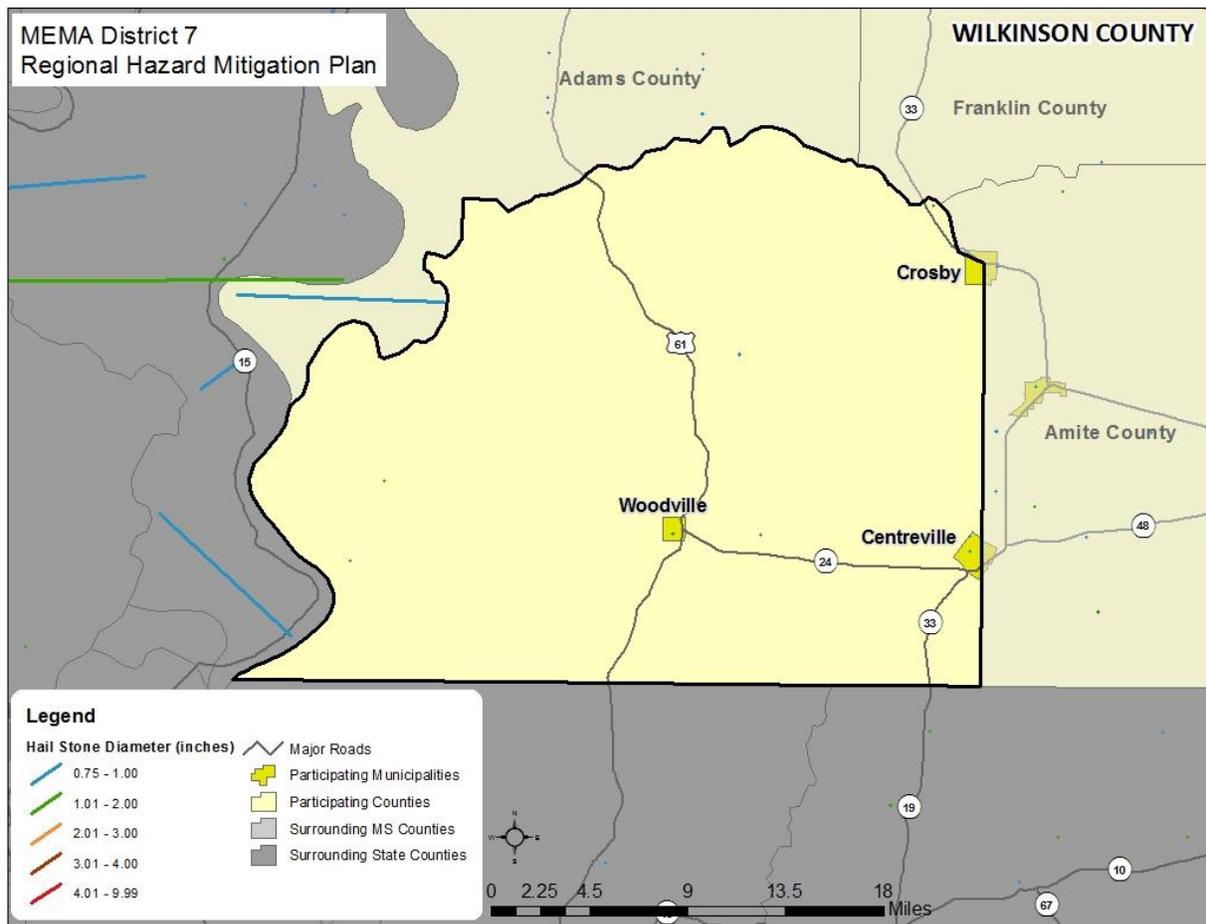
Based on historical occurrence information, it is assumed that all of Wilkinson County has a probability level of likely (between 10 and 100 percent annual probability) for future heat wave events.

## I.2.9 Hailstorm

### LOCATION AND SPATIAL EXTENT

Hailstorms frequently accompany thunderstorms, so their locations and spatial extents coincide. It is assumed that Wilkinson County is uniformly exposed to severe thunderstorms; therefore, all areas of the county are equally exposed to hail which may be produced by such storms. With that in mind, **Figure I.9** shows the location of hail events that have impacted the county between 1955 and 2015.

**FIGURE I.9: HAILSTORM TRACKS IN WILKINSON COUNTY**



Source: National Weather Service Storm Prediction Center

### HISTORICAL OCCURRENCES

According to the National Climatic Data Center, 15 recorded hailstorm events have affected Wilkinson County since 1980.<sup>10</sup> **Table I.17** is a summary of the hail events in Wilkinson County. **Table I.18** provides detailed information about each event that occurred in the county. In all, hail occurrences resulted in

<sup>10</sup> These hail events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017. It is likely that additional hail events have affected Wilkinson County. As additional local data becomes available, this hazard profile will be amended.

approximately \$851,000 (2017 dollars) in property damages.<sup>11</sup> Hail ranged in diameter from 0.75 inches to 1.75 inches. It should be noted that hail is notorious for causing substantial damage to cars, roofs, and other areas of the built environment that may not be reported to the National Climatic Data Center. Therefore, it is likely that damages are greater than the reported value.

**TABLE I.17: SUMMARY OF HAIL OCCURRENCES IN WILKINSON COUNTY**

| Location                      | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Centreville                   | 4                     | 0/0             | \$0                    | \$0                        |
| Crosby                        | 1                     | 0/0             | \$0                    | \$0                        |
| Woodville                     | 3                     | 0/0             | \$851,407              | \$35,475                   |
| Unincorporated Area           | 7                     | 0/0             | \$0                    | \$0                        |
| <b>WILKINSON COUNTY TOTAL</b> | <b>15</b>             | <b>0/0</b>      | <b>\$851,407</b>       | <b>\$35,475</b>            |

Source: National Climatic Data Center

**TABLE I.18: HISTORICAL HAIL OCCURRENCES IN WILKINSON COUNTY**

| Location                   | Date       | Magnitude | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-----------|-----------------|------------------|
| <b>Centreville</b>         |            |           |                 |                  |
| CENTREVILLE                | 3/26/2005  | 1.75 in.  | 0/0             | \$0              |
| CENTREVILLE                | 2/21/2010  | 0.88 in.  | 0/0             | \$0              |
| CENTREVILLE                | 12/23/2014 | 1.00 in.  | 0/0             | \$0              |
| CENTREVILLE                | 2/15/2016  | 1.00 in.  | 0/0             | \$0              |
| <b>Crosby</b>              |            |           |                 |                  |
| Cosby                      | 3/25/1993  | 0.75 in.  | 0/0             | \$0              |
| <b>Woodville</b>           |            |           |                 |                  |
| Woodville                  | 3/25/1993  | 1.75 in.  | 0/0             | \$851,407        |
| WOODVILLE                  | 12/23/2014 | 1.00 in.  | 0/0             | \$0              |
| WOODVILLE                  | 4/1/2016   | 1.00 in.  | 0/0             | \$0              |
| <b>Unincorporated Area</b> |            |           |                 |                  |
| WILKINSON CO.              | 4/18/1980  | 1.00 in.  | 0/0             | \$0              |
| ROSETTA                    | 2/27/1999  | 1.75 in.  | 0/0             | \$0              |
| WILKINSON                  | 3/12/2003  | 1.00 in.  | 0/0             | \$0              |
| FT ADAMS                   | 4/6/2005   | 1.00 in.  | 0/0             | \$0              |
| FT ADAMS                   | 5/21/2012  | 1.25 in.  | 0/0             | \$0              |
| POND                       | 3/30/2016  | 1.50 in.  | 0/0             | \$0              |
| LANEHEART                  | 3/30/2016  | 1.75 in.  | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

<sup>11</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

## ***PROBABILITY OF FUTURE OCCURRENCES***

Based on historical occurrence information, it is assumed that the probability of future hail occurrences is highly likely (100 percent annual probability). Since hail is an atmospheric hazard, it is assumed that Wilkinson County has equal exposure to this hazard. It can be expected that future hail events will continue to cause minor damage to property and vehicles throughout the county.

## **I.2.10 Hurricane and Tropical Storm**

### ***LOCATION AND SPATIAL EXTENT***

Hurricanes and tropical storms threaten the entire Atlantic and Gulf seaboard of the United States. While coastal areas are most directly exposed to the brunt of landfalling storms, their impact is often felt hundreds of miles inland and they can affect Wilkinson County. All areas in Wilkinson County are equally susceptible to hurricane and tropical storms.

### ***HISTORICAL OCCURRENCES***

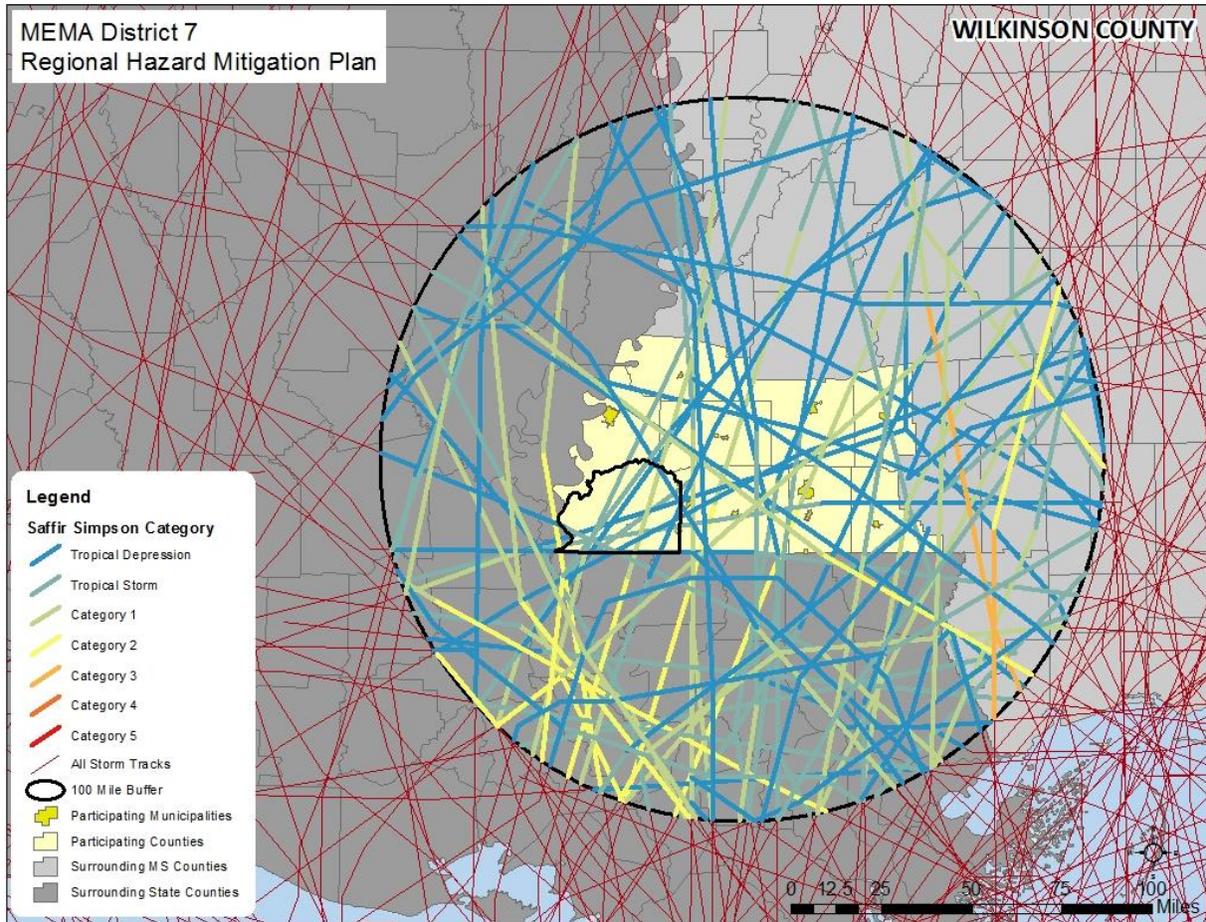
According to the National Hurricane Center's historical storm track records, 86 hurricane or tropical storm/depression tracks have passed within 100 miles of the MEMA District 7 Region since 1854.<sup>12</sup> This includes: 35 hurricanes, 21 tropical storms, and 30 tropical depressions.

A total of 61 tracks passed directly through the region as shown in **Figure I.10. Table I.19** provides the date of occurrence, name (if applicable), maximum wind speed (as recorded within 100 miles of the MEMA District 7 Region) and category of the storm based on the Saffir-Simpson Scale for each event.

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<sup>12</sup>These storm track statistics include tropical depressions, tropical storms, and hurricanes. Lesser events may still cause significant local impact in terms of rainfall and high winds.

**FIGURE I.10: HISTORICAL HURRICANE STORM TRACKS WITHIN 100 MILES OF THE MEMA DISTRICT 7 REGION**



Source: National Oceanic and Atmospheric Administration; National Hurricane Center

**TABLE I.19: HISTORICAL STORM TRACKS WITHIN 100 MILES OF THE MEMA 7 DISTRICT REGION (1850–2016)**

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/21/1854          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/5/1855           | NOT NAMED  | Not Available              | Tropical Depression |
| 8/11/1856          | UNNAMED    | 85.03                      | Category 2          |
| 10/2/1860          | UNNAMED    | 89.03                      | Category 2          |
| 8/18/1861          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/16/1862          | NOT NAMED  | Not Available              | Tropical Depression |
| 9/30/1863          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/5/1869           | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/12/1872          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/18/1875          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/1/1879           | UNNAMED    | 89.03                      | Category 2          |
| 10/7/1879          | UNNAMED    | 58.6                       | Tropical Storm      |

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 10/7/1879          | NOT NAMED  | Not Available              | Tropical Depression |
| 8/3/1881           | NOT NAMED  | Not Available              | Tropical Depression |
| 6/15/1886          | UNNAMED    | 69.67                      | Category 1          |
| 8/20/1888          | UNNAMED    | 81.90                      | Category 1          |
| 8/27/1890          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/7/1893           | UNNAMED    | 78.78                      | Category 1          |
| 8/8/1894           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/20/1898          | UNNAMED    | 42.69                      | Tropical Storm      |
| 9/29/1905          | UNNAMED    | 42.69                      | Tropical Storm      |
| 10/9/1905          | UNNAMED    | 42.69                      | Tropical Storm      |
| 8/2/1908           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/21/1909          | UNNAMED    | 92.89                      | Category 2          |
| 8/12/1911          | UNNAMED    | 50.35                      | Tropical Storm      |
| 6/13/1912          | UNNAMED    | 64.34                      | Category 1          |
| 7/17/1912          | UNNAMED    | 0.87                       | Tropical Depression |
| 9/18/1914          | UNNAMED    | 32.60                      | Tropical Depression |
| 9/29/1915          | UNNAMED    | 95.53                      | Category 2          |
| 7/6/1916           | UNNAMED    | 85.03                      | Category 2          |
| 9/22/1920          | UNNAMED    | 87.29                      | Category 2          |
| 10/16/1923         | UNNAMED    | 78.78                      | Category 1          |
| 8/26/1926          | UNNAMED    | 78.78                      | Category 1          |
| 9/21/1926          | UNNAMED    | 58.60                      | Tropical Storm      |
| 7/15/1931          | UNNAMED    | 50.35                      | Tropical Storm      |
| 9/19/1932          | UNNAMED    | 64.34                      | Category 1          |
| 10/16/1932         | UNNAMED    | 58.6                       | Tropical Storm      |
| 7/26/1933          | UNNAMED    | 17.56                      | Tropical Depression |
| 6/16/1934          | UNNAMED    | 87.29                      | Category 2          |
| 7/27/1936          | UNNAMED    | 42.69                      | Tropical Storm      |
| 8/23/1936          | UNNAMED    | 4.99                       | Tropical Depression |
| 10/3/1937          | UNNAMED    | 32.6                       | Tropical Depression |
| 9/24/1940          | UNNAMED    | 32.6                       | Tropical Depression |
| 9/6/1945           | UNNAMED    | 17.56                      | Tropical Depression |
| 9/8/1947           | UNNAMED    | 32.6                       | Tropical Depression |
| 9/19/1947          | UNNAMED    | 91.63                      | Category 2          |
| 9/4/1948           | UNNAMED    | 69.67                      | Category 1          |
| 9/4/1949           | UNNAMED    | 58.6                       | Tropical Storm      |
| 8/1/1955           | BRENDA     | 64.34                      | Category 1          |
| 8/27/1955          | UNNAMED    | 50.35                      | Tropical Storm      |
| 6/13/1956          | UNNAMED    | 58.60                      | Tropical Storm      |
| 9/18/1957          | ESTHER     | 64.34                      | Category 1          |
| 5/31/1959          | ARLENE     | 64.34                      | Category 1          |
| 10/4/1964          | HILDA      | 91.63                      | Category 2          |
| 9/10/1965          | BETSY      | 89.03                      | Category 2          |
| 8/18/1969          | CAMILLE    | 99.88                      | Category 3          |
| 8/9/1971           | UNNAMED    | 4.99                       | Tropical Depression |
| 9/1/1971           | UNNAMED    | 4.99                       | Tropical Depression |

| Date of Occurrence | Storm Name | Maximum Wind Speed (knots) | Storm Category      |
|--------------------|------------|----------------------------|---------------------|
| 9/5/1971           | FERN       | 4.99                       | Tropical Depression |
| 9/16/1971          | EDITH      | 87.29                      | Category 2          |
| 7/29/1975          | UNNAMED    | 4.99                       | Tropical Depression |
| 9/5/1977           | BABE       | 58.60                      | Tropical Storm      |
| 7/11/1979          | BOB        | 73.83                      | Category 1          |
| 7/20/1980          | UNNAMED    | 0.87                       | Tropical Depression |
| 8/15/1985          | DANNY      | 78.78                      | Category 1          |
| 9/2/1985           | ELENA      | 92.89                      | Category 2          |
| 10/29/1985         | JUAN       | 73.83                      | Category 1          |
| 8/11/1987          | UNNAMED    | 4.99                       | Tropical Depression |
| 8/9/1988           | BERYL      | 50.35                      | Tropical Storm      |
| 9/10/1988          | FLORENCE   | 69.67                      | Category 1          |
| 8/26/1992          | ANDREW     | 85.03                      | Category 2          |
| 9/20/1998          | HERMINE    | 32.60                      | Tropical Depression |
| 6/11/2001          | ALLISON    | 42.69                      | Tropical Storm      |
| 8/5/2002           | BERTHA     | 32.60                      | Tropical Depression |
| 9/26/2002          | ISIDORE    | 64.34                      | Category 1          |
| 10/3/2002          | LILI       | 69.67                      | Category 1          |
| 6/30/2003          | BILL       | 58.60                      | Tropical Storm      |
| 10/10/2004         | MATTHEW    | 17.56                      | Tropical Depression |
| 8/29/2005          | KATRINA    | 94.63                      | Category 3          |
| 9/13/2007          | HUMBERTO   | 32.60                      | Tropical Depression |
| 8/24/2008          | FAY        | 17.56                      | Tropical Depression |
| 9/1/2008           | GUSTAV     | 87.29                      | Category 2          |
| 7/25/2010          | BONNIE     | 0.87                       | Tropical Depression |
| 8/17/2010          | FIVE       | 4.99                       | Tropical Depression |
| 9/4/2011           | LEE        | 32.60                      | Tropical Depression |
| 8/29/2012          | ISAAC      | 69.67                      | Category 1          |

Source: National Hurricane Center

Federal records indicate that six disaster declarations were made in 1965 (Hurricane Betsy), 1969 (Hurricane Camille), 2004 (Hurricane Ivan), 2005 (Hurricane Katrina), 2008 (Hurricane Gustav), and 2012 (Hurricane Isaac) in Wilkinson County.<sup>13</sup> Hurricane and tropical storm events can cause substantial damage in the area due to high winds and flooding.

The National Climatic Data Center also reported six hurricane or tropical storm events in Wilkinson County since 2002.<sup>14</sup> These storms are listed in **Table I.20** and are generally representative of storms with the greatest impact on the county over that time period.

<sup>13</sup> A complete listing of historical disaster declarations can be found in Section 4: Hazard Identification.

<sup>14</sup> These hurricane events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional occurrences have occurred and have gone unreported.

**TABLE I.20: HISTORICAL HURRICANE/TROPICAL STORM OCCURRENCES IN WILKINSON COUNTY**

| Date of Occurrence | Storm Name          | Deaths/Injuries | Property Damage (2017) <sup>15</sup> |
|--------------------|---------------------|-----------------|--------------------------------------|
| 10/2/2002          | Hurricane Lili      | 0/0             | \$2,252,372                          |
| 8/28/2005          | Hurricane Katrina   | 0/0             | \$4,233,104                          |
| 8/24/2008          | Tropical Storm Faye | 0/0             | \$0                                  |
| 9/1/2008           | Hurricane Gustav    | 0/0             | \$11,947,736                         |
| 9/2/2011           | Tropical Storm Lee  | 0/0             | \$5,389                              |
| 8/28/2012          | Hurricane Isaac     | 0/0             | \$53,070                             |

Source: National Climatic Data Center

Flooding and high winds from hurricanes and tropical storms can cause damage throughout the county. Anecdotes are available from NCDC for the major storms that have impacted the county as found below:

#### **Hurricane Katrina – August 29, 2005**

The damage from Hurricane Katrina was devastating and widespread. Damage occurred across all of the Jackson forecast area which includes 9 parishes in Northeast Louisiana, 2 counties in Southeast Arkansas and about 2/3 of Central and Southern Mississippi. As widespread as the damage was, the more concentrated and most significant damage occurred across Southeast and East-Central Mississippi. For other areas, especially those west of Natchez to Yazoo City to Grenada line, damage to trees and power lines was significant and scattered across the landscape. As you move toward Central Mississippi and along Interstate 55 the damage and impacts increase. This portion of the state sustained widespread damage to trees and power lines.

#### **Hurricane Gustav – September 1, 2008**

As the center of Gustav crossed much of southern Louisiana, tropical storm force winds extended into southern Mississippi and portions of east central Louisiana. Sustained winds were between 35 and 45 mph with higher gusts between 70 and 100 mph occurred. Tree and power line damage was extensive across these areas which resulted in widespread power outages, some of which lasted for 3 to 5 days. As Gustav slowed across central Louisiana, the outer rainbands continued to rotate across much of southern and central Mississippi. This kept those portions of Mississippi in the region which was favorable for tornadoes. Over 3 days, 26 tornadoes were confirmed, all of which were in the EF0 to EF1 range.

#### **Hurricane Isaac – August 29, 2012**

Isaac moved very slowly to the north and northwest over the course of August 29th, which made for prolonged impacts. Forward motion of about 5 mph lead to tremendous flooding issues for both Louisiana and portions of Mississippi south of I-20. Around noon on August 29th, Isaac was downgraded to a Tropical Storm, but this was not much relief to the many residents who were being inundated with rain and wind. The worst of the wind was felt generally along and south of an axis from Marion County to Adams County. Numerous trees were down in Adams County, leaving many without power for several days. Eighty percent of the roads were blocked in Franklin County due to downed trees.

<sup>15</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

### **PROBABILITY OF FUTURE OCCURRENCES**

Given the inland location of the county, Wilkinson County will not be susceptible to many of the sub-hazards that are often associated with hurricanes and tropical storms such as storm surge. Although the probability of experiencing major impacts is somewhat less than coastal areas because of this, hurricanes and tropical storms remain a real threat to Wilkinson County due to induced events like flooding and high wind. Based on historical evidence, the probability level of future occurrence is likely (between 10 and 100 percent annual probability). Given the regional nature of the hazard, all areas in the county are equally exposed to this hazard. However, when the county is impacted, the damage could be significant, threatening lives and property throughout the planning area.

### **HURRICANE EVACUATIONS**

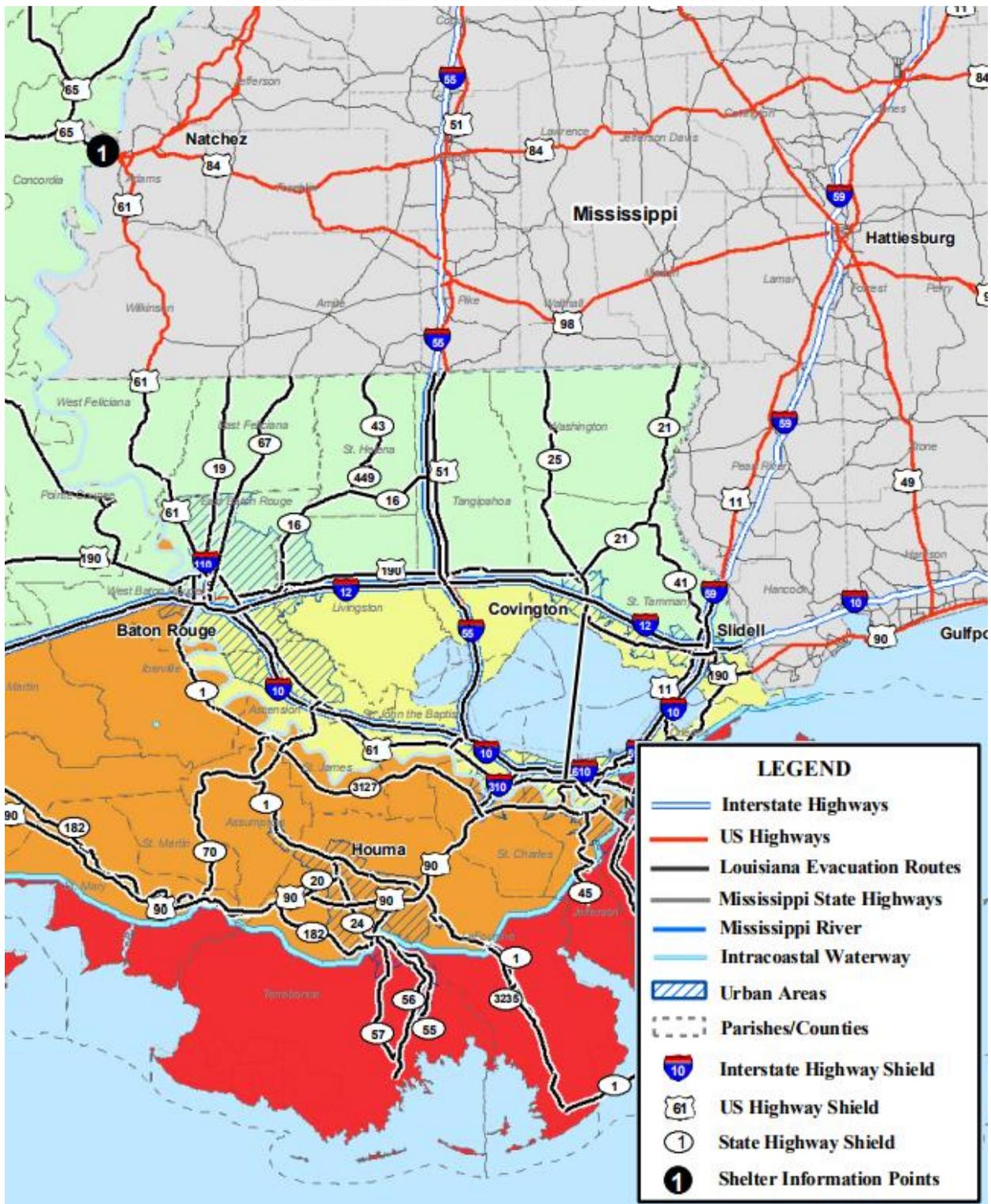
As discussed above, the MEMA District 7 Region has been directly impacted by a number of hurricane and tropical storm events historically. However, it should be noted that the region is also susceptible to indirect effects from hurricanes and tropical storms, particularly in the form of evacuations from coastal counties. The counties within MEMA District 7 are located far enough inland that they are often the primary recipients of evacuees from counties that will be (or have been) impacted by major storm events.

For example, during Hurricane Katrina in 2005, thousands of evacuees made their way to counties in southwest Mississippi to take temporary refuge from the storm. Due to the severe and devastating effects of the storm, temporary sheltering within these counties was extended much longer than originally anticipated and in some cases, the evacuees ended up staying for weeks or months. This additional population caused a major strain on resources within these relatively rural counties, as local communities with limited resources had an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people.

Caring for all of these evacuees was especially challenging for counties in the MEMA District 7 Region because most had been impacted themselves by the storm and were attempting to help their own citizens recover from the storm. Undoubtedly, recovering from a major disaster while simultaneously attempting to help evacuees from surrounding counties poses a number of difficulties for emergency management personnel and other local officials.

Based on Hurricane Katrina and other major hurricane events that have impacted the Gulf Coast in the past, it is likely that many of the MEMA District 7 counties will be receiver counties when it comes to evacuees. Many of these evacuees will likely come from locations in Louisiana, including New Orleans. Indeed, the State of Louisiana evacuation plan indicates that one of the primary evacuation routes from the City of New Orleans will direct evacuees north along Interstate 55, sending people through Pike County and Lincoln County (**Figure I.11**). Depending on the severity of the event, officials in Louisiana may even change Interstate 55 over to a contraflow traffic pattern to enable quicker evacuations.

FIGURE I.11: STATE OF LOUISIANA EVACUATION ROUTES



Source: State of Louisiana Evacuation Plan

As a result of the influx of evacuees during storm events, it is critical for local officials in MEMA District 7 to prepare for evacuations during hurricanes and other tropical storms, even if the counties themselves

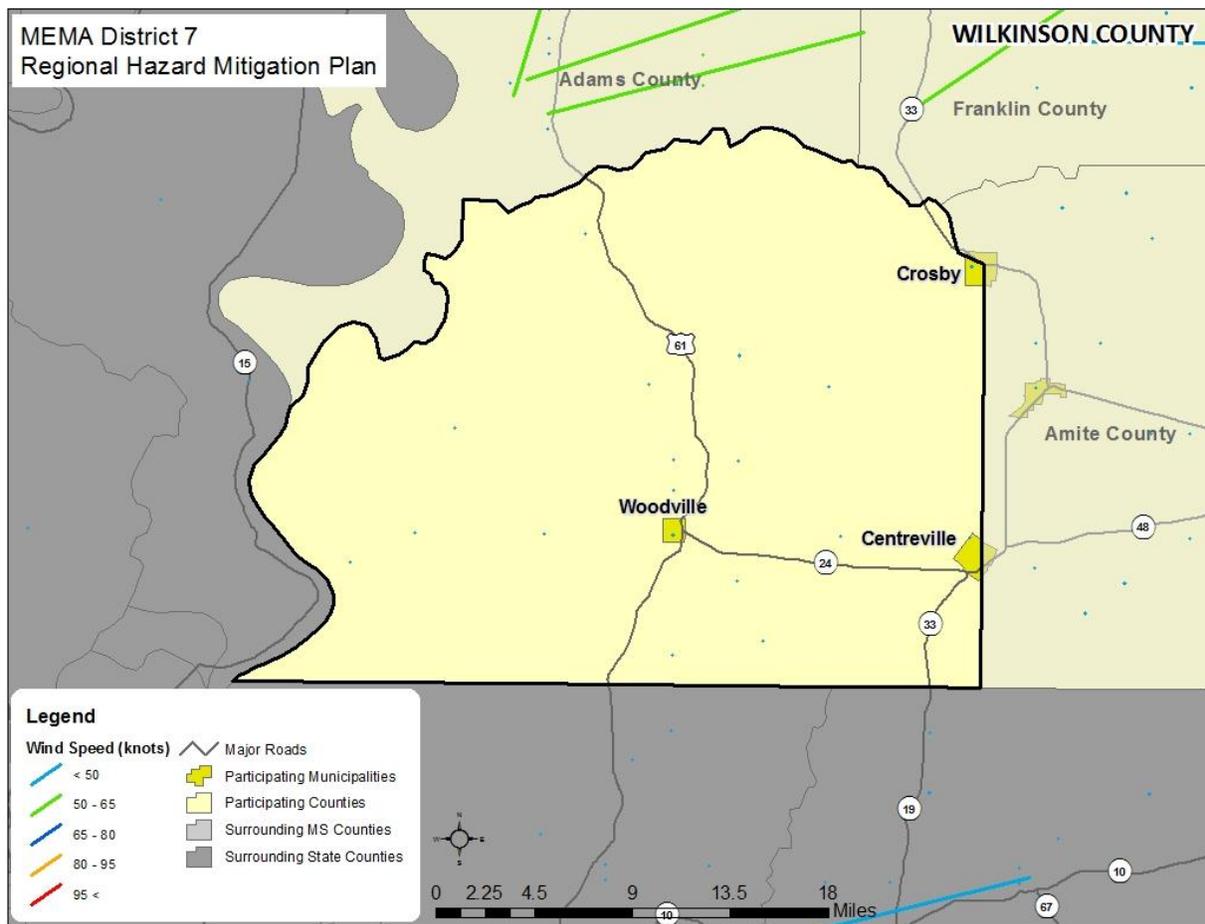
may not be directly impacted by the storm. As in past storms, it is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future storm events.

### I.2.11 Severe Thunderstorm/High Wind

#### LOCATION AND SPATIAL EXTENT

A thunderstorm event is an atmospheric hazard, and thus has no geographic boundaries. It is typically a widespread event that can occur in all regions of the United States. However, thunderstorms are most common in the central and southern states because atmospheric conditions in those regions are favorable for generating these powerful storms. It is assumed that Wilkinson County has uniform exposure to an event and the spatial extent of an impact could be large. With that in mind, **Figure I.12** shows the location of wind events that have impacted the county between 1955 and 2015.

**FIGURE I.12: SEVERE THUNDERSTORM TRACKS IN WILKINSON COUNTY**



Source: National Weather Service Storm Prediction Center

**HISTORICAL OCCURRENCES**

Severe storms were at least partially responsible for seven disaster declarations in Wilkinson County in 1979, 1983, 1990, 1992, 2001, 2008, and 2009.<sup>16</sup> According to NCDC, there have been 47 reported thunderstorm and high wind events since 1975 in Wilkinson County.<sup>17</sup> These events caused almost \$214,000 (2017 dollars) in damages.<sup>18</sup> **Table I.21** summarizes this information. **Table I.22** presents detailed thunderstorm and high wind event reports including date, magnitude, and associated damages for each event.

**TABLE I.21: SUMMARY OF THUNDERSTORM/HIGH WIND OCCURRENCES IN WILKINSON COUNTY**

| Location                      | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Centreville                   | 5                     | 0/0             | \$15,697               | \$923                      |
| Crosby                        | 4                     | 0/0             | \$15,658               | \$712                      |
| Woodville                     | 14                    | 0/0             | \$64,979               | \$2,954                    |
| Unincorporated Area           | 24                    | 0/0             | \$117,191              | \$2,790                    |
| <b>WILKINSON COUNTY TOTAL</b> | <b>47</b>             | <b>0/0</b>      | <b>\$213,525</b>       | <b>\$7,379</b>             |

Source: National Climatic Data Center

**TABLE I.22: HISTORICAL THUNDERSTORM/HIGH WIND OCCURRENCES IN WILKINSON COUNTY**

| Location           | Date      | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|--------------------|-----------|-------------------|------------|-----------------|------------------|
| <b>Centreville</b> |           |                   |            |                 |                  |
| CENTREVILLE        | 3/27/2000 | Thunderstorm Wind | --         | 0/0             | \$714            |
| CENTREVILLE        | 3/12/2001 | Thunderstorm Wind | --         | 0/0             | \$11,102         |
| CENTREVILLE        | 7/7/2002  | Thunderstorm Wind | --         | 0/0             | \$1,358          |
| CENTREVILLE        | 3/22/2005 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,265          |
| CENTREVILLE        | 5/29/2005 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,258          |
| <b>Crosby</b>      |           |                   |            |                 |                  |
| Crosby             | 4/11/1995 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| CROSBY             | 6/5/1998  | Thunderstorm Wind | --         | 0/0             | \$7,501          |
| CROSBY             | 6/22/2001 | Thunderstorm Wind | --         | 0/0             | \$6,869          |
| CROSBY             | 6/27/2004 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,289          |
| <b>Woodville</b>   |           |                   |            |                 |                  |
| Woodville          | 4/11/1995 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| Woodville          | 5/8/1995  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WOODVILLE          | 2/12/1997 | Thunderstorm Wind | --         | 0/0             | \$1,532          |

<sup>16</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>17</sup> These thunderstorm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1955 through February 2017 and these high wind events are only inclusive of those reported by NCDC from 1996 through February 2017. It is likely that additional thunderstorm and high wind events have occurred in Wilkinson County. As additional local data becomes available, this hazard profile will be amended.

<sup>18</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

**ANNEX I: WILKINSON COUNTY**

| Location                   | Date       | Type              | Magnitude† | Deaths/Injuries | Property Damage* |
|----------------------------|------------|-------------------|------------|-----------------|------------------|
| WOODVILLE                  | 2/13/1997  | Thunderstorm Wind | --         | 0/0             | \$1,532          |
| WOODVILLE                  | 2/26/1998  | Thunderstorm Wind | --         | 0/0             | \$1,208          |
| WOODVILLE                  | 3/12/2001  | Thunderstorm Wind | --         | 0/0             | \$34,694         |
| WOODVILLE                  | 12/19/2002 | Thunderstorm Wind | --         | 0/0             | \$16,221         |
| WOODVILLE                  | 11/18/2003 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,988          |
| WOODVILLE                  | 6/27/2004  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,289          |
| WOODVILLE                  | 11/24/2004 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,280          |
| WOODVILLE                  | 5/29/2005  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$629            |
| WOODVILLE                  | 6/18/2007  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,760          |
| WOODVILLE                  | 3/25/2009  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,724          |
| WOODVILLE                  | 5/17/2010  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$1,121          |
| <b>Unincorporated Area</b> |            |                   |            |                 |                  |
| WILKINSON CO.              | 1/19/1975  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WILKINSON CO.              | 4/4/1977   | Thunderstorm Wind | 75 kts.    | 0/0             | \$0              |
| WILKINSON CO.              | 11/16/1987 | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WILKINSON CO.              | 4/18/1988  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WILKINSON CO.              | 4/18/1988  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WILKINSON CO.              | 5/27/1990  | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WILKINSON CO.              | 5/4/1991   | Thunderstorm Wind | 0 kts.     | 0/0             | \$0              |
| WILKINSON CO.              | 4/7/1993   | Thunderstorm Wind | 0 kts.     | 0/0             | \$849            |
| Doloroso                   | 12/4/1993  | Thunderstorm Wind | 0 kts.     | 0/0             | \$83,856         |
| WILKINSON CO.              | 1/27/1994  | Thunderstorm Wind | 0 kts.     | 0/0             | \$8,363          |
| TURNBULL                   | 3/17/1996  | Thunderstorm Wind | --         | 0/0             | \$0              |
| FT ADAMS                   | 2/21/1997  | Thunderstorm Wind | --         | 0/0             | \$7,661          |
| COUNTYWIDE                 | 7/22/2000  | Thunderstorm Wind | --         | 0/0             | \$708            |
| WILKINSON                  | 8/21/2003  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,987          |
| WILKINSON                  | 11/18/2003 | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,325          |
| FT ADAMS                   | 2/5/2004   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$1,970          |
| LESSLEY                    | 6/3/2004   | Thunderstorm Wind | 50 kts. EG | 0/0             | \$645            |
| PINCKNEYVILLE              | 2/17/2008  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$2,310          |
| FT ADAMS                   | 11/30/2010 | Thunderstorm Wind | 52 kts. EG | 0/0             | \$2,235          |
| DOLOROSO                   | 11/30/2010 | Thunderstorm Wind | 52 kts. EG | 0/0             | \$0              |
| NEWTONIA                   | 9/30/2012  | Thunderstorm Wind | 52 kts. EG | 0/0             | \$5,283          |
| TURNBULL                   | 2/15/2016  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$0              |
| PINCKNEYVILLE              | 3/17/2016  | Thunderstorm Wind | 50 kts. EG | 0/0             | \$0              |
| DOLOROSO                   | 3/24/2016  | Thunderstorm Wind | 60 kts. EG | 0/0             | \$0              |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

†E = estimated; EG = estimated gust; ES = estimated sustained; M = measured; MG = measured gust; MS = measured sustained

Source: National Climatic Data Center

**PROBABILITY OF FUTURE OCCURRENCES**

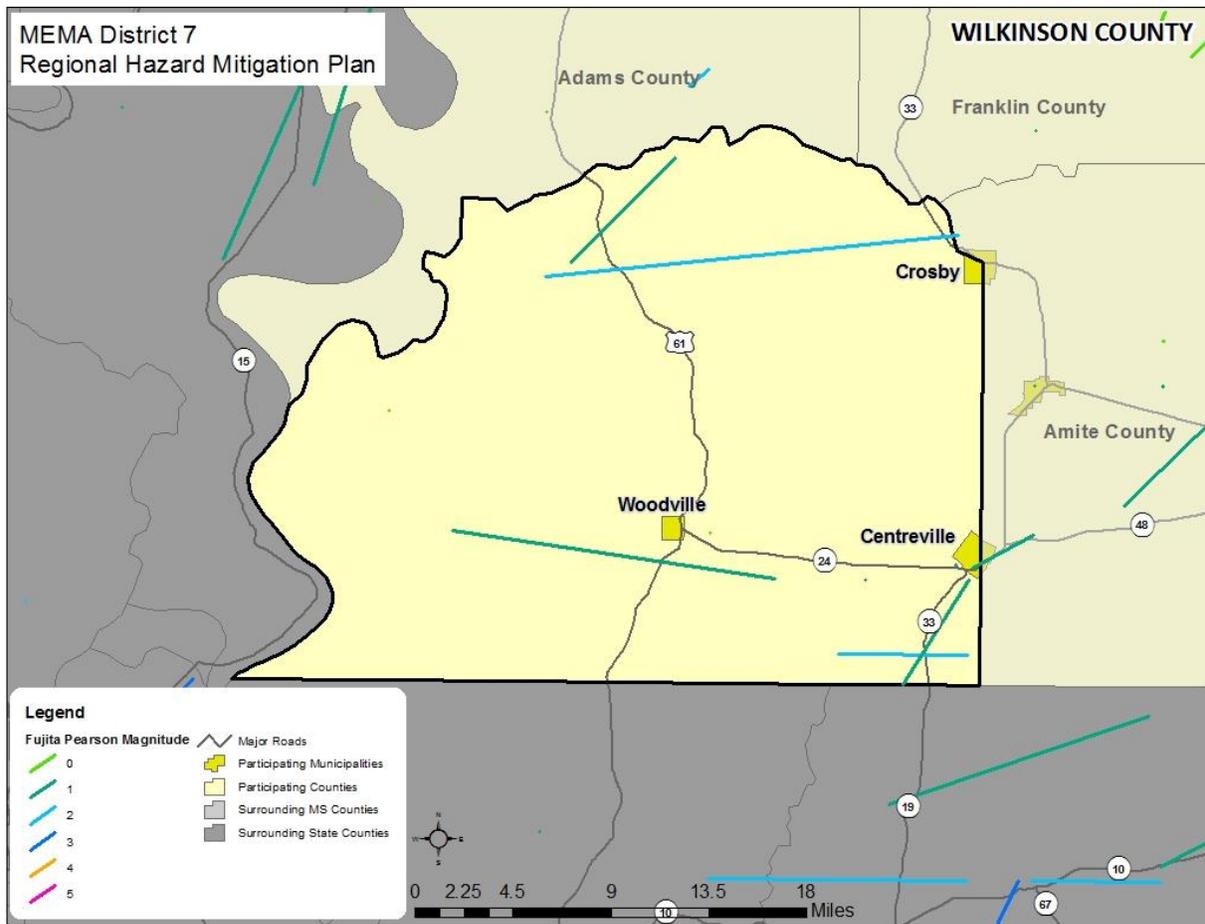
Given the high number of previous events, it is certain that thunderstorm events, including straight-line wind events, will occur in the future. This results in a probability level of highly likely (100 percent annual probability) for the entire county.

## I.2.12 Tornado

### LOCATION AND SPATIAL EXTENT

Tornadoes occur throughout the state of Mississippi, and thus in Wilkinson County. Tornadoes typically impact a relatively small area, but damage may be extensive. Event locations are completely random and it is not possible to predict specific areas that are more susceptible to tornado strikes over time. Therefore, it is assumed that Wilkinson County is uniformly exposed to this hazard. With that in mind, **Figure I.13** shows tornado track data for many of the major tornado events that have impacted the county between 1950 and 2015. While no definitive pattern emerges from this data, some areas that have been impacted in the past may be potentially more susceptible in the future.

**FIGURE I.13: HISTORICAL TORNADO TRACKS IN WILKINSON COUNTY**



Source: National Weather Service Storm Prediction Center

**HISTORICAL OCCURRENCES**

Tornadoes were at least partially responsible for seven disaster declarations in Wilkinson County in 1973, 1979, 1983, 1990, 1992, 2001, and 2009.<sup>19</sup> According to the National Climatic Data Center, there have been a total of 10 recorded tornado events in Wilkinson County since 1968 (**Table I.23**), resulting in almost \$2.2 million (2017 dollars) in property damages.<sup>20 21</sup> In addition, 15 injuries were reported. The magnitude of these tornadoes ranges from F0 to F2, although an F5 event is possible. Detailed information on historic tornado events can be found in **Table I.24**.

**TABLE I.23: SUMMARY OF TORNADO OCCURRENCES IN WILKINSON COUNTY**

| Location                      | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|-------------------------------|-----------------------|-----------------|------------------------|----------------------------|
| Centreville                   | 1                     | 0/0             | \$106,500              | \$21,300                   |
| Crosby                        | 0                     | 0/0             | \$0                    | \$0                        |
| Woodville                     | 1                     | 0/0             | \$724                  | \$43                       |
| Unincorporated Area           | 8                     | 0/15            | \$2,084,953            | \$42,550                   |
| <b>WILKINSON COUNTY TOTAL</b> | <b>10</b>             | <b>0/15</b>     | <b>\$2,192,177</b>     | <b>\$63,893</b>            |

Source: National Climatic Data Center

**TABLE I.24: HISTORICAL TORNADO IMPACTS IN WILKINSON COUNTY**

| Location           | Date       | Magnitude | Deaths/Injuries | Property Damage* | Details   |
|--------------------|------------|-----------|-----------------|------------------|---|
| <b>Centreville</b> |            |           |                 |                  |   |
| CENTREVILLE        | 12/25/2012 | EF1       | 0/0             | \$106,500        | The tornado first touched down south of Highway 24, just east of the intersection of Highway 33 and Highway 24 on the south side of Centreville. Initially, numerous soft wood trees and a few hard woods were snapped and uprooted, and a few power poles lost their crossmembers. The tornado quickly moved to the east-northeast across Highway 24 uprooting another 6 to 10 trees, one of which clipped a house, bringing down much of the east facing wall. The tornado was 170-200 yards wide at this point and continued into the town of Centreville. A tire service station lost most of its canopy with the columns still standing, and the Centreville Head Start lost its metal awning. The tornado crossed Fort Street with many more trees coming |

<sup>19</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Identification*.

<sup>20</sup> These tornado events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1950 through February 2017. It is likely that additional tornadoes have occurred in Wilkinson County. As additional local data becomes available, this hazard profile will be amended.

<sup>21</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| Location                   | Date       | Magnitude | Deaths/<br>Injuries | Property<br>Damage* | Details  |
|----------------------------|------------|-----------|---------------------|---------------------|--|
|                            |            |           |                     |                     | down, one on top of a car. Also along Fort Street, a single-wide mobile home lost most of its exterior walls. On East Howard Street, another tree fell into a house, pinning and injuring a lady. The tornado continued to the east-northeast, leading to another area of significant tree damage, uprooting and snapping numerous hard woods. A residence had minor structural damage leading to the carport partially collapsing. The tornado moved along Highway 48 for about another mile causing light tree damage before lifting. Times were based on radar and eyewitness reports. Maximum wind speed was estimated at 105 mph. |
| <b>Crosby</b>              |            |           |                     |                     |  |
| None reported              | --         | --        | --                  | --                  | --   |
| <b>Woodville</b>           |            |           |                     |                     |  |
| WOODVILLE                  | 1/3/2000   | F0        | 0/0                 | \$724               | A tornado briefly touched down just east of Woodville along Highway 24 knocking down several trees.  |
| <b>Unincorporated Area</b> |            |           |                     |                     |  |
| WILKINSON CO.              | 11/30/1968 | --        | 0/6                 | --                  | --   |
| WILKINSON CO.              | 10/8/1977  | F1        | 0/0                 | \$9,924             | --   |
| WILKINSON CO.              | 10/27/1980 | F1        | 0/0                 | \$72,088            | --   |
| WILKINSON CO.              | 11/20/1986 | F2        | 0/0                 | \$553,723           | --   |
| WILKINSON CO.              | 11/16/1987 | F1        | 0/0                 | \$52,973            | --   |
| WILKINSON CO.              | 6/28/1989  | F1        | 0/5                 | \$492,595           | --   |
| WILKINSON CO.              | 5/12/1990  | F2        | 0/4                 | \$473,150           | --   |
| WILKINSON CO.              | 11/21/1992 | F1        | 0/0                 | \$430,500           | --   |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.  
 Source: National Climatic Data Center

**PROBABILITY OF FUTURE OCCURRENCES**

According to historical information, tornado events pose a significant threat to Wilkinson County. The probability of future tornado occurrences affecting Wilkinson County is likely (between 10 and 100 percent annual probability).

## I.2.13 Winter Storm and Freeze

### LOCATION AND SPATIAL EXTENT

Nearly the entire continental United States is susceptible to winter storm and freeze events. Some ice and winter storms may be large enough to affect several states, while others might affect limited, localized areas. The degree of exposure typically depends on the normal expected severity of local winter weather. Wilkinson County is not accustomed to severe winter weather conditions and seldom receives severe winter weather, even during the winter months. Events tend to be mild in nature; however, this creates a situation where even relatively small accumulations of snow, ice, or other wintery precipitation can lead to losses and damage due to the fact that these events are not commonplace. Given the atmospheric nature of the hazard, the entire county has uniform exposure to a winter storm.

### HISTORICAL OCCURRENCES

According to the National Climatic Data Center, there have been a total of nine recorded winter storm events in Wilkinson County since 2002 (**Table I.25**).<sup>22</sup> These events did not result in any property damages.<sup>23</sup> Detailed information on the recorded winter storm events can be found in **Table I.26**.

**TABLE I.25: SUMMARY OF WINTER STORM EVENTS IN WILKINSON COUNTY**

| Location         | Number of Occurrences | Deaths/Injuries | Property Damage (2017) | Annualized Property Losses |
|------------------|-----------------------|-----------------|------------------------|----------------------------|
| Wilkinson County | 9                     | 0/0             | \$0                    | \$0                        |

Source: National Climatic Data Center

**TABLE I.26: HISTORICAL WINTER STORM IMPACTS IN WILKINSON COUNTY**

| Location                   | Date       | Type         | Deaths/Injuries | Property Damage* |
|----------------------------|------------|--------------|-----------------|------------------|
| <b>Centreville</b>         |            |              |                 |                  |
| None reported              | --         | --           | --              | --               |
| <b>Crosby</b>              |            |              |                 |                  |
| None reported              | --         | --           | --              | --               |
| <b>Woodville</b>           |            |              |                 |                  |
| None reported              | --         | --           | --              | --               |
| <b>Unincorporated Area</b> |            |              |                 |                  |
| WILKINSON (ZONE)           | 1/1/2002   | Winter Storm | 0/0             | \$0              |
| WILKINSON (ZONE)           | 12/11/2008 | Heavy Snow   | 0/0             | \$0              |
| WILKINSON (ZONE)           | 12/4/2009  | Winter Storm | 0/0             | \$0              |
| WILKINSON (ZONE)           | 2/11/2010  | Heavy Snow   | 0/0             | \$0              |
| WILKINSON (ZONE)           | 2/3/2011   | Ice Storm    | 0/0             | \$0              |
| WILKINSON (ZONE)           | 2/3/2011   | Ice Storm    | 0/0             | \$0              |

<sup>22</sup> These ice and winter storm events are only inclusive of those reported by the National Climatic Data Center (NCDC) from 1996 through February 2017. It is likely that additional winter storm conditions have affected Wilkinson County.

<sup>23</sup> Adjusted dollar values were calculated based on the Consumer Price Index for All Urban Consumers (CPI-U) U.S. city average series for all items, not seasonally adjusted. This data represents changes in the prices of all goods and services purchased for consumption by urban households. This monthly index value has been calculated every year since 1913. The 2017 dollar values were calculated based on buying power in April 2017.

| <b>Location</b>  | <b>Date</b> | <b>Type</b>    | <b>Deaths/Injuries</b> | <b>Property Damage*</b> |
|------------------|-------------|----------------|------------------------|-------------------------|
| WILKINSON (ZONE) | 1/23/2014   | Winter Weather | 0/0                    | \$0                     |
| WILKINSON (ZONE) | 1/28/2014   | Sleet          | 0/0                    | \$0                     |
| WILKINSON (ZONE) | 3/4/2014    | Winter Weather | 0/0                    | \$0                     |

\*Property damage is reported in 2017 dollars; all damage may not have been reported.

Source: National Climatic Data Center

There have been several severe winter weather events in Wilkinson County. The text below describes two of the major events and associated impacts on the county. Similar impacts can be expected with severe winter weather.

**February 2010**

Heavy snow affected a large portion of the region, especially locations across central and southern Mississippi, on Thursday night and Friday, February 11th and 12th. The heavy snow was a result of a low pressure system that tracked eastward across the northern Gulf of Mexico, and a vigorous upper level disturbance that moved across the region while a cold air mass was in place. Light precipitation overspread the region late Thursday afternoon into the evening before becoming heavy Thursday night into early Friday morning. The snow tapered off from west to east during the midday hours Friday.

**February 2011**

An ice storm developed across the area on February 3rd into the early morning hours of the 4th. While this icing event was not devastating, the impact to travel was a major issue across the region. Thousands of accidents occurred from slick roads. As a result of the accidents, three fatalities occurred along with a handful of injuries. Overall, most areas received 0.25 to 0.5 inches of ice accumulation from freezing rain. Additionally, some areas had a mix of precipitation with sleet accumulating. Some snow did occur, but those were just across select areas and the accumulation was mainly one inch or less.

Winter storms throughout the planning area have several negative externalities including hypothermia, cost of snow and debris cleanup, business and government service interruption, traffic accidents, and power outages. Furthermore, citizens may resort to using inappropriate heating devices that could to fire or an accumulation of toxic fumes.

***PROBABILITY OF FUTURE OCCURRENCES***

Winter storm events will continue to occur in Wilkinson County. Based on historical information, the probability is likely (between 10 and 100 percent annual probability).

***HUMAN-CAUSED HAZARDS***

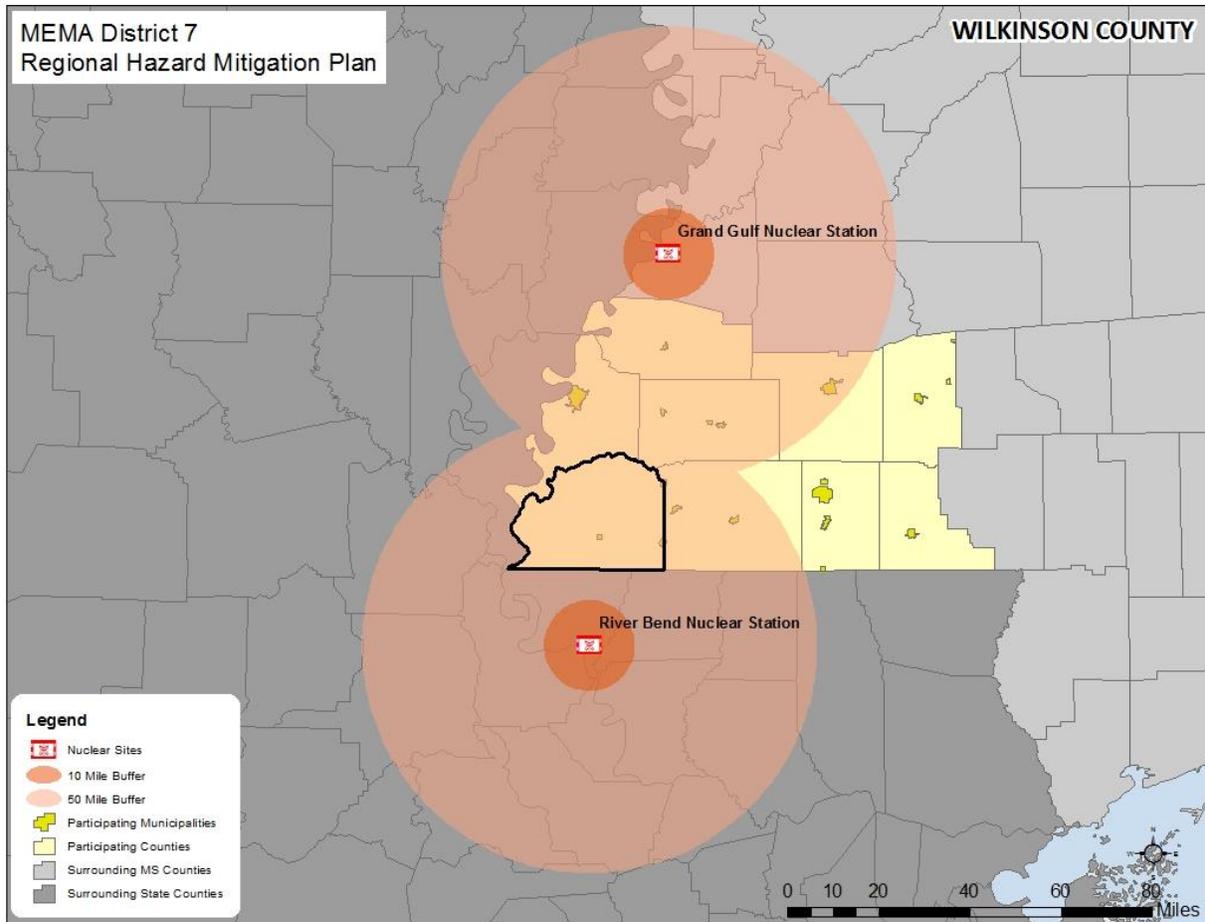
**I.2.14 Radiological Event**

***LOCATION AND SPATIAL EXTENT***

The Grand Gulf Nuclear Station and River Bend Nuclear Station are both located within a 50-mile radius of the MEMA District 7 Region. The Nuclear Regulatory Commission defines two emergency planning zones around nuclear plants. Areas located within 10 miles of the station are considered to be within the zone of highest risk to a nuclear incident and this radius is the designated evacuation radius recommended

by the Nuclear Regulatory Commission. Within the 10-mile zone, the primary concern is exposure to and inhalation of radioactive contamination. No part of Wilkinson County is located in the 10-mile radius of a nuclear station. The most concerning effects in the secondary 50-mile zone are related to ingestion of food and liquids that may have been contaminated. All of Wilkinson County is located within this 50-mile radius. The 50-mile zone is still considered to be at risk from a nuclear incident, though the impacts may be less severe than in the 10-mile zone (Figure I.14).

**FIGURE I.14: NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN WILKINSON COUNTY**



Source: International Atomic Energy Agency

### **HISTORICAL OCCURRENCES**

Although there have been no major nuclear events at either the Grand Gulf or River Bend Nuclear Stations, there is some possibility that one could occur as there have been incidents in the past in the United States at other facilities and at facilities around the world. Additionally, a list of minor events/notifications was acquired from reports collected by the Nuclear Regulatory Commission (NRC). The NRC classifies events using the scale found in Table I.27. A list of events at Grand Gulf Nuclear Station can be found in Table I.28 and a list of events at River Bend Nuclear Station can be found in Table I.29. It is noteworthy that all of the events were minor in magnitude and many were insignificant enough that they did not register on the classification scale.

**TABLE I.27: NUCLEAR REGULATORY COMMISSION EMERGENCY CLASSIFICATION SCALE FOR EVENTS OCCURRING AT NUCLEAR POWER PLANTS**

| Classification                       | Description   |
|--------------------------------------|---|
| Notification of Unusual Event (NOUE) | Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. [Note: This term is sometimes shortened to Unusual Event (UE). The terms Notification of Unusual Event, NOUE and Unusual Event are used interchangeably.]  |
| Alert                                | Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) protective action guides (PAGs)  |
| Site Area Emergency                  | Site Area Emergency (SAE) – Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile action that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary. |
| General Emergency                    | Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile action that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.  |

Source: Nuclear Regulatory Commission

**TABLE I.28: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT GRAND GULF NUCLEAR STATION**

| Date      | Retrieved From*                  | Classification | Plant             | Description  |
|-----------|----------------------------------|----------------|-------------------|--|
| 8/29/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST         |
| 10/1/2012 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF NUCLEAR STATION SECURITY OFFICER LOCKOUT                  |
| 9/29/2016 | Preliminary Notification Reports | Not Applicable | Grand Gulf Unit 1 | GRAND GULF EXTENDED PLANT SHUTDOWN TO ADDRESS OPERATIONS PERFORMANCE |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lersearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

**TABLE I.29: HISTORICAL OCCURRENCES OF NOTIFIABLE EVENTS AT  
RIVER BEND NUCLEAR STATION**

| Date       | Retrieved From*                  | Classification                               | Plant             | Description   |
|------------|----------------------------------|--|-------------------|---|
| 11/26/1985 | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | ECCS Initiation: Improper restoration of a level transmitter causes HPSC injection    |
| 11/27/1985 | Licensee Event Report            | Alert  | River Bend Unit 1 | Failure to Perform Surveillance Tests   |
| 3/5/1992   | Licensee Event Report            | Notification of Unusual Event                | River Bend Unit 1 | REACTOR SCRAM CAUSED BY A GENERATOR TRIP DUE TO HIGH WINDS CAUSING TRANSFORMER DAMAGE |
| 9/15/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE IVAN  |
| 10/4/2004  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | Shutdown Greater than 72 Hours  |
| 9/23/2005  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | NRC ENTERS MONITORING MODE DUE TO HURRICANE RITA                                      |
| 5/23/2007  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REACTOR SHUTDOWN DUE TO UNEXPECTED CHANGE IN RECIRCULATION FLOW                       |
| 9/2/2008   | Preliminary Notification Reports | Notification of Unusual Event/Not Applicable | River Bend Unit 1 | NRC RESPONSE TO HURRICANE GUSTAV  |
| 5/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | AUGMENTED INSPECTION TEAM ONSITE AT RIVER BEND STATION                                |
| 8/29/2012  | Preliminary Notification Reports | Not Applicable                               | River Bend Unit 1 | REGION IV RESPONSE TO HURRICANE/SEVERE WEATHER ON GULF COAST                          |

Source: Nuclear Regulatory Commission

\*Preliminary Notification Reports (<http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/>): These are brief descriptions, generated by NRC regions when needed, of matters that are of significant safety or safeguards concern or have high public interest. PNs are used to promptly inform the Commissioners and others in NRC and Agreement States with new and current information.

Licensee Event Reports (<https://lersearch.inl.gov/Entry.aspx>): Commercial nuclear reactor licensees are required to report certain event information per 10 CFR 50.73. Search was for- "Notification of Unusual Event" "Alert" "Site Area Emergency" "General Emergency"

### **PROBABILITY OF FUTURE OCCURRENCES**

A nuclear event is a very rare occurrence in the United States due to the intense regulation of the industry. There have been minor incidents in the past, but it is considered unlikely (less than 1 percent annual probability).

### **RADIOLOGICAL EVACUATIONS**

Similar to the hurricane evacuations discussed above, in many ways the MEMA District 7 Region would potentially be impacted to a greater degree by evacuations caused by a radiological event than by the event itself. Since the region is not directly located within the 10-mile evacuation area but neighboring counties are located within this zone, it is highly likely that populations from those neighboring counties will be evacuated to the counties within the MEMA District 7 Region.

Due to the severe and long-term effects of a major radiological event, temporary sheltering will be an initial concern, but the greater challenge may be in the long-term. As has happened with historical radiological accidents in other locations, the danger in the impacted area will likely extend for a very long period after the event and evacuees may be unable to return to their homes for months or years. This additional influx of population will cause a major strain on resources within these relatively rural counties in the short-term, as local communities with limited resources will have an unexpected and immediate need to provide shelter and other life essentials such as food, water, and health care to a significant, additional number of people. In the long-term, there may be challenges for local officials as existing infrastructure will likely be inadequate to handle larger populations.

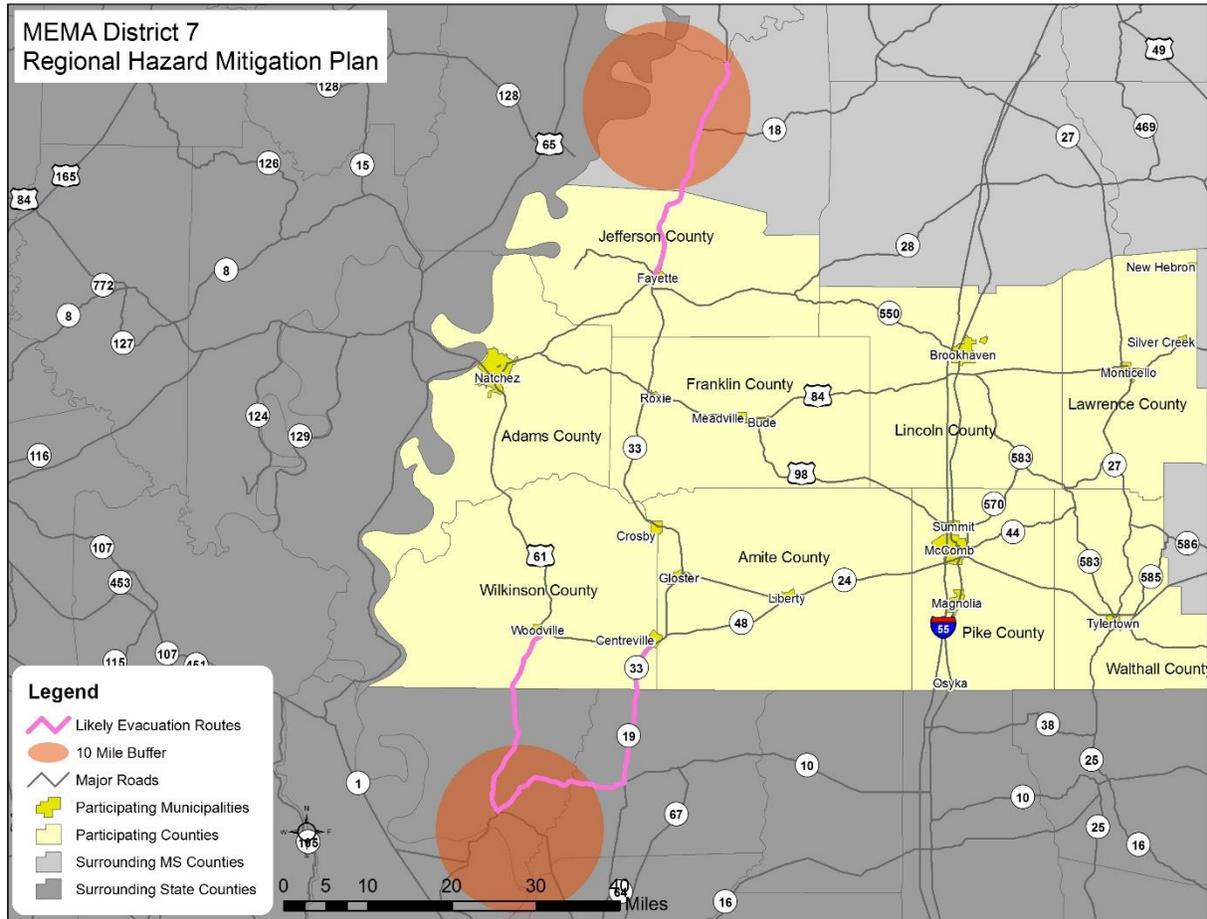
Although there have not been any major radiological events in the region historically, hurricane evacuations (discussed above) provide a similar scenario in terms of what the region might expect. However, one additional concern that officials will need to consider in a radiological event is that evacuees may be contaminated by radioactivity. According to the Centers for Disease Control, radioactive contamination can occur when radioactive materials are released into the environment and become deposited into the air, water, surfaces, soil, plants, buildings, people or animals. This contamination can then be spread when people touch other people, surfaces, or objects. Therefore, when people evacuate a contaminated zone, they pose a potential risk of spreading the contamination to others if they are not properly treated. Local officials in MEMA District 7 may need to be prepared to set up decontamination centers along major evacuation routes to ensure that the contamination is not spread. It is also important for citizens to understand the steps they can take to reduce the risk of spreading contamination such as evacuating quickly after an event and following decontamination instructions as directed by local officials.<sup>24</sup>

Based on the locations of the 10-mile evacuation areas near the region, many of these evacuees will likely come from Claiborne County to the north and West Feliciana and East Feliciana Parishes to the south. The main roads for these evacuees will probably be U.S. Highway 61 and Mississippi State Highway 33 since these are the primary and most direct roads into and out of the aforementioned evacuation counties and into MEMA District 7 (**Figure I.15**). Depending on the severity of the event, officials may even change these roads over to a contraflow traffic pattern to enable quicker evacuations.

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<sup>24</sup> Centers for Disease Control and Prevention. *Emergency Preparedness and Response: Contamination vs. Exposure*. Retrieved on September 1, 2017 from <https://emergency.cdc.gov/radiation/contamination.asp>

**FIGURE I.15: LIKELY EVACUATION ROUTES FOR A RADIOLOGICAL EVENT IN THE MEMA DISTRICT 7 REGION**



Source: International Atomic Energy Agency

As a result of the potential for an influx of evacuees during a radiological event, it is critical for local officials in MEMA District 7 to prepare for evacuations. It is possible that thousands of additional people will be relocated, either temporarily or permanently, to MEMA District 7. Therefore, plans for additional shelters and other resources should be coordinated well in advance of future events.

### I.2.15 Conclusions on Hazard Risk

The hazard profiles presented in this subsection were developed using best available data and result in what may be considered principally a qualitative assessment as recommended by FEMA in its “How-to” guidance document titled *Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA Publication 386-2). It relies heavily on historical and anecdotal data, stakeholder input, and professional and experienced judgment regarding observed and/or anticipated hazard impacts. It also carefully considers the findings in other relevant plans, studies, and technical reports.

**HAZARD EXTENT**

**Table I.30** describes the extent of each natural hazard identified for Wilkinson County. The extent of a hazard is defined as its severity or magnitude, as it relates to the planning area.

**TABLE I.30: EXTENT OF WILKINSON COUNTY HAZARDS**

| Flood-related Hazards  |  |             |  |                                     |                                  |                                 |  |   |
|--|--|-------------|--|-------------------------------------|----------------------------------|---------------------------------|--|---|
| Dam and Levee Failure  | Dam Failure extent is defined using the Mississippi Department of Environmental Quality classifications which include Low, Significant, and High. No dams are classified as high-hazard in Wilkinson County.   |             |  |                                     |                                  |                                 |  |   |
| Erosion  | The extent of erosion can be defined by the measurable rate of erosion that occurs. There are no official erosion rate records in Wilkinson County but local estimates are around 0.25 to 0.50 feet per year. Some areas of erosion have been identified by local coordinators.  |             |  |                                     |                                  |                                 |  |   |
| Flood  | Flood extent can be measured by the amount of land and property in the floodplain as well as flood height and velocity. The amount of land in the floodplain accounts for 21.7 percent of the total land area in Wilkinson County.   |             |  |                                     |                                  |                                 |  |   |
|  | Flood depth and velocity are recorded via United States Geological Survey stream gages throughout the region. While a gage does not exist for each participating jurisdiction, there is one at or near many areas. The greatest peak discharge recorded for the county was on the Buffalo River near Woodville. Water reached a discharge of 65,000 cubic feet per second (recorded on March 25, 1973). The highest stream gage height was also on the Buffalo River near Woodville with a height that was recorded at 22.30 feet (recorded on March 25, 1973). Additional peak discharge readings, historic crest heights, and the corresponding flood categories (where available) are in the table below. |             |  |                                     |                                  |                                 |  |   |
|  | <b>Location/<br/>Jurisdiction</b>  | <b>Date</b> | <b>Maximum<br/>Historic<br/>Crest (ft)</b> | <b>Peak<br/>Discharge<br/>(cfs)</b> | <b>Flood Categories</b>          |                                 |  |   |
|  |  |             |  |                                     | <b>Action<br/>Stage<br/>(ft)</b> | <b>Flood<br/>Stage<br/>(ft)</b> | <b>Moderate<br/>Flood<br/>Stage (ft)</b> | <b>Major<br/>Flood<br/>Stage<br/>(ft)</b> |
| <b>Wilkinson County</b>  |  |             |  |                                     |                                  |                                 |  |   |
| Observers<br>Draw near<br>Doloroso   | 3/17/1961  | 10.10       | 418  | NA                                  | NA                               | NA                              | NA                                       |   |
| Buffalo<br>River near<br>Woodville   | 3/25/1973  | 22.30       | 65,000                                     | NA                                  | NA                               | NA                              | NA                                       |   |
| Moores<br>Branch<br>near<br>Woodville  | 3/24/1973  | 9.90        | 455  | NA                                  | NA                               | NA                              | NA                                       |   |
| NA= Data not available for this particular gage<br>*Occurred on a different date than Maximum Historic Crest |  |             |  |                                     |                                  |                                 |  |   |

| <b>Fire-related Hazards</b>    |  |
|--------------------------------|--|
| Drought                        | Drought extent is defined by the U.S. Drought Monitor Classifications which include Abnormally Dry, Moderate Drought, Severe Drought, Extreme Drought, and Exceptional Drought. According to the U.S. Drought Monitor Classifications, the most severe drought condition is Exceptional. Wilkinson County has received this ranking twice over the 17-year reporting period.   |
| Lightning                      | According to the Vaisala’s flash density map, Wilkinson County is located in an area that experiences 12 to 28 lightning flashes per square mile per year. It should be noted that future lightning occurrences may exceed these figures.  |
| Wildfire                       | Wildfire data was provided by the Mississippi Forestry Commission and is reported annually by county from 2007-2016. The greatest number of fires to occur in Wilkinson County in any year was 27 in 2011. The greatest number of acres to burn in the county in a single year occurred in 2008 when 336 acres were burned. Although this data lists the extent that has occurred, larger and more frequent wildfires are possible throughout the county.          |
| <b>Geologic Hazards</b>        |  |
| Earthquake                     | Earthquake extent can be measured by the Richter Scale or the Modified Mercalli Intensity (MMI) scale. According to data provided by the National Centers for Environmental Information, no earthquakes were reported in Wilkinson County.   |
| <b>Wind-related Hazards</b>    |  |
| Extreme Heat                   | The extent of extreme heat can be measured by the record high temperature recorded. Official long term temperature records are not kept for any areas in Wilkinson County. However, the highest recorded temperature in the region was 106°F in 2007 with heat index values recorded above 115°F.  |
| Hailstorm                      | Hail extent can be defined by the size of the hail stone. The largest hail stone reported in Wilkinson County was 1.75 inches (last reported on March 30, 2016). It should be noted that future events may exceed this.  |
| Hurricane and Tropical Storm   | Hurricane extent is defined by the Saffir-Simpson Scale which classifies hurricanes into Category 1 through Category 5. The greatest classification of hurricane to impact the MEMA District 7 Region was a Category 3 storm. This occurred in 1969 with Hurricane Camille and in 2005 with Hurricane Katrina. The storm track of both storms passed just to the east of the region, but due to the size of these storms, their impact was felt across the region. |
| Severe Thunderstorm/ High Wind | Thunderstorm extent is defined by the number of thunder events and wind speeds reported. According to a 67-year history from the National Climatic Data Center, the strongest recorded wind event in Wilkinson County was reported on April 4, 1977 at 75 knots (approximately 86 mph). It should be noted that future events may exceed these historical occurrences.   |
| Tornado                        | Tornado hazard extent is measured by tornado occurrences in the US provided by FEMA as well as the Fujita/Enhanced Fujita Scale. The greatest magnitude reported in Wilkinson County was an F2 (last reported on May 12, 1990).  |
| Winter Storm and Freeze        | The extent of winter storms can be measured by the amount of snowfall received (in inches). Official long term snow records are not kept for any areas in Wilkinson County. However, reports from NCDC of the greatest snowfall in the county has been 3 inches (reported on February 11, 2010).   |
| <b>Human-caused Hazards</b>    |  |
| Radiological Event             | Although there is no history of a nuclear accident at either the Grand Gulf Nuclear Station or River Bend Nuclear Station, other events across the globe and in the United States in particular indicate that an event is possible. Since several national and international events were Level 7 events on the INES, the potential for a Level 7 event at these stations is possible.  |

### PRIORITY RISK INDEX RESULTS

In order to draw some meaningful planning conclusions on hazard risk for Wilkinson County, the results of the hazard profiling process were used to generate countywide hazard classifications according to a “Priority Risk Index” (PRI). More information on the PRI and how it was calculated can be found in Section 5.17.2.

**Table I.31** summarizes the degree of risk assigned to each category for all initially identified hazards based on the application of the PRI. Assigned risk levels were based on the detailed hazard profiles developed for this subsection, as well as input from the Regional Hazard Mitigation Council. The results were then used in calculating PRI values and making final determinations for the risk assessment.

**TABLE I.31: SUMMARY OF PRI RESULTS FOR WILKINSON COUNTY**

| Hazard                        | Category/Degree of Risk |              |                |                    |                    |            |
|-------------------------------|-------------------------|--------------|----------------|--------------------|--------------------|------------|
|                               | Probability             | Impact       | Spatial Extent | Warning Time       | Duration           | PRI Score  |
| <b>Flood-related Hazards</b>  |                         |              |                |                    |                    |            |
| Dam Failure and Levee Failure | Unlikely                | Critical     | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>2.3</b> |
| Erosion                       | Likely                  | Minor        | Small          | More than 24 hours | More than 1 week   | <b>2.1</b> |
| Flood                         | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 24 hours | <b>3.2</b> |
| <b>Fire-related Hazards</b>   |                         |              |                |                    |                    |            |
| Drought                       | Possible                | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.5</b> |
| Lightning                     | Highly Likely           | Limited      | Small          | 6 to 12 hours      | Less than 6 hours  | <b>2.6</b> |
| Wildfire                      | Possible                | Limited      | Small          | Less than 6 hours  | Less than 1 week   | <b>2.3</b> |
| <b>Geologic Hazards</b>       |                         |              |                |                    |                    |            |
| Earthquake                    | Unlikely                | Minor        | Small          | Less than 6 hours  | Less than 6 hours  | <b>1.5</b> |
| <b>Wind-related Hazards</b>   |                         |              |                |                    |                    |            |
| Extreme Heat                  | Likely                  | Limited      | Large          | More than 24 hours | More than 1 week   | <b>2.8</b> |
| Hailstorm                     | Highly Likely           | Limited      | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>2.8</b> |
| Hurricane and Tropical Storm  | Likely                  | Catastrophic | Large          | More than 24 hours | Less than 1 week   | <b>3.3</b> |
| Severe Thunderstorm/High Wind | Highly Likely           | Critical     | Moderate       | 6 to 12 hours      | Less than 6 hours  | <b>3.1</b> |
| Tornado                       | Likely                  | Catastrophic | Moderate       | Less than 6 hours  | Less than 6 hours  | <b>3.2</b> |
| Winter Storm and Freeze       | Likely                  | Minor        | Moderate       | More than 24 hours | Less than 1 week   | <b>2.2</b> |
| <b>Human-caused Hazards</b>   |                         |              |                |                    |                    |            |
| Radiological Event            | Unlikely                | Critical     | Moderate       | More than 24 hours | Less than 1 week   | <b>2.2</b> |

### I.2.16 Final Determinations on Hazard Risk

The conclusions drawn from the hazard profiling process for Wilkinson County, including the PRI results and input from the Regional Hazard Mitigation Council, resulted in the classification of risk for each identified hazard according to three categories: High Risk, Moderate Risk, and Low Risk (**Table I.32**). For

purposes of these classifications, risk is expressed in relative terms according to the estimated impact that a hazard will have on human life and property throughout all of Wilkinson County. A more quantitative analysis to estimate potential dollar losses for each hazard has been performed separately, and is described in Section 6: *Vulnerability Assessment* and below in Section I.3. It should be noted that although some hazards are classified below as posing low risk, their occurrence of varying or unprecedented magnitudes is still possible in some cases and their assigned classification will continue to be evaluated during future plan updates. In most cases, the hazards of greatest concern did not change much since the last plan update, indicating that the priorities remained relatively stable and there were few changes in priorities.

**TABLE I.32: CONCLUSIONS ON HAZARD RISK FOR WILKINSON COUNTY**

|                      |  |
|----------------------|--|
| <b>HIGH RISK</b>     | Hurricane and Tropical Storm<br>Tornado<br>Flood<br>Severe Thunderstorm/High Wind      |
| <b>MODERATE RISK</b> | Extreme Heat<br>Hailstorm<br>Lightning<br>Drought<br>Dam and Levee Failure<br>Wildfire |
| <b>LOW RISK</b>      | Winter Storm and Freeze<br>Radiological Event<br>Erosion<br>Earthquake                 |

### I.3 WILKINSON COUNTY VULNERABILITY ASSESSMENT

This subsection identifies and quantifies the vulnerability of Wilkinson County to the significant hazards previously identified. This includes identifying and characterizing an inventory of assets in the county and assessing the potential impact and expected amount of damages caused to these assets by each identified hazard event. More information on the methodology and data sources used to conduct this assessment can be found in Section 6: *Vulnerability Assessment*.

#### I.3.1 Asset Inventory

**Table I.33** lists the estimated number of improved properties and the total value of improvements for Wilkinson County and its participating jurisdictions (study area of vulnerability assessment). Because digital parcel data was not available for most communities, data obtained from Hazus-MH 4.0 inventory was utilized to complete the analysis.

**TABLE I.33: IMPROVED PROPERTY IN WILKINSON COUNTY**

| Location                      | Counts of Improved Property | Total Value of Improvements |
|-------------------------------|-----------------------------|-----------------------------|
| Centreville                   | 866                         | \$150,329                   |
| Crosby                        | 211                         | \$25,479                    |
| Woodville                     | 804                         | \$157,912                   |
| Unincorporated Area           | 3,339                       | \$763,081,280               |
| <b>WILKINSON COUNTY TOTAL</b> | <b>5,220</b>                | <b>\$763,415,000</b>        |

Source: Hazus-MH 4.0

**Table I.34** lists the fire stations, police stations, medical care facilities, emergency operation centers, schools, government/public buildings, transportation infrastructure, and private facilities located in Wilkinson County according to previous plan data and Hazus-MH 4.0 data that was reviewed and updated by local officials.

In addition, **Figure I.16** shows the locations of critical facilities in Wilkinson County. **Table I.45**, at the end of this subsection, shows a complete list of the critical facilities by name, as well as the hazards that affect each facility. As noted previously, this list is not all-inclusive and only includes information provided through Hazus which was updated, as best as possible, with local knowledge.

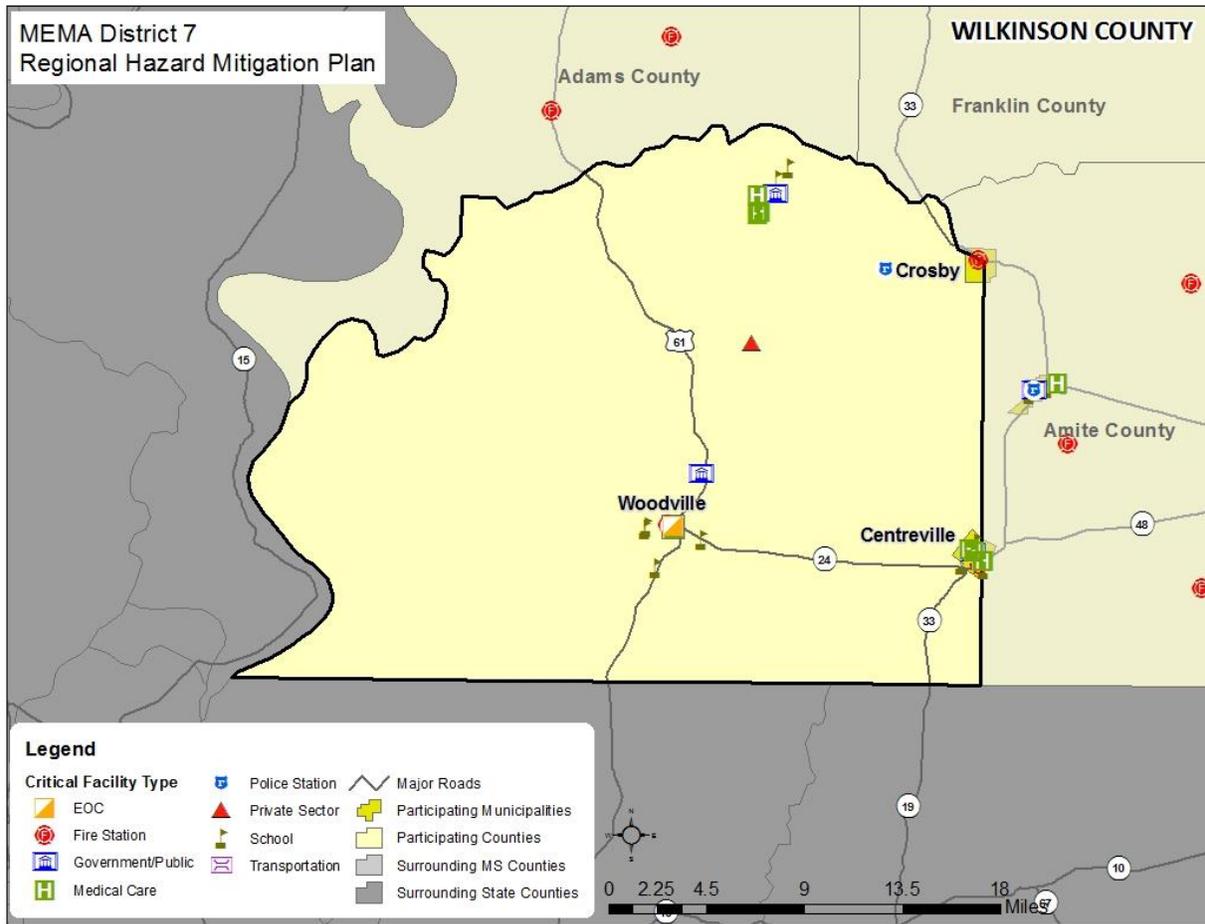
**TABLE I.34: CRITICAL FACILITY INVENTORY IN WILKINSON COUNTY**

| Location                      | Fire Stations | Police Stations | Medical Care | EOC      | Schools  | Gov't/<br>Public | Trans    | Private Sector |
|-------------------------------|---------------|-----------------|--------------|----------|----------|------------------|----------|----------------|
| Centreville                   | 1             | 1               | 4*           | 0        | 3        | 1                | 0        | 0              |
| Crosby                        | 1             | 1               | 0            | 0        | 0        | 0                | 0        | 0              |
| Woodville                     | 1             | 3               | 1            | 1        | 2        | 0                | 0        | 0              |
| Unincorporated Area           | 0             | 0               | 0            | 0        | 1        | 1                | 0        | 1              |
| <b>WILKINSON COUNTY TOTAL</b> | <b>3</b>      | <b>5</b>        | <b>4</b>     | <b>1</b> | <b>6</b> | <b>2</b>         | <b>0</b> | <b>1</b>       |

\*One of these facilities is located in the part of Centreville that is located in Amite County

Source: Hazus-MH 4.0; Local Officials

**FIGURE I.16: CRITICAL FACILITY LOCATIONS IN WILKINSON COUNTY**



Source: Hazus-MH 4.0; Local Officials

### I.3.2 Social Vulnerability

In addition to identifying those assets potentially at risk to identified hazards, it is important to identify and assess those particular segments of the resident population in Wilkinson County that are potentially at risk to these hazards.

**Table I.35** lists the population by jurisdiction according to U.S. Census, American Community Survey 2015 population estimates. The total population in Wilkinson County according to Census data was 9,345 persons. Additional population estimates are presented above in Section I.1.

**TABLE I.35: TOTAL POPULATION IN WILKINSON COUNTY**

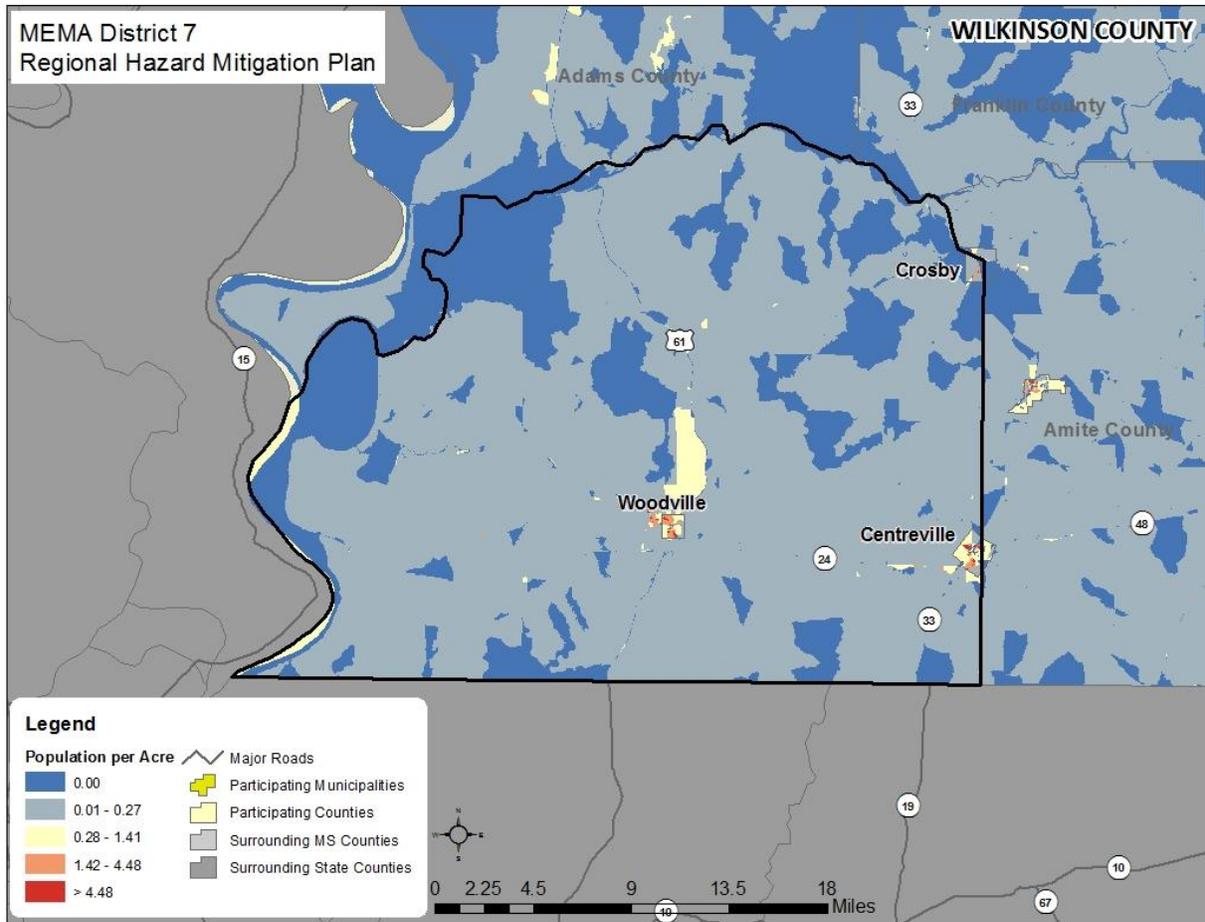
| Location                      | Total 2015 Population |
|-------------------------------|-----------------------|
| Centreville                   | 1,765                 |
| Crosby                        | 413                   |
| Woodville                     | 1,245                 |
| Unincorporated Area           | 5,922                 |
| <b>WILKINSON COUNTY TOTAL</b> | <b>9,345</b>          |

| Location | Total 2015 Population |
|----------|-----------------------|
|----------|-----------------------|

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

In addition, **Figure I.17** illustrates the population density per acre by census block as it was reported by the U.S. Census Bureau in 2010. As can be seen in the figure, the population is spread out with concentrations in municipal areas such as Centreville and Woodville.

**FIGURE I.17: POPULATION DENSITY IN WILKINSON COUNTY**



Source: United States Census Bureau, 2010 Census

### I.3.3 Development Trends and Changes in Vulnerability

Since the previous hazard mitigation plan was approved, Wilkinson County has experienced limited growth and development. **Table I.36** shows the number of building units constructed since 2010 according to the U.S. Census American Community Survey.

**TABLE I.36: BUILDING COUNTS FOR WILKINSON COUNTY**

| Location    | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|-------------|----------------------------|---------------------------|----------------------------------|
| Centreville | 754                        | 0                         | 0.00%                            |

| Location                      | Total Housing Units (2015) | Units Built 2010 or Later | % Building Stock Built Post-2010 |
|-------------------------------|----------------------------|---------------------------|----------------------------------|
| Crosby                        | 160                        | 14                        | 8.75%                            |
| Woodville                     | 656                        | 41                        | 6.25%                            |
| Unincorporated Area           | 3,477                      | 144                       | 4.14%                            |
| <b>WILKINSON COUNTY TOTAL</b> | <b>5,047</b>               | <b>199</b>                | <b>3.94%</b>                     |

Source: United States Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

Table I.37 shows population growth estimates for the county from 2010 to 2015 based on the U.S. Census American Community Survey.

**TABLE I.37: POPULATION GROWTH FOR WILKINSON COUNTY**

| Location                      | Population Estimates |              |              |              |              |              | % Change 2010-2015 |
|-------------------------------|----------------------|--------------|--------------|--------------|--------------|--------------|--------------------|
|                               | 2010                 | 2011         | 2012         | 2013         | 2014         | 2015         |                    |
| Centreville                   | 1,559                | 1,820        | 1,817        | 1,710        | 1,760        | 1,765        | 13.21%             |
| Crosby                        | 586                  | 517          | 514          | 414          | 440          | 413          | -29.52%            |
| Woodville                     | 1,129                | 1,071        | 864          | 1,050        | 1,133        | 1,245        | 10.27%             |
| Unincorporated Area           | 6,796                | 6,538        | 6,583        | 6,479        | 6,148        | 5,922        | -12.86%            |
| <b>WILKINSON COUNTY TOTAL</b> | <b>10,070</b>        | <b>9,946</b> | <b>9,778</b> | <b>9,653</b> | <b>9,481</b> | <b>9,345</b> | <b>-7.20%</b>      |

Source: United States Census Bureau, 2006-2010, 2007-2011, 2008-2012, 2009-2013, and 2010-2014, and 2011-2015 American Community Survey 5-Year Estimates

Based on the data above, there has been a low rate of residential development and population growth in the county since 2010, and the county has actually experienced a population decline. However, it is notable that Centreville, Crosby, and Woodville have experienced significant rates of growth and/or development compared to the rest of the county, resulting in an increased number of people and structures that are vulnerable to the potential impacts of the identified hazards. Therefore, development and population growth has impacted the county’s vulnerability since the previous local hazard mitigation plan was approved and there has been a slight increase in the overall vulnerability as well as a larger increase in certain areas and communities.

It is also important to note that as development increases in the future, greater populations and more structures and infrastructure will be exposed to potential hazards if development occurs in the floodplains or other high risk areas.

### I.3.4 Vulnerability Assessment Results

As noted in Section 6: *Vulnerability Assessment*, only hazards with a specific geographic boundary, available modeling tool, or sufficient historical data allow for further analysis. Those results, specific to Wilkinson County, are presented here. All other hazards are assumed to impact the entire planning region (drought, extreme heat, hailstorm, lightning, severe thunderstorm/high wind, tornado, and winter storm) or, due to lack of data, analysis would not lead to credible results (erosion). The total county exposure, and thus risk to these hazards, was presented in **Table I.33**.

The hazards to be further analyzed in this subsection include: dam/levee failure, flood, wildfire, earthquake, hurricane and tropical storm winds, and radiological event.

The annualized loss estimate for all hazards is presented near the end of this subsection in **Table I.44**.

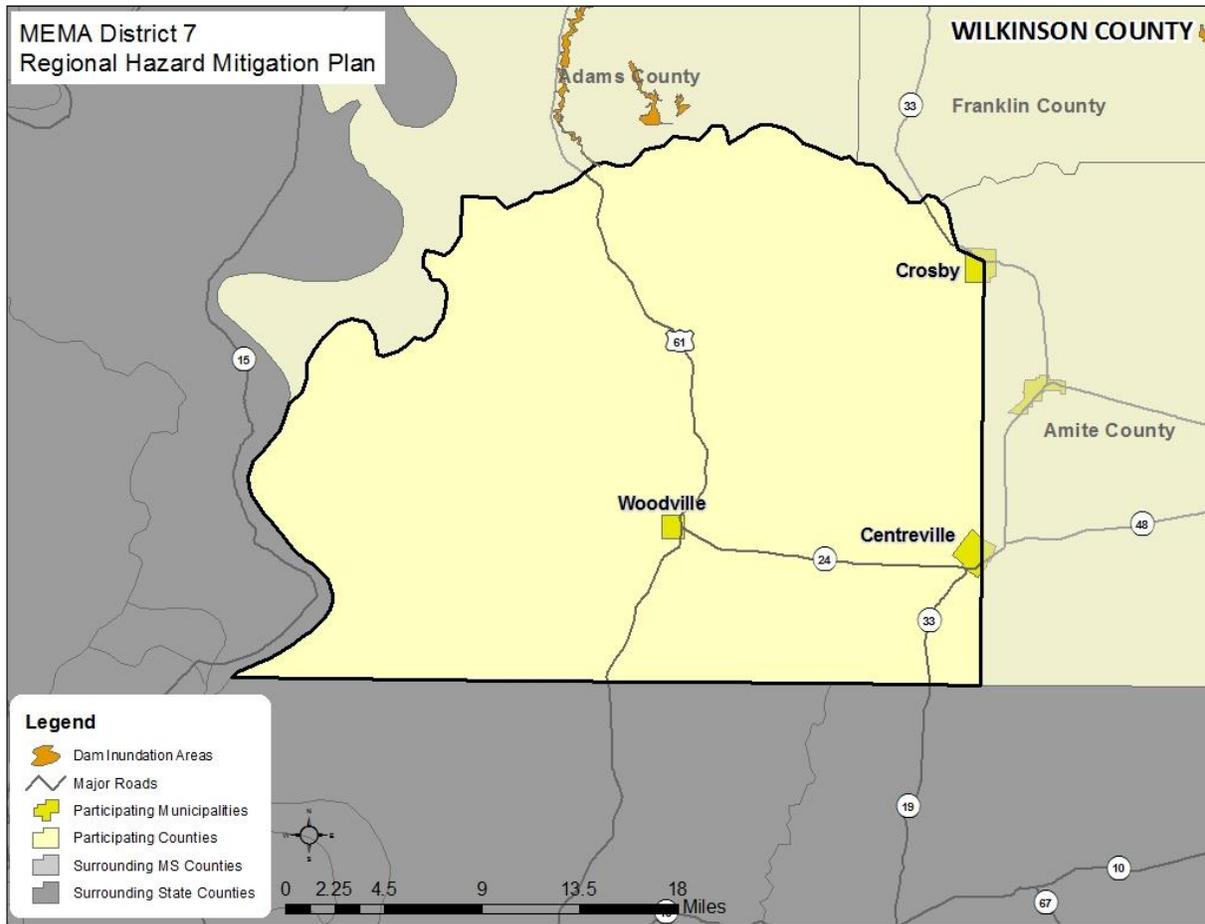
### ***DAM/LEVEE FAILURE***

In order to assess risk to a dam or levee failure, a GIS-based analysis was used to estimate exposure to one of the areas delineated by the Mississippi Department of Environmental Quality as a potential inundation area in the event of a failure. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified inundation area. As mentioned previously, this type of inundation mapping has not been completed for every dam/levee in the region, so the results of this analysis likely underestimate the overall vulnerability to a dam or levee failure. However, the analysis is still useful as a sort of baseline minimum of property that is potentially at-risk. The identified inundation areas can be found in **Figure I.18**.

In general, building footprint and parcel data were used in this analysis. However, in some communities, due to a lack of digital parcel data, it was determined that analysis using the inventory from Hazus-MH 4.0 would be used to supplement the building/parcel data. It should be noted that this data will merely be an estimation and may not reflect actual counts or values located in dam inundation areas. Indeed, in almost all cases, this data likely overestimates the amount of property in the identified risk zones.

**Table I.38** presents the potential at-risk property. Both the number of buildings and the approximate improved value are presented.

**FIGURE I.18: DAM INUNDATION AREAS IN WILKINSON COUNTY**



Source: Mississippi Department of Environmental Quality

**TABLE I.38: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE DAM/LEVEE FAILURE HAZARD**

| Location                      | Dam Inundation Area            |                        |
|-------------------------------|--------------------------------|------------------------|
|                               | Approx. Number of Improvements | Approx. Improved Value |
| Centreville                   | 0                              | \$0                    |
| Crosby                        | 0                              | \$0                    |
| Woodville                     | 0                              | \$0                    |
| Unincorporated Area           | 0                              | \$0                    |
| <b>WILKINSON COUNTY TOTAL</b> | <b>0</b>                       | <b>\$0</b>             |

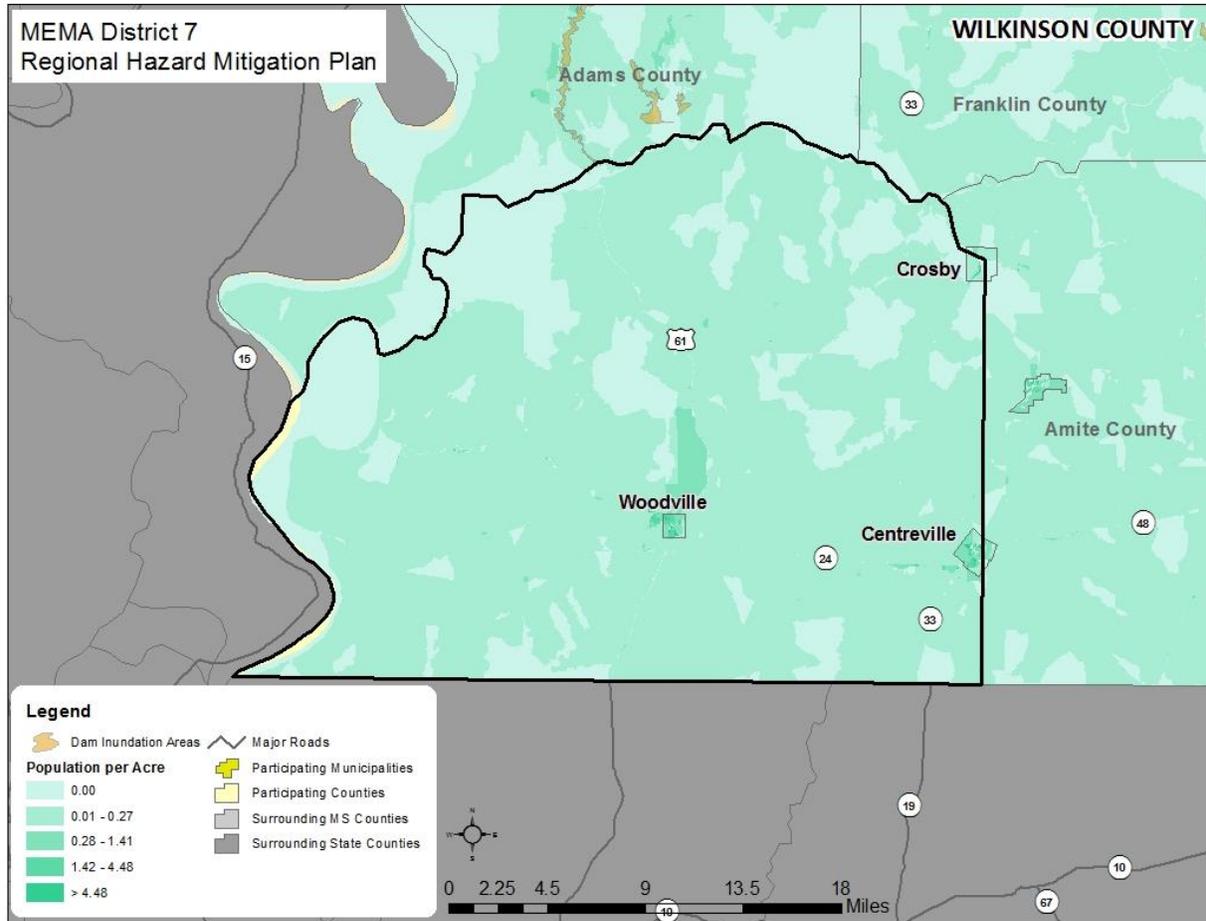
Source: Mississippi Department of Environmental Quality; Hazus 4.0

**Social Vulnerability**

Figure I.19 is presented to gain a better understanding of at-risk population by evaluating census block level population data against dam inundation areas. Although there are no areas of concern located within

the county, this does not indicate that there is no risk to a dam/levee failure, especially considering not all dams have delineated inundation areas.

**FIGURE I.19: POPULATION DENSITY NEAR DAM INUNDATION AREAS IN WILKINSON COUNTY**



Source: Mississippi Department of Environmental Quality; United States Census Bureau, 2010 Census

**Critical Facilities**

There are no critical facilities located within the identified dam inundation areas. Although there are no facilities located in the identified areas, this does not indicate that there is no risk to a dam/levee failure, especially considering not all dams have delineated inundation areas. A list of specific critical facilities and their associated risk can be found in **Table I.45** at the end of this section.

In conclusion, a dam/levee failure has the potential to impact existing and future buildings, facilities, and populations in Wilkinson County, though structures located near or in the dam inundation areas are at highest risk. Specific vulnerabilities for Wilkinson County assets will be greatly dependent on their individual design and the mitigation measures in place where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates if data becomes available.

**FLOOD**

Historical evidence indicates that Wilkinson County is susceptible to flood events. A total of 10 flood events have been reported by the National Climatic Data Center resulting in \$6.9 million (2017 dollars) in property damage. On an annualized level, these damages amounted to \$349,495 for Wilkinson County.

In order to assess flood risk, a GIS-based analysis was used to estimate exposure to flood events using Digital Flood Insurance Rate Map (DFIRM) data in combination with improved property records for the county. The determination of value at-risk (exposure) was calculated using GIS analysis by summing the values for improved properties that were located within an identified floodplain. Due to a lack of digital parcel data in most counties, it was determined that an analysis using the inventory from Hazus-MH 4.0 would be used, though it should be noted that the data will merely be an estimation and may not reflect actual counts or values located in the floodplain. Indeed, in almost all cases, this analysis likely overestimates the amount of property at risk. **Table I.39** presents the potential at-risk property. Both the number of parcels and the approximate value are presented.

**TABLE I.39: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO THE FLOOD HAZARD<sup>25</sup>**

| Location                      | 1.0-percent ACF                |                                | 0.2-percent ACF                |                                |
|-------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|                               | Approx. Number of Improvements |
| Centreville                   | 63                             | \$7,299,000                    | 0                              | \$0                            |
| Crosby                        | 172                            | \$20,101,000                   | 0                              | \$0                            |
| Woodville                     | 186                            | \$42,240,000                   | 0                              | \$0                            |
| Unincorporated Area           | 2,697                          | \$347,578,000                  | 0                              | \$0                            |
| <b>WILKINSON COUNTY TOTAL</b> | <b>3,118</b>                   | <b>\$417,218,000</b>           | <b>0</b>                       | <b>\$0</b>                     |

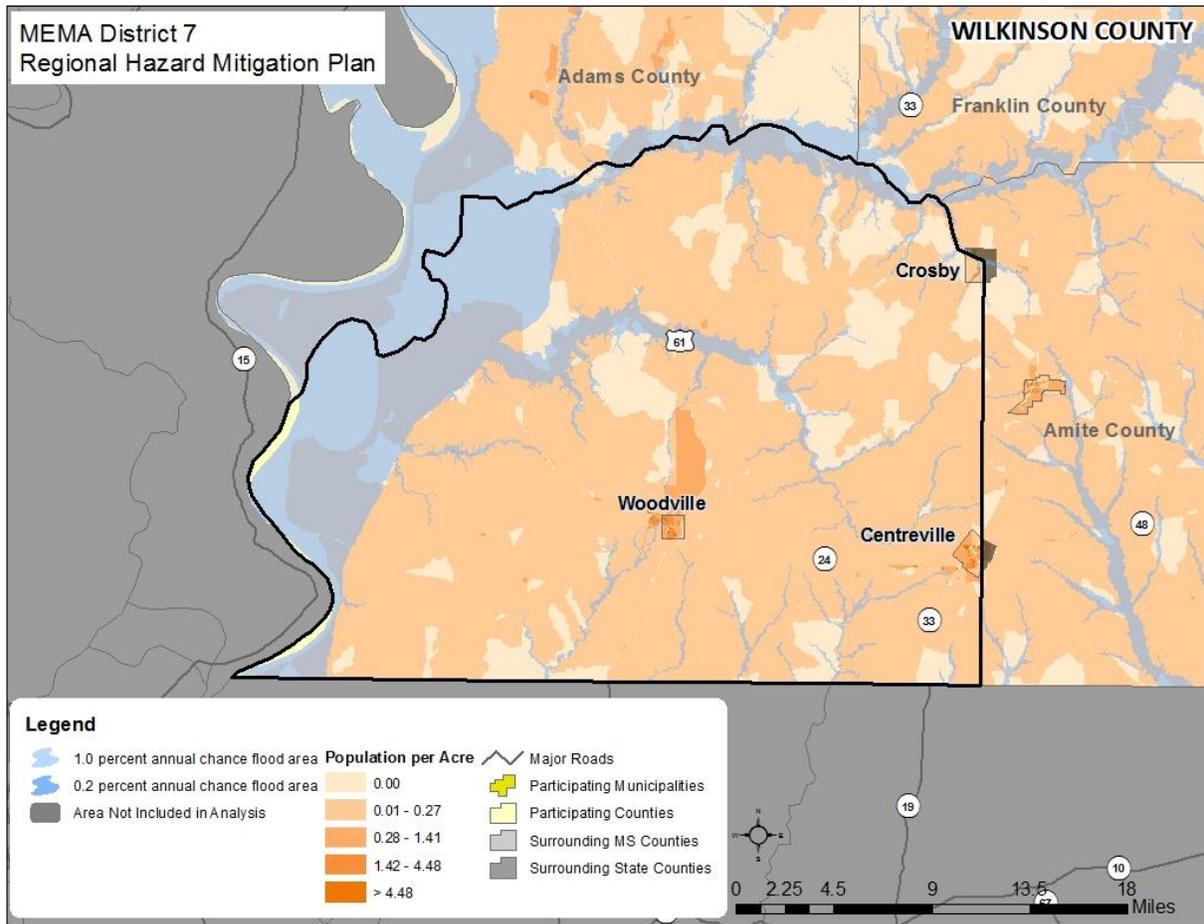
Source: Federal Emergency Management Agency DFIRM; Hazus MH 4.0

**Social Vulnerability**

**Figure I.20** is presented to gain a better understanding of at-risk population by evaluating census block level population data against mapped floodplains. There are areas of concern in several of the population centers. Therefore, further investigation in these areas may be warranted.

<sup>25</sup> As noted in Section 6.4, no building-specific data, such as building footprints, was available to determine buildings at risk. As a result of this data limitation, at-risk census block building counts and values of the structures were used.

**FIGURE I.20 : POPULATION DENSITY NEAR FLOODPLAINS IN WILKINSON COUNTY**



Source: Federal Emergency Management Agency DFIRM; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are no critical facilities located in the floodplain. (Please note, as previously indicated, this analysis does not consider building elevation, which may negate risk.) A list of specific critical facilities and their associated risk can be found in **Table I.45** at the end of this subsection.

In conclusion, a flood has the potential to impact many existing and future buildings, facilities, and populations in Wilkinson County, though some areas are at a higher risk than others. All types of structures in a floodplain are at-risk, though elevated structures will have a reduced risk. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. Furthermore, areas subject to repetitive flooding should be analyzed for potential mitigation actions.

**WILDFIRE**

Although historical evidence indicates that Wilkinson County is susceptible to wildfire events, there are few reports which include information on historic dollar losses. Therefore, it is difficult to calculate a

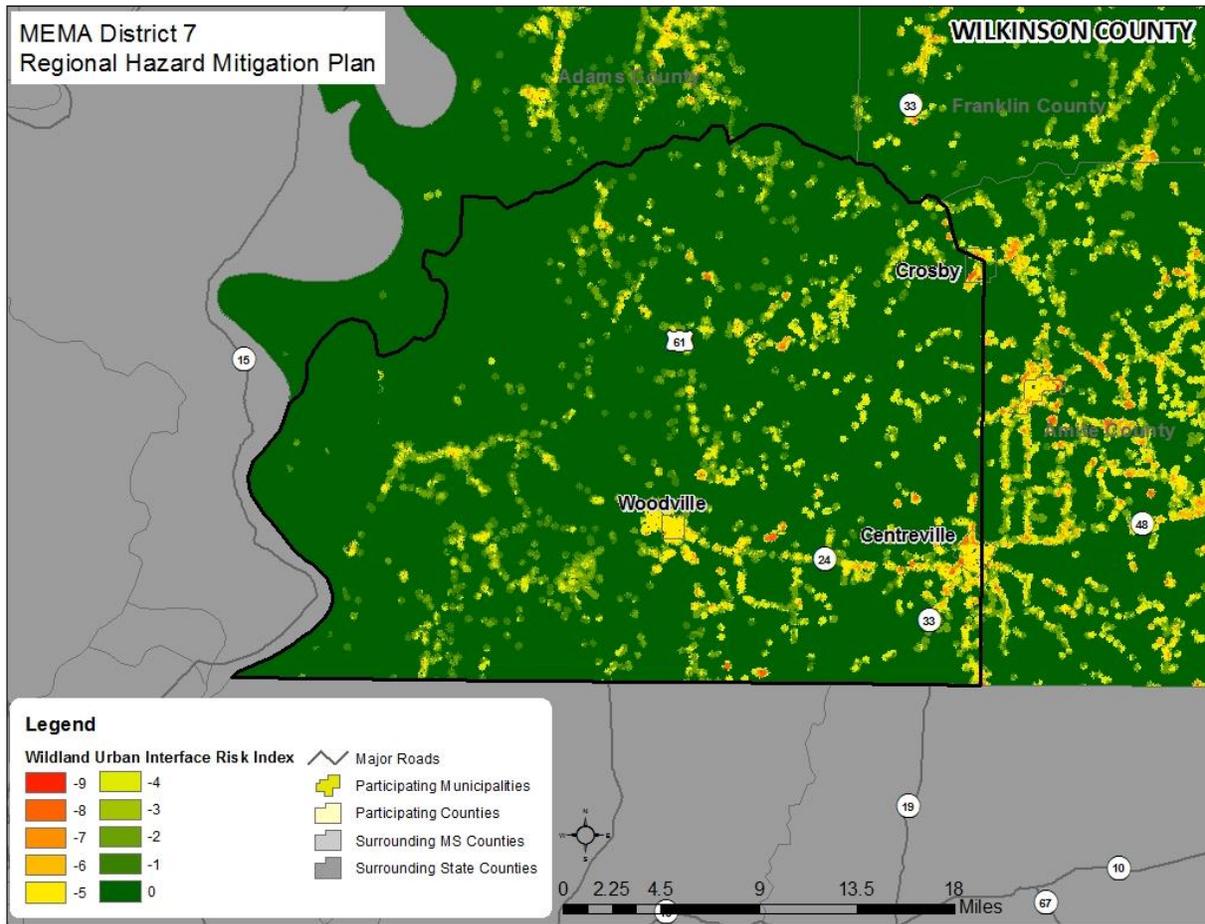
reliable annualized loss figure. Annualized loss is considered negligible though it should be noted that a single event could result in significant damages throughout the county.

To estimate exposure to wildfire, building data was obtained from Hazus-MH 4.0 which includes information that has been aggregated at the census block level and which has been deemed useful for analyzing wildfire vulnerability. However, it should be noted that the accuracy of Hazus data is somewhat lower than that of parcel data. For the critical facility analysis, areas of concern were intersected with critical facility locations.

**Figure I.21** shows the Wildland Urban Interface Risk Index (WUIRI) data, which is a data layer that shows a rating of the potential impact of a wildfire on people and their homes. The key input, Wildland Urban Interface (WUI), reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the WUI and rural areas is key information for defining potential wildfire impacts to people and homes. Initially provided as raster data, it was converted to a polygon to allow for analysis. The Wildland Urban Interface Risk Index data ranges from 0 to -9 with lower values being most severe (as noted previously, this is only a measure of relative risk). **Figure I.22** shows the areas of analysis where any grid cell is less than -4. Areas with a value below -4 were chosen to be displayed as areas of risk because this showed the upper echelon of the scale and the areas at highest risk.

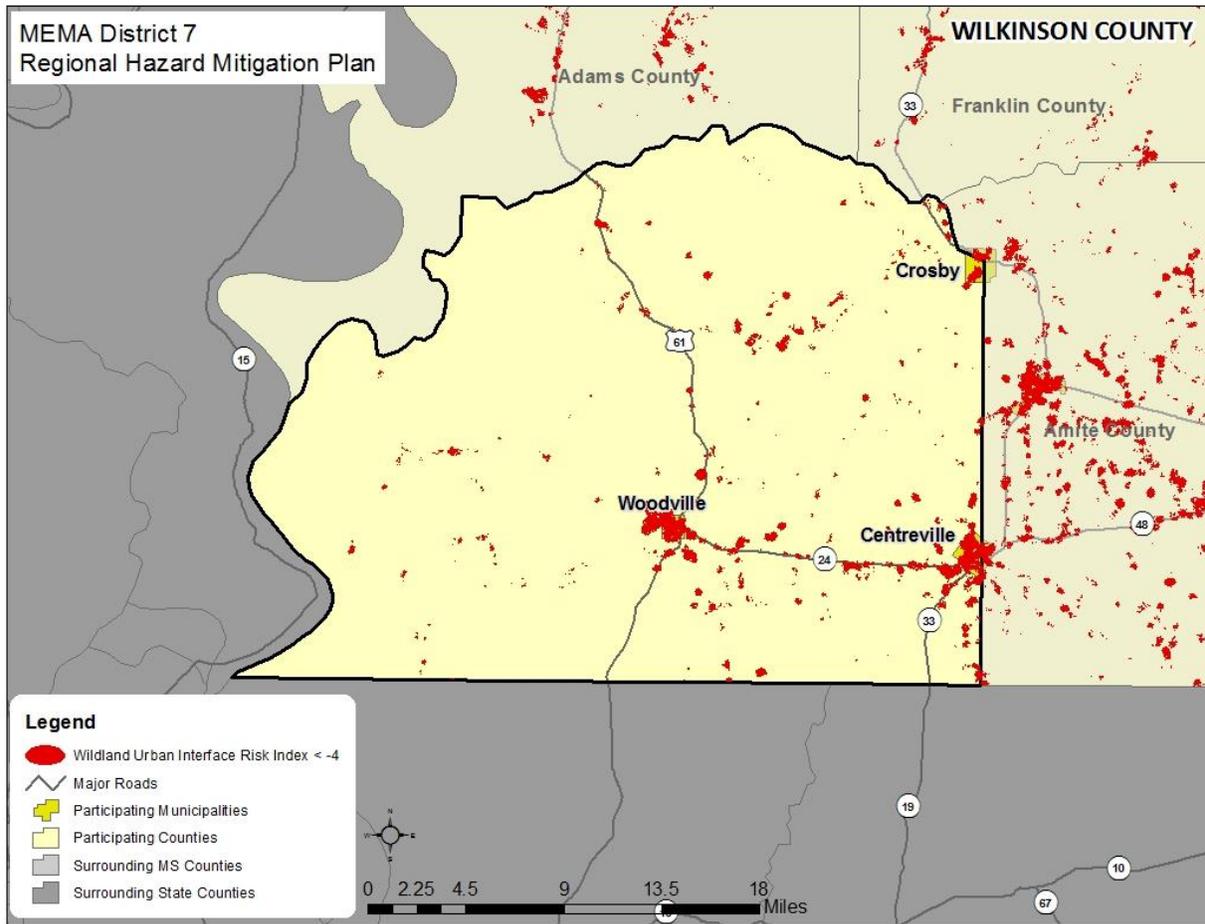
**Table I.40** shows the results of the analysis.

FIGURE I.21: WUI RISK INDEX AREAS IN WILKINSON COUNTY



Source: Southern Wildfire Risk Assessment Data

**FIGURE I.22: WILDFIRE RISK AREAS IN WILKINSON COUNTY**



Source: Southern Wildfire Risk Assessment Data

**TABLE I.40: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO WILDFIRE RISK AREAS<sup>26</sup>**

| Location                      | Wildfire Risk Area             |                        |
|-------------------------------|--------------------------------|------------------------|
|                               | Approx. Number of Improvements | Approx. Improved Value |
| Centreville                   | 857                            | \$145,347,000          |
| Crosby                        | 211                            | \$25,479,000           |
| Woodville                     | 804                            | \$157,912,000          |
| Unincorporated Area           | 3,068                          | \$395,421,000          |
| <b>WILKINSON COUNTY TOTAL</b> | <b>4,940</b>                   | <b>\$724,159,000</b>   |

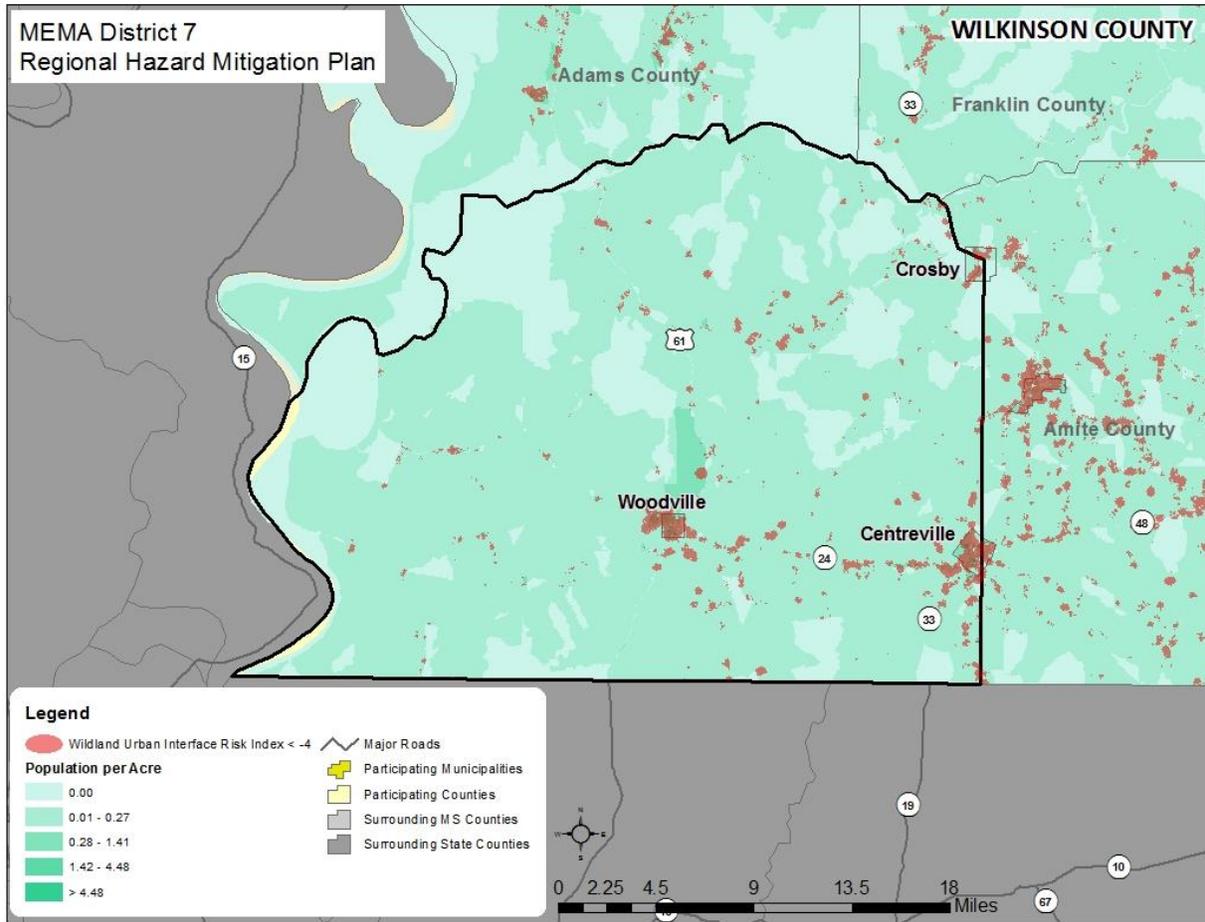
Source: Southern Wildfire Risk Assessment; Hazus-MH 4.0

<sup>26</sup> Parcel/Building Footprint data was not available for Wilkinson County. Therefore, building counts and values were pulled from Hazus-MH at the census block level and approximate improved value was calculated.

**Social Vulnerability**

Given some level of susceptibility across the entire county, it is assumed that the total population is at risk to the wildfire hazard. **Figure I.23** shows an overlay of the wildfire risk areas identified above with the population density by census block. This shows that many of the areas of higher population concentration are susceptible to wildfire because of their proximity to the wildland urban interface.

**FIGURE I.23: WILDFIRE RISK AREAS IN WILKINSON COUNTY**



Source: Southern Wildfire Risk Assessment Data; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that there are 18 critical facilities located in wildfire areas of concern, including 1 EOC, 3 fire stations, 1 government/public building, 3 medical care facilities, 3 police stations, 1 private sector building, and 6 schools. It should be noted, that several factors could impact the spread of a wildfire putting all facilities at risk. A list of specific critical facilities and their associated risk can be found in **Table I.45** at the end of this subsection.

In conclusion, a wildfire event has the potential to impact many existing and future buildings, critical facilities, and populations in Wilkinson County.

**EARTHQUAKE**

As the Hazus-MH model suggests below, and historical occurrences confirm, any significant earthquake activity in the area is likely to inflict minor damage to the county. Hazus-MH 4.0 estimates a total annualized loss of \$4,000 which includes structural and non-structural damage to buildings, contents, and inventory throughout the county.

For the earthquake hazard vulnerability assessment, a probabilistic scenario was created to estimate the average annualized loss<sup>27</sup> for the county. The results of the analysis are generated at the census tract level within Hazus-MH and then aggregated to the county level. Since the scenario is annualized, no building counts are provided. Losses reported included losses due to structure failure, building loss, contents damage, and inventory loss. They do not include losses to business interruption, lost income, or relocation. **Table I.41** summarizes the findings with results rounded to the nearest thousand.

**TABLE I.41: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR EARTHQUAKE HAZARD**

| Location         | Structural Damage | Non-Structural Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|------------------|-------------------|-----------------------|-----------------|----------------|-----------------------|
| Wilkinson County | \$1,000           | \$2,000               | \$1,000         | \$0            | \$4,000               |

Source: Hazus-MH 4.0

**Social Vulnerability**

It can be assumed that all existing and future populations are at risk to the earthquake hazard.

**Critical Facilities**

The Hazus-MH probabilistic analysis did not indicate that any critical facilities would sustain measurable damage in an earthquake event. However, all critical facilities should be considered at-risk to minor to moderate damage should an event occur. A list of specific critical facilities and their associated risk can be found in **Table I.45** at the end of this subsection.

In conclusion, an earthquake has the potential to impact all existing and future buildings, facilities, and populations in Wilkinson County. Specific vulnerabilities for these assets will be greatly dependent on their individual design and the mitigation measures in place. Such site-specific vulnerability determinations are outside the scope of this assessment but may be considered during future plan updates. The Hazus-MH scenario indicates that minimal to moderate damage is expected from an earthquake occurrence. While Wilkinson County may not experience a catastrophic earthquake, localized damage is possible with a moderate to larger scale occurrence.

**HURRICANE AND TROPICAL STORM**

Historical evidence indicates that Wilkinson County has significant risk to the hurricane and tropical storm hazard. There have been six disaster declarations due to hurricanes as noted in pervious sections. Several tracks have come near or traversed through the county, as shown and discussed in Section I.2.10. Hazus-MH 4.0 estimates a total annualized loss of \$161,000 which includes buildings, contents, and inventory throughout the county.

<sup>27</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

Hurricanes and tropical storms can cause damage through numerous additional hazards such as flooding, erosion, tornadoes, and high winds, thus it is difficult to estimate total potential losses from these cumulative effects. The current Hazus-MH hurricane model only analyzes hurricane winds and is not capable of modeling and estimating cumulative losses from all hazards associated with hurricanes; therefore, only hurricane winds are analyzed in this section. It can be assumed that all existing and future buildings and populations are at risk to the hurricane and tropical storm hazard. Hazus-MH 4.0 was used to determine average annualized losses<sup>28</sup> for the county as shown below in **Table I.42**. Only losses to buildings, inventory, and contents are included in the results.

**TABLE I.42: AVERAGE ANNUALIZED LOSS ESTIMATIONS FOR HURRICANE WIND HAZARD**

| Location         | Building Damage | Contents Damage | Inventory Loss | Total Annualized Loss |
|------------------|-----------------|-----------------|----------------|-----------------------|
| Wilkinson County | \$115,000       | \$46,000        | \$0            | \$161,000             |

Source: Hazus-MH 4.0

**Social Vulnerability**

Given some equal susceptibility across the entire county, it is assumed that the total population, both current and future, is at risk to the hurricane and tropical storm hazard.

**Critical Facilities**

Given equal vulnerability across Wilkinson County, all critical facilities are considered to be at risk. Some buildings may perform better than others in the face of such an event due to construction and age, among other factors. Determining individual building response is beyond the scope of this plan. However, this plan will consider mitigation action for especially vulnerable structures and/or critical facilities to mitigate against the effects of the hurricane hazard. A list of specific critical facilities can be found in **Table I.45** at the end of this subsection.

In conclusion, a hurricane event has the potential to impact many existing and future buildings, critical facilities, and populations in Wilkinson County.

**RADIOLOGICAL EVENT**

The location of Grand Gulf and River Bend Nuclear Stations north and south of the region, respectively, demonstrate that the county is at some risk to the effects of a nuclear accident. Although there have not been any major events at these plants in the past, there have been major events at other nuclear stations around the country. Additionally, smaller scale incidents at both these nuclear stations have occurred.

In order to assess nuclear risk, a GIS-based analysis was used to estimate exposure during a nuclear event within each of the risk zones described in Section I.2.14. The determination of assessed value at-risk (exposure) was calculated using GIS analysis by summing the total values for those properties that were confirmed to be located within one of the risk zones. **Table I.43** presents potential at-risk properties in the 50-mile buffer zone (no property was located in the 10-mile buffer zone). The number of buildings, parcels, and the approximate value are presented.

<sup>28</sup> Annualized loss is defined by Hazus-MH as the expected value of loss in any one year.

**TABLE I.43: ESTIMATED EXPOSURE OF IMPROVED PROPERTY TO A NUCLEAR ACCIDENT**

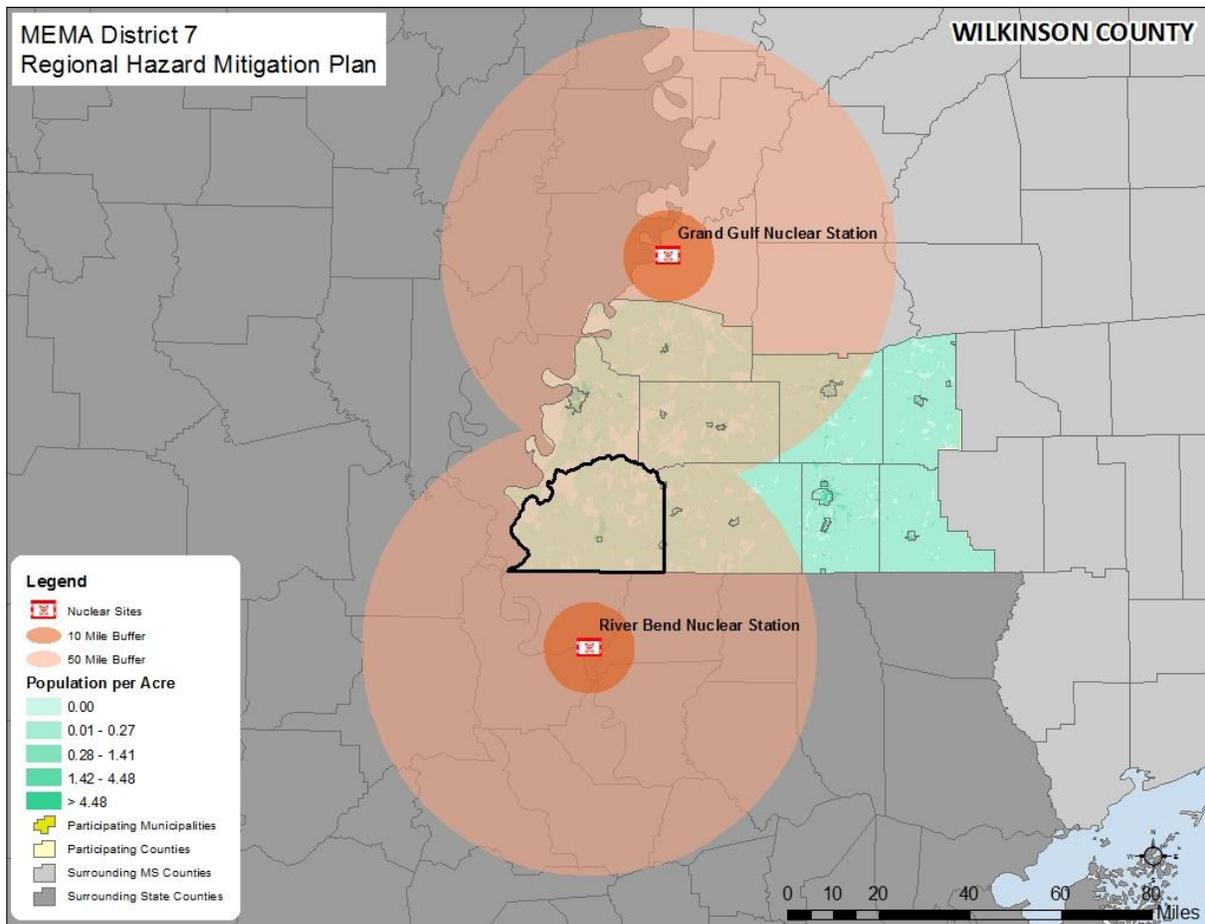
| Location                      | 50-mile Nuclear Buffer Area    |                        |
|-------------------------------|--------------------------------|------------------------|
|                               | Approx. Number of Improvements | Approx. Improved Value |
| Centreville                   | 866                            | \$150,329,000          |
| Crosby                        | 211                            | \$25,479,000           |
| Woodville                     | 804                            | \$157,912,000          |
| Unincorporated Area           | 3,339                          | \$429,695,000          |
| <b>WILKINSON COUNTY TOTAL</b> | <b>5,220</b>                   | <b>\$763,415,000</b>   |

Source: International Atomic Energy Agency; Hazus-MH 4.0

**Social Vulnerability**

Since the entire county is within the 50-mile buffer area, the entire population is considered to be at high risk to a radiological event. This risk can be seen in **Figure I.24**.

**FIGURE I.24: POPULATION DENSITY NEAR NUCLEAR POWER PLANT INCIDENT HAZARD ZONES IN WILKINSON COUNTY**



Source: International Atomic Energy Agency; United States Census Bureau, 2010 Census

**Critical Facilities**

The critical facility analysis revealed that all 22 critical facilities in the county are located in the 50-mile nuclear buffer area, including 1 EOC, 3 fire stations, 2 government/public buildings, 4 medical care facilities, 5 police stations, 1 private sector building, and 6 schools. No critical facilities are located in the 10-mile buffer area. A list of specific critical facilities and their associated risk can be found in **Table I.45** at the end of this section.

In conclusion, a nuclear accident has the potential to impact many existing and future buildings, facilities, and populations in Wilkinson County.

**CONCLUSIONS ON HAZARD VULNERABILITY**

**Table I.44** presents a summary of annualized loss for each hazard in Wilkinson County. Due to the reporting of hazard damages primarily at the county level, it was difficult to determine an accurate annualized loss estimate for each municipality. Therefore, an annualized loss was determined through the damage reported through historical occurrences at the county level. These values should be used as an additional planning tool or measure risk for determining hazard mitigation strategies throughout the county.

**TABLE I.44: ANNUALIZED LOSS FOR WILKINSON COUNTY**

| Event                         | Wilkinson County |
|-------------------------------|------------------|
| <b>Flood-related Hazards</b>  |                  |
| Dam and Levee Failure         | Negligible       |
| Erosion                       | Negligible       |
| Flood                         | \$349,495        |
| <b>Fire-related Hazards</b>   |                  |
| Drought                       | Negligible       |
| Lightning                     | \$0              |
| Wildfire                      | Negligible       |
| <b>Geologic Hazards</b>       |                  |
| Earthquake*                   | \$1,000          |
| <b>Wind-related Hazards</b>   |                  |
| Extreme Heat                  | Negligible       |
| Hailstorm                     | \$35,475         |
| Hurricane & Tropical Storm    | \$1,232,778      |
| Severe Thunderstorm/High Wind | \$7,379          |
| Tornado                       | \$63,893         |
| Winter Storm & Freeze         | \$0              |
| <b>Human-caused Hazards</b>   |                  |
| Radiological Event            | Negligible       |

\*No historic losses for earthquake were recorded, so Hazus estimates for annualized loss were used.

| Event | Wilkinson County |
|-------|------------------|
|-------|------------------|

Note: In this table, the term “Negligible” is used to indicate that no records of dollar losses for the particular hazard were recorded. This could be the case either because there were no events that caused dollar damage or because documentation of that particular type of event is not well kept.

As noted previously, all existing and future buildings and populations (including critical facilities) are vulnerable to atmospheric hazards including drought, lightning, extreme heat, hailstorm, hurricane and tropical storm, severe thunderstorm/high wind, tornado, and winter storm and freeze. Some buildings may be more vulnerable to these hazards based on other factors such as construction and building type. **Table I.45** shows the critical facilities vulnerable to the hazards analyzed in this section. The table lists those assets that are determined to be exposed to each of the identified hazards (marked with an “X”).

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**TABLE I.45: AT-RISK CRITICAL FACILITIES IN WILKINSON COUNTY**

| FACILITY NAME                          | FACILITY TYPE     | FLOOD-RELATED         |         |                | FIRE-RELATED   |         |           | GEO      | WIND-RELATED |              |           |                              |                                   |         | HUM                     |                                 |                                 |
|--|-------------------|-----------------------|---------|----------------|----------------|---------|-----------|----------|--------------|--------------|-----------|------------------------------|-----------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|  |                   | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought | Lightning | Wildfire | Earthquake   | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Lightning | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| <b>Wilkinson County</b>                |                   |                       |         |                |                |         |           |          |              |              |           |                              |                                   |         |                         |                                 |                                 |
| Wilkinson County EOC                   | EOC               |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Centreville Volunteer Fire Department  | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Crosby Fire Department                 | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Woodville Fire Department              | Fire Station      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| A.O. Smith Community Center            | Government/Public |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Wilkinson County Correctional Facility | Government/Public |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Catchings Clinic                       | Medical Care      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Field Clinic                           | Medical Care      |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Field Memorial Community Hospital      | Medical Care      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Wilkinson Nursing Home                 | Medical Care      |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Centreville Police Dept                | Police Station    |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Crosby Police Dept                     | Police Station    |                       | X       |                |                | X       | X         |          | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Wilkinson County Sheriff               | Police Station    |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Woodville Police Dept                  | Police Station    |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Woodville Police Dept                  | Police Station    |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Netterville Lumber Company             | Private Sector    |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Finch Elementary School                | School            |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |
| Wilkinson County Christian Academy     | School            |                       | X       |                |                | X       | X         | X        | X            | X            | X         | X                            | X                                 | X       | X                       |                                 | X                               |

| FACILITY NAME                      | FACILITY TYPE | FLOOD-RELATED         |         |                |                | FIRE-RELATED |           |          | GEO        | WIND-RELATED |           |                              |                                   |         |                         | HUM                             |                                 |
|------------------------------------|---------------|-----------------------|---------|----------------|----------------|--------------|-----------|----------|------------|--------------|-----------|------------------------------|-----------------------------------|---------|-------------------------|---------------------------------|---------------------------------|
|                                    |               | Dam and Levee Failure | Erosion | Flood – 100 yr | Flood – 500 yr | Drought      | Lightning | Wildfire | Earthquake | Extreme Heat | Hailstorm | Hurricane and Tropical Storm | Severe Thunderstorm/<br>Lightning | Tornado | Winter Storm and Freeze | Radiological Event 10-mile area | Radiological Event 50-mile area |
| Wilkinson County Elementary School | School        |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Wilkinson County High School       | School        |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| Wilkinson County Voc-Tech Center   | School        |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |
| William Winams Alternative School  | School        |                       | X       |                |                | X            | X         | X        | X          | X            | X         | X                            | X                                 | X       |                         |                                 | X                               |

## I.4 WILKINSON COUNTY CAPABILITY ASSESSMENT

This subsection discusses the capability of Wilkinson County to implement hazard mitigation activities. More information on the purpose and methodology used to conduct the assessment can be found in Section 7: *Capability Assessment*.

### I.4.1 Planning and Regulatory Capability

**Table I.46** provides a summary of the relevant local plans, ordinances, and programs already in place or under development for Wilkinson County. A checkmark (✓) indicates that the given item is currently in place and being implemented. An asterisk (\*) indicates that the given item is currently being developed for future implementation. A dagger (†) indicates that the given item is administered for that municipality by the county. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the MEMA District 7 Regional Hazard Mitigation Plan.

**TABLE I.46: RELEVANT PLANS, ORDINANCES, AND PROGRAMS**

| Planning Tool/Regulatory Tool | Hazard Mitigation Plan | Threat and Hazard Identification and Risk Assessment (THIRA) | Comprehensive Land Use Plan | Floodplain Management Plan/Flood Mitigation Plan | Open Space Management Plan (Parks & Rec/Greenway Plan) | Stormwater Management Plan/Ordinance | Natural Resource Protection Plan | Flood Response Plan | Emergency Operations Plan | Emergency Management Accreditation Program (EMAP Accreditation) | Continuity of Operations Plan | Evacuation Plan | Disaster Recovery Plan | Capital Improvements Plan | Economic Development Plan | Historic Preservation Plan | Flood Damage Prevention Ordinance | Zoning Ordinance | Subdivision Ordinance | Unified Development Ordinance | Post-Disaster Redevelopment/ Reconstruction Plan/ Ordinance | Building Code | Fire Code | National Flood Insurance Program (NFIP) | NFIP Community Rating System (CRS Program) |
|-------------------------------|------------------------|--|-----------------------------|--|--|--------------------------------------|----------------------------------|---------------------|---------------------------|---|-------------------------------|-----------------|------------------------|---------------------------|---------------------------|----------------------------|-----------------------------------|------------------|-----------------------|-------------------------------|---|---------------|-----------|---|--|
|                               | WILKINSON COUNTY       | ✓  |                             |  |  |                                      |                                  |                     |                           | ✓   |                               |                 |                        |                           |                           | ✓                          |                                   | ✓                |                       |                               |   |               |           |   | ✓  |
| Centreville                   | †                      |  |                             |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            | ✓                                 |                  |                       |                               |   |               |           | ✓                                       |  |
| Crosby                        | †                      |  |                             |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            | ✓                                 |                  |                       |                               |   |               |           | ✓                                       |  |
| Woodville                     | †                      |  | ✓                           |  |  |                                      |                                  |                     | †                         |   |                               |                 |                        |                           | †                         |                            | ✓                                 | ✓                |                       |                               |   | ✓             |           | ✓                                       |  |

A more detailed discussion on the county’s planning and regulatory capabilities follows.

### EMERGENCY MANAGEMENT

#### Hazard Mitigation Plan

Wilkinson County has previously adopted a hazard mitigation plan. The Town of Centreville, Town of Crosby, and Town of Woodville were also included in this plan.

**Emergency Operations Plan**

Wilkinson County maintains an emergency operations plan through its Emergency Management Agency. The Town of Centreville, Town of Crosby, and Town of Woodville are also covered by this plan.

**GENERAL PLANNING**

**Comprehensive Land Use Plan**

Wilkinson County has not adopted a county comprehensive land use plan. However, the Town of Woodville has adopted a town comprehensive plan.

**Historic Preservation Plan**

None of the jurisdictions in Wilkinson County has a historic preservation plan. However, the Town of Woodville has published historic preservation guidelines.

**Zoning Ordinance**

The Town of Woodville is the only jurisdiction in Wilkinson County that has adopted a zoning ordinance.

**Building Codes, Permitting, and Inspections**

The Town of Woodville is the only jurisdiction in Wilkinson County that has adopted a building code.

**FLOODPLAIN MANAGEMENT**

Table I.47 provides NFIP policy and claim information for each participating jurisdiction in Wilkinson County.

**TABLE I.47: NFIP POLICY AND CLAIM INFORMATION**

| Jurisdiction      | Date Joined NFIP | Current Effective Map Date | NFIP Policies in Force | Insurance in Force | Closed Claims | Total Payments to Date |
|-------------------|------------------|----------------------------|------------------------|--------------------|---------------|------------------------|
| WILKINSON COUNTY† | 07/16/90         | 04/19/10                   | 86                     | \$13,223,500       | 1,586         | \$20,305,199           |
| Centreville       | 03/12/10         | (NSFHA)                    | 0                      | \$0                | 0             | \$0                    |
| Crosby            | 02/01/86         | 04/19/10                   | 3                      | \$673,000          | 2             | \$15,459               |
| Woodville         | 04/19/10         | 04/19/10                   | 1                      | \$107,100          | 0             | \$0                    |

†Includes unincorporated areas of county only

NSFHA – No Special Flood Hazard Area - All Zone C

Source: NFIP Community Status information as of 8/17/2017; NFIP claims and policy information as of 4/30/2017

All jurisdictions listed above that are participants in the NFIP will continue to comply with all required provisions of the program and will work to adequately comply in the future utilizing a number of strategies. For example, the jurisdictions will coordinate with MEMA and FEMA to develop maps and regulations related to special flood hazard areas within their jurisdictional boundaries and, through a consistent monitoring process, will design and improve their floodplain management program in a way that reduces the risk of flooding to people and property.

**Flood Damage Prevention Ordinance**

All communities participating in the NFIP are required to adopt a local flood damage prevention ordinance. Wilkinson County, Town of Centreville, Town of Crosby, and Town of Woodville all participate in the NFIP and have adopted flood damage prevention regulations.

**I.4.2 Administrative and Technical Capability**

**Table I.48** provides a summary of the capability assessment results for Wilkinson County with regard to relevant staff and personnel resources. A checkmark (✓) indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill. A dagger (†) indicates a county-level staff member(s) provides the specified knowledge or skill to that municipality.

**TABLE I.48: RELEVANT STAFF/PERSONNEL RESOURCES**

| Staff/Personnel Resource | Planners with knowledge of land development/land management practices | Engineers or professionals trained in construction practices related to buildings and/or infrastructure | Planners or engineers with an understanding of natural and/or human-caused hazards | Emergency Manager | Floodplain Manager | Land Surveyors | Scientists familiar with the hazards of the community | Staff with education or expertise to assess the community's vulnerability to hazards | Personnel skilled in GIS and/or Hazus | Resource development staff or grant writers |
|--------------------------|---|---|--|-------------------|--------------------|----------------|---|--|---------------------------------------|---|
| WILKINSON COUNTY         |   |   |  | ✓                 | ✓                  |                | ✓   | ✓  |                                       |   |
| Centreville              |   |   |  | †                 | ✓                  |                | †   | †  |                                       |   |
| Crosby                   |   |   |  | †                 | ✓                  |                | †   | †  |                                       |   |
| Woodville                |   | ✓   |  | †                 | ✓                  |                | †   | †  |                                       |   |

Credit for having a floodplain manager was given to those jurisdictions that have a flood damage prevention ordinance, and therefore an appointed floodplain administrator, regardless of whether the appointee was dedicated solely to floodplain management. Credit was given for having a scientist familiar with the hazards of the community if a jurisdiction has a Cooperative Extension Service or Soil and Water Conservation Department. Credit was also given for having staff with education or expertise to assess the community's vulnerability to hazards if a staff member from the jurisdiction was a participant on the existing hazard mitigation plan's planning committee.

**I.4.3 Fiscal Capability**

**Table I.49** provides a summary of the results for Wilkinson County with regard to relevant fiscal resources. A checkmark (✓) indicates that the given fiscal resource has previously been used to implement hazard

mitigation actions. A dagger (†) indicates that the given fiscal resource is locally available for hazard mitigation purposes (including match funds for state and federal mitigation grant funds).

**TABLE I.49: RELEVANT FISCAL RESOURCES**

| Fiscal Tool/Resource    | Capital Improvement Programming | Community Development Block Grants (CDBG) | Special Purpose Taxes (or taxing districts) | Gas/Electric Utility Fees | Water/Sewer Fees | Stormwater Utility Fees | Development Impact Fees | General Obligation, Revenue, and/or Special Tax Bonds | Partnering Arrangements or Intergovernmental Agreements | Other: FEMA Hazard Mitigation Grants, Homeland Security Grants, USDA Rural Development Agency Grants, and US Economic Development Administration Grants |
|-------------------------|---------------------------------|---|---|---------------------------|------------------|-------------------------|-------------------------|---|---|---|
| <b>WILKINSON COUNTY</b> |                                 | †   |   |                           |                  |                         |                         |   | ✓   | ✓   |
| Centreville             |                                 | †   |   |                           |                  |                         |                         |   |   | †   |
| Crosby                  |                                 | †   |   |                           |                  |                         |                         |   |   | †   |
| Woodville               |                                 | †   |   |                           |                  |                         |                         |   |   | †   |

### I.4.4 Political Capability

During the months immediately following a disaster, local public opinion in Wilkinson County is more likely to shift in support of hazard mitigation efforts.

**Table I.50** provides a summary of the results for Wilkinson County with regard to political capability. A checkmark (✓) indicates the expected degree of political support by local elected officials in terms of adopting/funding information.

**TABLE I.50: LOCAL POLITICAL SUPPORT**

| Political Support       | Limited | Moderate | High |
|-------------------------|---------|----------|------|
| <b>WILKINSON COUNTY</b> |         | ✓        |      |
| Centreville             |         | ✓        |      |
| Crosby                  |         | ✓        |      |
| Woodville               |         | ✓        |      |

## I.4.5 Conclusions on Local Capability

**Table I.51** shows the results of the capability assessment using the designed scoring methodology described in Section 7: *Capability Assessment*. The capability score is based solely on the information found in existing hazard mitigation plans and readily available on the jurisdictions' government websites. This information was reviewed by all jurisdictions and each jurisdiction provided feedback on the information included in the capability assessment. Local government input was vital to identifying capabilities. According to the assessment, the average local capability score for the county and its jurisdictions is 20.5, which falls into the limited capability ranking.

**TABLE I.51: CAPABILITY ASSESSMENT RESULTS**

| Jurisdiction     | Overall Capability Score | Overall Capability Rating |
|------------------|--------------------------|---------------------------|
| WILKINSON COUNTY | 24                       | Limited                   |
| Centreville      | 17                       | Limited                   |
| Crosby           | 17                       | Limited                   |
| Woodville        | 24                       | Limited                   |

## I.5 WILKINSON COUNTY MITIGATION STRATEGY

This subsection provides the blueprint for Wilkinson County to follow in order to become less vulnerable to its identified hazards. It is based on general consensus of the Regional Hazard Mitigation Council and the findings and conclusions of the capability assessment and risk assessment. Additional Information can be found in Section 8: *Mitigation Strategy* and Section 9: *Mitigation Action Plan*.

### I.5.1 Mitigation Goals

Wilkinson County developed six mitigation goals in coordination with the other participating MEMA District 7 Region jurisdictions. The regional mitigation goals are presented in **Table I.52**.

**TABLE I.52: MEMA DISTRICT 7 REGIONAL MITIGATION GOALS**

|         | Goal   |
|---------|--|
| Goal #1 | Increase the overall public awareness of natural hazards that face the region.   |
| Goal #2 | Retrofit of critical facilities and/or critical infrastructure to lower the risk of damage from natural hazards.   |
| Goal #3 | General improvement of regional or local mitigation planning and capability.   |
| Goal #4 | Support State Identified Mitigation Initiatives such as saferooms and storm shelters, severe weather warning systems for universities and colleges, and severe weather notification systems for local communities. |
| Goal #5 | Reduce loss of life, damage and loss of property and infrastructure, economic costs, including response, recovery and disruption of economic activity.   |

|         | Goal  |
|---------|---|
| Goal #6 | Foster cooperation among all levels of governments and the private sector with respect to improving, updating, and implementing the hazard mitigation plan. |

## I.5.2 Mitigation Action Plan

The mitigation actions proposed by Wilkinson County, Town of Centreville, Town of Crosby, and Town of Woodville are listed in the following individual Mitigation Action Plans.

## Wilkinson County Mitigation Action Plan

| Action #          | Description   | Hazard(s) Addressed       | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|-------------------|---|---------------------------|-------------------|--|---|-------------------------|--|
| <b>Prevention</b> |   |                           |                   |  |   |                         |  |
| P-1               | <b>Comprehensive Land Use and Long Term Recovery Planning</b> – The Wilkinson County Board of Supervisors/Towns of Woodville, Centreville, and Crosby should have a Comprehensive Plan developed to guide long term recovery and development. | Hurricane or other hazard | High              | Wilkinson County Board of Supervisors/ Towns of Woodville, Centreville, and Crosby | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | The Wilkinson County Board of Supervisors/Towns of Woodville, Centreville, and Crosby recognize that comprehensive land use planning yields many benefits for both the county and towns. The existence of a Comprehensive Plan enables a county or municipality to institute zoning ordinances to regulate new development and protect or upgrade existing development and it provides a solid basis to establish stronger building codes. Many of the goals of Long Term Recovery Planning and Comprehensive Planning are one and the same. Although Woodville has adopted a Town Plan, the county and two other towns have not developed a Comprehensive Plan. Therefore, this action will remain in the plan. |

**ANNEX I: WILKINSON COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---|-------------------------|---|
| P-2      | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.                                   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.                              |
| P-3      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as counties develop it to enhance tornado hazard risk assessment. | Tornado             | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2018                    | A detailed tornado hazard risk assessment for properties found within local jurisdictions does not currently exist. The county has received the necessary data and is working on developing it to enhance the tornado risk assessment. Therefore, this action will remain in place to improve future vulnerability assessments. |
| P-4      | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist counties with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as counties develop it to enhance wildfire risk assessment.           | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2019                    | A detailed wildfire risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the county would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.                                  |

| Action #                           | Description   | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|---|---|-------------------|--|---|-------------------------|--|
| <b>Property Protection</b>         |   |   |                   |  |   |                         |  |
| PP-1                               | <b>Retrofit Existing Public Buildings for Wind Resistance</b> – The Wilkinson County Board of Supervisors/Towns of Woodville, Centreville, and Crosby should seek to retrofit all essential government buildings to increase their resistance to the effects of high winds. | Hurricane, Tornado or other wind related hazard | High              | Wilkinson County Board of Supervisors/ Towns of Woodville, Centreville, and Crosby | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Wilkinson County Board of Supervisors/Towns of Woodville, Centreville, and Crosby recognize that damage to public buildings from wind is a serious hazard affecting the ability of government to function during and after disasters. Roof and structural damage and loss of electrical service in county/town government buildings due to high winds can render these buildings at least temporarily unusable and can potentially cause disruptions in government services. Retrofits of essential government buildings have not been completed and the county is working on obtaining grants to provide the necessary funding. Therefore, this action will remain in the plan to lessen potential wind damage to those structures. |
| <b>Natural Resource Protection</b> |   |   |                   |  |   |                         |  |
| NRP-1                              |   |   |                   |  |   |                         |  |
| <b>Structural Projects</b>         |   |   |                   |  |   |                         |  |
| SP-1                               |   |   |                   |  |   |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|--|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |  |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-8 since they were duplicate actions. |

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                      | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|--|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | <p>Hurricane or other hazard leading to loss of electrical power</p> | <p>High</p>       | <p>Wilkinson County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>Completed</p>        | <p>Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. Since 2005 the county has secured 4 generators for locations that include the Courthouse, Health Dept., Welfare Dept. and Sheriff Station.</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department               | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---------------------------------------|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail. | Hurricane or other hazard leading to loss of traditional communications systems | High              | Wilkinson County Board of Supervisors | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. Wilkinson County continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                      | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---|-------------------|--|--|-------------------------|--|
| ES-4     | <p><b>Construct New Emergency Shelter</b><br/>                     – The county should construct a 200 person evacuation shelter. When not needed for disaster related housing, the building will serve as a Community Center and can be rented by individuals for group functions such as family reunions, weddings, or class reunions.</p> | <p>Hurricane, Tornado or other hazard requiring the use of emergency shelters</p> | <p>High</p>       | <p>Wilkinson County Board of Supervisors</p> | <p>Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds</p> | <p>2022</p>             | <p>The Wilkinson County Board of Supervisors recognize the need to have modern, safe emergency shelters for county/town residents and evacuees from other areas during times of disaster. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short- term use, but for longer term needs as were seen in the Hurricane Katrina disaster, the presence of evacuees in these facilities for more than a few days caused a disruption in the facility’s designed function. Since a new emergency shelter has not been constructed in Wilkinson County, this action will remain in the plan</p> |

| Action # | Description   | Hazard(s) Addressed                             | Relative Priority | Lead Agency/ Department   | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---|---|-------------------------|---|
| ES-5     | <b>Construct Emergency Operations Center (EOC)</b> – The county should construct or renovate a current county owned building for the purpose of an EOC.   | Hurricane, Tornado or other wind related hazard | High              | Wilkinson County Board of Supervisors/<br>Towns of Woodville, Centreville, and Crosby | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county general and special funds | 2022                    | The Wilkinson County Board of Supervisors recognizes the need to have modern, safe emergency operations center for county/town employees (firemen, policemen) emergency personnel and volunteers to convene during times of disaster to discuss planning options, rescue operations or any disaster plan of action. Currently a combination of schools, churches, and other government buildings are used. This works acceptably for short-term use, but for longer term needs as were seen in the Hurricane Katrina. Since an EOC has not been constructed in Wilkinson County, this action will remain in the plan. |
| ES-6     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the county to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the county where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the countywide system. | Tornado   | High              | Wilkinson County Board of Supervisors   | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County General Fund  | Completed               | Many citizens in Wilkinson County live in rural areas and small communities. In the event of inclement weather, it is essential that they receive timely warnings. Since 2005 the county has purchased and installed three additional sirens throughout the county.   |

|             |  |                     |             |  |   |             |  |
|-------------|--|---------------------|-------------|--|---|-------------|--|
| <p>ES-7</p> | <p><b>Improve Emergency Evacuation Routes</b> – Wilkinson County sees the need to improve the condition of its evacuation routes including upgrading bridges where needed.</p> | <p>Radiological</p> | <p>High</p> | <p>Wilkinson County Board of Supervisors</p> | <p>Homeland Security grants, FEMA Hazard Mitigation grants, individual county general and special funds</p> | <p>2022</p> | <p>River Bend Nuclear Power Station is located approximately 17 miles south of Wilkinson County in Louisiana. Most of the county is in the 50-mile Ingestion Emergency Planning Zone. Adequate warning systems and timely evacuation are the citizens only defense in the event of a release of contaminants from the facility. Also, it is anticipated that should contaminants be released from River Bend, many Louisiana residents would need to evacuate to or through Wilkinson County. Wilkinson County is currently working on a Dam and Road reconstruction in the Lake Mary area. In 2011, the county received a grant through the Mississippi Development Authority to reconstruct and reopen a bridge in Fort Adams on Pond Rd. In 2012, the county applied for grant funds to rehab eight bridges, one of which is closed, in the Homochitto National Forest through the Federal Hwy Administration’s Public Lands Highways fund. All of these efforts will help reopen roads for efficient evacuation. The county is still working to further improve evacuation routes, so this action will remain in the plan.</p> |
|-------------|--|---------------------|-------------|--|---|-------------|--|

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---|---------------------------|-------------------------|--|
| ES-8                                  | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms       | High              | Mississippi Emergency Management Agency | MEMA, FEMA                | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan.   |
| <b>Public Education and Awareness</b> |   |                     |                   |   |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Wilkinson County Board of Supervisors   | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|---|
| PEA-2    | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.   |
| PEA-3    | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | MDEQ, Dam Safety Division | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                             |
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.  | Dam Failure         | Moderate          | MDEQ, Dam Safety Division | N/A                       | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. Wilkinson County will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|---|
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan |
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others</b> – Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.                  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                      | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan.   |

| Action # | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan. |

## Town of Centreville Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions.</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                         | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|---|---|-------------------|---|---|-------------------------|---|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | Town of Centreville Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Centreville will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---|-------------------|--|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Centreville Board of Aldermen and Mayor            | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Centreville continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Centreville/ Wilkinson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | Completed               | In the event of inclement weather, it is essential that residents of the Town of Centreville receive timely warnings. Since 2005 the county has purchased and installed three additional sirens throughout the county.   |

|             |  |                     |             |   |   |             |  |
|-------------|--|---------------------|-------------|---|---|-------------|--|
| <p>ES-5</p> | <p><b>Improve Emergency Evacuation Routes</b> – The Town of Centreville and Wilkinson County sees the need to improve the condition of the evacuation routes including upgrading bridges where needed.</p> | <p>Radiological</p> | <p>High</p> | <p>Town of Centreville/<br/>Wilkinson<br/>County Board<br/>of Supervisors</p> | <p>Homeland Security grants, FEMA Hazard Mitigation grants, individual county general and special funds</p> | <p>2022</p> | <p>River Bend Nuclear Power Station is located approximately 17 miles south of Wilkinson County in Louisiana. Most of the county is in the 50-mile Ingestion Emergency Planning Zone. Adequate warning systems and timely evacuation are the citizens only defense in the event of a release of contaminants from the facility. Also, it is anticipated that should contaminants be released from River Bend, many Louisiana residents would need to evacuate to or through Wilkinson County. Wilkinson County is currently working on a Dam and Road reconstruction in the Lake Mary area. In 2011, the county received a grant through the Mississippi Development Authority to reconstruct and reopen a bridge in Fort Adams on Pond Rd. In 2012, the county applied for grant funds to rehab eight bridges, one of which is closed, in the Homochitto National Forest through the Federal Hwy Administration’s Public Lands Highways fund. All of these efforts will help reopen roads for efficient evacuation. The county is still working to further improve evacuation routes, so this action will remain in the plan.</p> |
|-------------|--|---------------------|-------------|---|---|-------------|--|

**ANNEX I: WILKINSON COUNTY**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                         | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-6     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency         | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-7     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Centreville Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Centreville       | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Centreville will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Crosby Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities’ ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-5 since they were duplicate actions.</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|--|---|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | Town of Crosby Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Crosby will continue to purchase critical facility generators as funding permits, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---|-------------------|--|---|-------------------------|---|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Crosby Board of Aldermen and Mayor               | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Crosby continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Crosby/<br>Wilkinson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County and/or Town General Fund  | Completed               | In the event of inclement weather, it is essential that residents of the Town of Crosby receive timely warnings. Since 2005 the county has purchased and installed three additional sirens throughout the county.   |

**ANNEX I: WILKINSON COUNTY**

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                    | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|--|---|-------------------------|--|
| ES-5     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency    | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-6     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Crosby Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Crosby            | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

**ANNEX I: WILKINSON COUNTY**

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Crosby will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

## Town of Woodville Mitigation Action Plan

| Action #          | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)  |
|-------------------|--|---------------------|-------------------|---|--|-------------------------|---|
| <b>Prevention</b> |  |                     |                   |   |  |                         |   |
| P-1               | <b>Assessing Vulnerability by Jurisdiction</b> – Create or acquire geographic information system layers to include E911 roads, structures, and 100-year flood zones. Use this data to develop accurate risk assessments for flood zones throughout the jurisdiction.   | Flood               | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds        | 2019                    | A detailed flood hazard risk assessment for properties found within local jurisdictions does not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments.  |
| P-2               | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, and infrastructure. Secure copies of this data as towns develop it to enhance tornado and wildfire hazard risk assessments. | Tornado, Wildfire   | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | 2019                    | Detailed tornado and wildfire hazard risk assessments for properties found within local jurisdictions do not currently exist. Digital maps of certain features in the town would make this much more feasible and accurate, so this action will remain in place to improve future vulnerability assessments. This action was combined with P-3 since they were duplicate actions. |

| Action #                           | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources  | Implementation Schedule | Implementation Status (2017)   |
|------------------------------------|--|---------------------|-------------------|---|--|-------------------------|--|
| P-3                                | <b>Assessing Vulnerability by Jurisdiction</b> – Encourage and assist towns with the development of geographic information systems including such layers as ownership, structures, infrastructure. Secure copies of this data as towns develop it to enhance wildfire risk assessment. | Wildfire            | Moderate          | Southwest Mississippi Planning and Development District, Inc. | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual county/town general and special funds | Deleted                 | This action is a duplicate of P-2, so it has been combined with P-2 and removed from the plan. |
| <b>Property Protection</b>         |  |                     |                   |   |  |                         |  |
| PP-1                               |  |                     |                   |   |  |                         |  |
| <b>Natural Resource Protection</b> |  |                     |                   |   |  |                         |  |
| NRP-1                              |  |                     |                   |   |  |                         |  |
| <b>Structural Projects</b>         |  |                     |                   |   |  |                         |  |
| SP-1                               |  |                     |                   |   |  |                         |  |

| Action #                  | Description  | Hazard(s) Addressed     | Relative Priority | Lead Agency/ Department                 | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|---------------------------|--|-------------------------|-------------------|---|---------------------------|-------------------------|---|
| <b>Emergency Services</b> |  |                         |                   |   |                           |                         |   |
| ES-1                      | <p><b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.</p> | Hurricane, Winter Storm | High              | Mississippi Emergency Management Agency | N/A                       | 2018                    | <p>Communities lack the skills and education needed to survive severe weather, before and during an event. Local emergency managers need to strengthen their hazardous weather operations. StormReady status will improve communities' ability to prepare for and mitigate the effects of extreme weather-related events, so this action will remain in the plan. This action was combined with ES-6 since they were duplicate actions.</p> |

| Action # | Description   | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|---|-------------------|---|---|-------------------------|--|
| ES-2     | <p><b>Critical Facility Generators –</b><br/>Purchase permanently mounted generators for water systems and government facilities such as town halls, county courthouses, police and sheriff offices. Purchase mobile generators for sewer lift stations. Secure the services of a licensed electrician to modify the wiring at each generator site to enable its use.</p> | Hurricane or other hazard leading to loss of electrical power | High              | Town of Woodville Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of electrical power to critical facilities such as water and sewer systems, law enforcement offices, and other critical facilities during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who depend on municipal and rural water and sewer systems and rely on county and town governments to continue to maintain order. This situation can be especially difficult on the elderly and other special needs persons who would have a difficult time maintaining the basics for themselves without assistance. The Town of Woodville will continue to purchase critical facility generators as funding permits, so this action will remain in the plan |

| Action # | Description  | Hazard(s) Addressed   | Relative Priority | Lead Agency/ Department                                  | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---|-------------------|--|---|-------------------------|--|
| ES-3     | <b>Improve Emergency Communications</b> – Purchase a satellite phone system to ensure communications capabilities are unimpeded during natural disasters even if traditional communications systems fail.  | Hurricane or other hazard leading to loss of traditional communications systems | High              | Town of Woodville Board of Aldermen and Mayor            | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual town general and special funds | 2020                    | Loss of the communication capabilities between law enforcement offices, other emergency responders, and other units of government during a natural disaster can have a severe impact on the functioning of government to provide relief and assistance to citizens and maintain civil order. This can also cause very significant problems for private citizens who need assistance, especially the elderly and other special needs persons. The Town of Woodville continues to improve emergency communications and will purchase a satellite phone system when funding allows, so this action will remain in the plan. |
| ES-4     | <b>Sirens/Warning Systems</b> – A warning system should be installed throughout the town to notify citizens of any dangerous weather or man-made event in a timely manner. In portions of the town where sirens/warning systems may have already been installed, they should be upgraded and incorporated into the town-wide system. | Tornado   | High              | Town of Woodville/ Wilkinson County Board of Supervisors | Homeland Security grants, FEMA Hazard Mitigation Grant, Individual County/Town General Fund   | Completed               | In the event of inclement weather, it is essential that residents of the Town of Woodville receive timely warnings. Since 2005 the county has purchased and installed three additional sirens throughout the county.   |

|             |  |                     |             |   |   |             |  |
|-------------|--|---------------------|-------------|---|---|-------------|--|
| <p>ES-5</p> | <p><b>Improve Emergency Evacuation Routes</b> – The Town of Woodville and Wilkinson County sees the need to improve the condition of the evacuation routes including upgrading bridges where needed.</p> | <p>Radiological</p> | <p>High</p> | <p>Town of Woodville/<br/>Wilkinson<br/>County Board<br/>of Supervisors</p> | <p>Homeland Security grants, FEMA Hazard Mitigation grants, individual county general and special funds</p> | <p>2022</p> | <p>River Bend Nuclear Power Station is located approximately 17 miles south of Wilkinson County in Louisiana. Most of the county is in the 50-mile Ingestion Emergency Planning Zone. Adequate warning systems and timely evacuation are the citizens only defense in the event of a release of contaminants from the facility. Also, it is anticipated that should contaminants be released from River Bend, many Louisiana residents would need to evacuate to or through Wilkinson County. Wilkinson County is currently working on a Dam and Road reconstruction in the Lake Mary area. In 2011, the county received a grant through the Mississippi Development Authority to reconstruct and reopen a bridge in Fort Adams on Pond Rd. In 2012, the county applied for grant funds to rehab eight bridges, one of which is closed, in the Homochitto National Forest through the Federal Hwy Administration’s Public Lands Highways fund. All of these efforts will help reopen roads for efficient evacuation. The county is still working to further improve evacuation routes, so this action will remain in the plan.</p> |
|-------------|--|---------------------|-------------|---|---|-------------|--|

| Action # | Description   | Hazard(s) Addressed  | Relative Priority | Lead Agency/ Department                       | Potential Funding Sources   | Implementation Schedule | Implementation Status (2017)   |
|----------|---|--|-------------------|---|---|-------------------------|--|
| ES-6     | <b>StormReady</b> – Encourage communities to take a new proactive approach to improving local hazardous weather operations by providing emergency managers with clear guidance on how to improve. Communities have fewer fatalities and less property damage if plans are in place before hazardous weather arrives. The National Weather Service designed StormReady to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Winter Storms  | High              | Mississippi Emergency Management Agency       | MEMA, FEMA  | Deleted                 | This action is a duplicate of ES-1, so it has been combined with ES-1 and removed from the plan. |
| ES-7     | <b>Safe Rooms and Community Shelters</b> – The town should construct and/or encourage construction of safe rooms and community shelters.  | Hurricane, Tornado or other hazard requiring the use of emergency shelters | High              | Town of Woodville Board of Aldermen and Mayor | Homeland Security grants, USDA Rural Development Agency grants, FEMA Hazard Mitigation grants, US Economic Development Administration grants, individual city general and special funds | 2022                    | New Action.  |

| Action #                              | Description   | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department   | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)   |
|---------------------------------------|---|---------------------|-------------------|---------------------------|---------------------------|-------------------------|--|
| <b>Public Education and Awareness</b> |   |                     |                   |                           |                           |                         |  |
| PEA-1                                 | <b>Media Campaign</b> – Encourage local newspapers, radio and television to periodically disseminate information regarding the potential dangers of earthquakes. The articles and information pieces will address existing and future buildings and infrastructure as well as other potential impacts.  | Earthquake          | Moderate          | Town of Woodville         | N/A                       | 2018                    | Although there are no known occurrences of earthquakes originating within this region, this could change or earthquakes originating outside this region could negatively impact citizens. It is important that citizens are aware of the potential impacts of earthquakes, so this action will remain in the plan. |
| PEA-2                                 | <b>Floodplain Management Workshops</b> – Host annual floodplain management related workshops to build around the new ‘Floodplain Management Handbook for Community Administrators’ and the possible inclusion of CRS related information by the ISO state representative. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices. | Flood               | High              | MEMA Mitigation Bureau    | N/A                       | 2018                    | Local Floodplain Administrators and other public officials require continued training in the National Flood Insurance Program (NFIP). This action will remain in the plan as communities will need to continue to implement floodplain management activities to maintain their participation in the NFIP.          |
| PEA-3                                 | <b>Education: Community Outreach</b> – MDEQ to develop an outreach plan to include development and presentation of public information programs for residents in ‘at risk’ communities. Southwest Mississippi Planning and Development District volunteers to host meetings and/or workshops at our Natchez or Meadville offices.  | Dam Failure         | High              | MDEQ, Dam Safety Division | N/A                       | 2019                    | There is a need for community outreach to both the general public and to the owners of high hazard dams concerning maintenance and Emergency Action Planning. It is important that the public and owners are aware of high hazard dams, so this action will remain in the plan.                                    |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources       | Implementation Schedule | Implementation Status (2017)   |
|----------|--|---------------------|-------------------|---|---------------------------------|-------------------------|--|
| PEA-4    | <b>Emergency Action Plans: Dam Owner Requirements</b> – Support MDEQ in outreach to high hazard and significant hazard dam owners concerning the development of acceptable emergency action plans.   | Dam Failure         | Moderate          | MDEQ, Dam Safety Division                                     | N/A                             | 2020                    | Emergency action plans are developed, exercised, and maintained by the individual dam owners. The MDEQ, Dam Safety Division is tasked to review the plans. The Town of Woodville will continue to support the outreach to high hazard and significant hazard dam owners, so this action will remain in the plan.   |
| PEA-5    | <b>Education: FireWise</b> – Recommend that public information and outreach workshops on the <i>Firewise</i> program be scheduled and encourage participation at one and two-day workshops presented by the Forestry Commission for the benefit of elected and designated officials, vulnerable residents, structural firefighters and members of the State Fire Marshal’s Office. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Wildfire            | High              | Southwest Mississippi Planning and Development District, Inc. | Mississippi Forestry Commission | 2018                    | Homeowners and residents of the Wildland/Urban interface are at risk from wildfire. Existing structures in the danger zone and those considering constructing new homes and businesses within wildland settings should be educated on ways to minimize their risks. Participation in <i>FireWise</i> will improve communities’ awareness of wildfire risk, so this action will remain in the plan. |

| Action # | Description  | Hazard(s) Addressed | Relative Priority | Lead Agency/ Department                                       | Potential Funding Sources | Implementation Schedule | Implementation Status (2017)  |
|----------|--|---------------------|-------------------|---|---------------------------|-------------------------|---|
| PEA-6    | <b>Education: Local Officials, Community Leaders and Others –</b><br>Recommend that structured workshops be held periodically by MEMA to educate local officials, community leaders and other first responders, and primary care facilities concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices. | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | Local officials, community leaders and other first responders, and primary care facilities should receive continuing education concerning evacuation procedures and treatment of affected individuals should a release of radiological materials occur. Therefore, this action will remain in the plan. |
| PEA-7    | <b>Education: Public Outreach –</b><br>Recommend that structured workshops and a media campaign be conducted periodically by MEMA to educate the general public concerning evacuation routes and procedures should a release of radiological materials occur. Southwest Mississippi Planning and Development District will volunteer to host meetings and/or workshops at our Natchez or Meadville offices.  | Radiological        | High              | Southwest Mississippi Planning and Development District, Inc. | MEMA, FEMA                | 2018                    | The public should receive continuing education concerning evacuation routes and procedures. Therefore, this action will remain in the plan.   |

# APPENDIX A

## PLAN ADOPTION

This appendix includes the FEMA APP and ADD Letters and the local adoption resolutions for each of the participating jurisdictions.

# APPENDIX B

## PLANNING TOOLS

This appendix includes the following:

1. List of Recommended Stakeholders
2. Blank Public Participation Survey
3. GIS Data Inventory Sheet
4. Scoring Criteria for Capability Assessment
5. Blank Mitigation Action Worksheet
6. Mitigation Action Progress Report Form
7. Plan Update Evaluation Worksheet

*In establishing a planning team, you want to ensure that you have a broad range of backgrounds and experiences represented. Below are some suggestions for agencies to include in a planning team. There are many organizations, both governmental and community-based, that should be included when creating a local team. In addition, state organizations can be included on local teams, when appropriate, to serve as a source of information and to provide guidance and coordination.*

*Use the checklist as a starting point for forming your team. Check the boxes beside any individuals or organizations that you have in your community/state that you believe should be included on your planning team so you can follow up with them.*

**Task A. Create the planning team – Suggestions for team members. Date: \_\_\_\_\_**

**Local/Tribal**

- Administrator/Manager's Office
- Budget/Finance Office
- Building Code Enforcement Office
- City/County Attorney's Office
- Economic Development Office
- Emergency Preparedness Office
- Fire and Rescue Department
- Hospital Management
- Local Emergency Planning Committee
- Planning and Zoning Office
- Police/Sheriff's Department
- Public Works Department
- Sanitation Department
- School Board
- Transportation Department
- Tribal Leaders

**Special Districts and Authorities**

- Airport and Seaport Authorities
- Business Improvement District(s)
- Fire Control District
- Flood Control District
- Redevelopment Agencies
- Regional/Metropolitan Planning Organization(s)
- School District(s)
- Transit/Transportation Agencies

**Others**

- Architectural/Engineering/Planning Firms
- Citizen Corps
- Colleges/Universities
- Land Developers
- Major Employers/Businesses
- Professional Associations
- Retired Professionals

**State**

- Adjutant General's Office (National Guard)
- Board of Education
- Building Code Office
- Climatologist
- Earthquake Program Manager
- Economic Development Office
- Emergency Management Office/State Hazard Mitigation Officer
- Environmental Protection Office
- Fire Marshal's Office
- Geologist
- Homeland Security Coordinator's Office
- Housing Office
- Hurricane Program Manager
- Insurance Commissioner's Office
- National Flood Insurance Program Coordinator
- Natural Resources Office
- Planning Agencies
- Police
- Public Health Office
- Public Information Office
- Tourism Department

**Non-Governmental Organizations (NGOs)**

- American Red Cross
- Chamber of Commerce
- Community/Faith-Based Organizations
- Environmental Organizations
- Homeowners Associations
- Neighborhood Organizations
- Private Development Agencies
- Utility Companies
- Other Appropriate NGOs

## PUBLIC PARTICIPATION SURVEY FOR HAZARD MITIGATION PLANNING

**We need your help! Please take a few minutes to complete this survey.**

The Counties of Adams, Amite, Franklin, Jefferson, Lawrence, Lincoln, Pike, Walthall, and Wilkinson are working together to become less vulnerable to natural hazards, such as winter storms, tornadoes, and floods, and your participation is important to us!

The counties, along with local jurisdictions and other partners, are working to prepare a multi-jurisdictional *Hazard Mitigation Plan*. This Plan will identify and assess our community's natural hazard risks and determine how to best mitigate, or minimize and manage, those risks.

This survey is an opportunity for you to share your opinions and participate in the mitigation planning process. The information you provide will help us better understand your hazard concerns and can lead to mitigation activities that should help lessen the impacts of future hazard events.

**Please help us by completing this survey by July 15, 2017 and returning it to:**

Ryan Wiedenman, Atkins  
1616 E Millbrook Road, Suite 160  
Raleigh, NC 27609

Surveys can also be faxed to: (919) 876-6848 c/o Ryan Wiedenman or scanned and emailed to:  
Ryan Wiedenman at [ryan.wiedenman@atkinsglobal.com](mailto:ryan.wiedenman@atkinsglobal.com).

If you have any questions regarding this survey or would like to learn about more ways you can participate in the development of the *MEMA District 7 Regional Hazard Mitigation Plan*, please contact Atkins, planning consultant for the project. You may reach Ryan Wiedenman (Atkins) at 919-431-5295 or by email at [ryan.wiedenman@atkinsglobal.com](mailto:ryan.wiedenman@atkinsglobal.com).

### 1. Where do you live?

- |  |                                       |
|--|---------------------------------------|
| <input type="checkbox"/> Unincorporated Adams County     | <input type="checkbox"/> Liberty      |
| <input type="checkbox"/> Unincorporated Amite County     | <input type="checkbox"/> Magnolia     |
| <input type="checkbox"/> Unincorporated Franklin County  | <input type="checkbox"/> McComb       |
| <input type="checkbox"/> Unincorporated Jefferson County | <input type="checkbox"/> Meadville    |
| <input type="checkbox"/> Unincorporated Lawrence County  | <input type="checkbox"/> Monticello   |
| <input type="checkbox"/> Unincorporated Lincoln County   | <input type="checkbox"/> Natchez      |
| <input type="checkbox"/> Unincorporated Pike County      | <input type="checkbox"/> New Hebron   |
| <input type="checkbox"/> Unincorporated Walthall County  | <input type="checkbox"/> Osyka        |
| <input type="checkbox"/> Unincorporated Wilkinson County | <input type="checkbox"/> Roxie        |
| <input type="checkbox"/> Brookhaven                      | <input type="checkbox"/> Silver Creek |
| <input type="checkbox"/> Bude                            | <input type="checkbox"/> Summit       |
| <input type="checkbox"/> Centreville                     | <input type="checkbox"/> Tylertown    |
| <input type="checkbox"/> Crosby                          | <input type="checkbox"/> Woodville    |
| <input type="checkbox"/> Fayette                         | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Gloster                         |                                       |

**2. Is your home located in a floodplain?**

- Yes
- No
- I don't know

**3. Do you have flood insurance for your home/personal property?**

- Yes
- No
- I don't know

**a. If "No," why not?**

- Not located in floodplain
- Too expensive
- Not necessary because it never floods
- Not necessary because my property is elevated or otherwise protected
- Never really considered it
- Other (please explain): \_\_\_\_\_

**4. Have you ever experienced or been impacted by a natural disaster?**

- Yes
- No

**a. If "Yes," please explain:**

**5. On a scale of 1 to 5, how concerned are you about the possibility of your community being impacted by a natural disaster?**

- 1 – Not at all
- 2 – Slightly
- 3 – Moderately
- 4 – Very
- 5 – Extremely

**6. Please select the three hazards you think pose the *greatest concern* to your community:**

- |  |  |
|--|--|
| <input type="checkbox"/> Dam/Levee Failure | <input type="checkbox"/> Hurricane/Tropical Storm      |
| <input type="checkbox"/> Drought           | <input type="checkbox"/> Lightning                     |
| <input type="checkbox"/> Earthquake        | <input type="checkbox"/> Radiological Event            |
| <input type="checkbox"/> Erosion           | <input type="checkbox"/> Severe Thunderstorm/High Wind |
| <input type="checkbox"/> Extreme Heat      | <input type="checkbox"/> Tornado                       |
| <input type="checkbox"/> Flood             | <input type="checkbox"/> Wildfire                      |
| <input type="checkbox"/> Hailstorm         | <input type="checkbox"/> Winter Storm/Freeze           |

**7. Is there another hazard not listed above that you think is a wide-scale threat to your community?**

- Yes (please explain): \_\_\_\_\_
- No

**8. On a scale of 1 to 5, how prepared do you feel if a natural disaster were to occur?**

- 1 – Not at all
- 2 – Slightly
- 3 – Moderately
- 4 – Very
- 5 – Extremely

**9. Have you taken any actions to make your home, neighborhood, or family safer from hazards?**

- Yes
- No

**a. If “Yes,” please explain:**

**10. Are you interested in making your home, neighborhood, or family safer from hazards?**

- Yes
- No

**11. On a scale of 1 to 5, how informed do you feel about the risks and potential impacts of natural disasters?**

- 1 – Not at all
- 2 – Slightly
- 3 – Moderately
- 4 – Very
- 5 – Extremely

**12. Do you know which government department or agency to contact regarding your risks from hazards in your area?**

- Yes
- No

**13. Please select the way(s) you prefer to receive information about how to make your home, neighborhood, or family safer from hazards:**

- Newspaper
- Television
- Radio
- Internet
- Social media
- Email
- Mail
- Public workshops/meetings
- School meetings
- Other (please explain): \_\_\_\_\_

**14. Please select the way(s) you prefer to receive alerts or warnings about impending hazard events or dangerous conditions:**

- Television
- Radio
- Landline phone
- Cell phone
- Text message
- Facebook
- Twitter
- Other (please explain): \_\_\_\_\_

**15. In your opinion, what are some steps your local government could take to reduce the risk of future hazard damages in your community?**

**16. A number of community-wide activities can reduce vulnerability to hazards. In general, these activities fall into one of the following six broad categories. Please tell us how important you think each category is for your community to consider.**

| Category   | Very Important           | Somewhat Important       | Not Important            |
|--|--------------------------|--------------------------|--------------------------|
| <p><b><u>1. Prevention</u></b><br/>           Administrative or regulatory actions that influence the way land is developed and buildings are built. Examples include planning and zoning, building codes, open space preservation, and floodplain regulations.</p>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <p><b><u>2. Property Protection</u></b><br/>           Actions that involve modification of existing buildings to protect them from a hazard or removal from the hazard area. Examples include acquisition, relocation, elevation, structural retrofits, and storm shutters.</p>                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <p><b><u>3. Natural Resource Protection</u></b><br/>           Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. Examples include floodplain protection, habitat preservation, slope stabilization, riparian buffers, and forest management.</p> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <p><b><u>4. Structural Projects</u></b><br/>           Actions intended to lessen the impact of a hazard by modifying the natural progression of the hazard. Examples include dams, levees, detention/retention basins, channel modification, retaining walls, and storm sewers.</p>                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <p><b><u>5. Emergency Services</u></b><br/>           Actions that protect people and property during and immediately after a hazard event. Examples include warning systems, evacuation planning, emergency response training, and protection of critical emergency facilities or systems.</p>                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <p><b><u>6. Public Education and Awareness</u></b><br/>           Actions to inform citizens about hazards and the techniques they can use to protect themselves and their property. Examples include outreach projects, school education programs, library materials, and demonstration events.</p>             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**THANK YOU FOR YOUR PARTICIPATION!**

**GIS Data Request Sheet**  
**MEMA District 7 Regional Hazard Mitigation Plan**

| <b>Data requested</b>                                    | <b>Available?</b> | <b>Received?</b> | <b>Potential Sources</b>                  |
|--|-------------------|------------------|---|
| Tax Parcel Data  |                   |                  | Tax Assessor                              |
| <i>including replacement value</i>                       |                   |                  |   |
| Building Footprints                                      |                   |                  | Tax Assessor/GIS office                   |
| Critical Facilities (in GIS or list form with addresses) |                   |                  | Tax Assessor/GIS office                   |
| examples include:  |                   |                  |   |
| government buildings                                     |                   |                  |   |
| hospitals  |                   |                  |   |
| senior care  |                   |                  |   |
| police/fire/EMS/EOC                                      |                   |                  |   |
| locally significant buildings                            |                   |                  |   |
| schools  |                   |                  |   |
| Local hazard studies                                     |                   |                  | public works, natural resources, planning |
| examples include:  |                   |                  |   |
| Flood Studies (HEC-RAS, Risk MAP)                        |                   |                  |   |
| Local Hazard History Articles                            |                   |                  |   |
| Areas of Concern Studies                                 |                   |                  |   |

If you have any questions, please contact:

Ryan Wiedenman

[ryan.wiedenman@atkinglobal.com](mailto:ryan.wiedenman@atkinglobal.com)

919-431-5295

## Points System for Capability Ranking

|  |
|--|
| <p><b>0-24 points = Limited overall capability</b><br/><b>25-49 points = Moderate overall capability</b><br/><b>50-86 points = High overall capability</b></p> |
|--|

### I. Planning and Regulatory Capability (Up to 48 points)

*Yes = 3 points*

*Under Development = 1 point*

*Included under county plan/code/ordinance/program = 1 point*

*No = 0 points*

- Hazard Mitigation Plan
- Threat Hazard and Identification and Risk Assessment (THIRA)
- Comprehensive Land Use Plan
- Floodplain Management Plan/Flood Mitigation Plan
- National Flood Insurance Program (NFIP)
- NFIP Community Rating System (CRS Program)

*Yes = 2 points*

*Under Development = 1 point*

*Included under county plan/code/ordinance/program = 1 point*

*No = 0 points*

- Open Space Management Plan/Parks & Recreation Plan/Greenways Plan
- Stormwater Management Plan/Ordinance
- Natural Resource Protection Plan
- Flood Response Plan
- Emergency Operations Plan
- Emergency Management Accreditation Program (EMAP Accreditation)
- Continuity of Operations Plan
- Evacuation Plan
- Disaster Recovery Plan
- Flood Damage Prevention Ordinance
- Post-disaster Redevelopment/Reconstruction Plan/Ordinance

*Yes = 1 point*

*No = 0 points*

- Capital Improvements Plan
- Economic Development Plan
- Historic Preservation Plan
- Zoning Ordinance
- Subdivision Ordinance
- Unified Development Ordinance

- Building Code
- Fire Code

**II. Administrative and Technical Capability  
(Up to 15 points)**

*Yes = 2 points*

*Service provided by county = 1 point*

*No = 0 points*

- Planners with knowledge of land development and land management practices
- Engineers or professionals trained in construction practices related to buildings and/or infrastructure
- Planners or engineers with an understanding of natural and/or human-caused hazards
- Emergency manager
- Floodplain manager

*Yes = 1 point*

*No = 0 points*

- Land surveyors
- Scientist familiar with the hazards of the community
- Staff with education or expertise to assess the community's vulnerability to hazards
- Personnel skilled in Geographical Information Systems (GIS) and/or Hazus
- Resource development staff or grant writers

**III. Fiscal Capability  
(Up to 20 points)**

*Yes - used to implement mitigation = 2 points*

*Yes - available = 1 point*

*No = 0 points*

- Capital Improvement Programming
- Community Development Block Grants (CDBG)
- Special Purpose Taxes (or tax districts)
- Gas/Electric Utility Fees
- Water/Sewer Fees
- Stormwater Utility Fees
- Development Impact Fees
- General Obligation/Revenue/Special Tax Bonds
- Partnering arrangements or intergovernmental agreements
- Other

**IV. Political Capability**  
**(Up to 3 points)**

*High = 3 point*

*Moderate = 2 points*

*Limited = 1 point*

- Degree of support by local elected officials in terms of adopting/funding mitigation

## MITIGATION ACTION WORKSHEETS

Mitigation Action Worksheets are used to identify potential hazard mitigation actions that participating jurisdictions in MEMA District 7 will consider to reduce the negative effects of identified hazards. The worksheets provide a simple yet effective method of organizing potential actions in a user-friendly manner that can easily be incorporated into the Region's Hazard Mitigation Plan.

The worksheets are to be used as part of a strategic planning process and are designed to be:

- a.) completed electronically (worksheets and instructions will be e-mailed to members of the Regional Hazard Mitigation Council following the Mitigation Strategy Workshop);
- b.) reviewed with your department/organization for further consideration; and
- c.) returned according to the contact information provided below.

**Please return all completed worksheets no later than September 30, 2017 to:**

Ryan Wiedenman, Project Manager Atkins

Electronic copies may be e-mailed to: [ryan.wiedenman@atkinsglobal.com](mailto:ryan.wiedenman@atkinsglobal.com)

Hard copies may be faxed to: [919-876-6848](tel:919-876-6848) (Attn: Ryan Wiedenman)

## INSTRUCTIONS

Each mitigation action should be considered to be a separate local project, policy or program and each individual action should be entered into a separate worksheet. By identifying the implementation requirements for each action, the worksheets will help lay the framework for engaging in distinct actions that will help reduce the community's overall vulnerability and risk. Detailed explanations on how to complete the worksheet are provided below.

**Proposed Action:** Identify a specific action that, if accomplished, will reduce vulnerability and risk in the impact area. Actions may be in the form of local policies (i.e., regulatory or incentive-based measures), programs or structural mitigation projects and should be consistent with any pre-identified mitigation goals and objectives.

**Site and Location:** Provide details with regard to the physical location or geographic extent of the proposed action, such as the location of a specific structure to be mitigated, whether a program will be citywide, countywide or regional, etc.

**History of Damages:** Provide a brief history of any known damages as it relates to the proposed action and the hazard(s) being addressed. For example, the proposed elevation of a repetitive loss property should include an overview of the number of times the structure has flooded, total dollar amount of damages if available, etc.

**Hazard(s) Addressed:** List the hazard(s) the proposed action is designed to mitigate against.

**Category:** Indicate the most appropriate category for the proposed action as discussed during the Mitigation Strategy Workshop (Prevention; Property Protection; Natural Resource Protection; Structural Projects; Emergency Services; Public Education and Awareness).

**Priority:** Indicate whether the action is a "high" priority, "moderate" priority or "low" priority based generally on the following criteria:

1. Effect on overall risk to life and property
2. Ease of implementation / technical feasibility
3. Project costs versus benefits
4. Political and community support
5. Funding availability

**Estimated Cost:** If applicable, indicate what the total cost will be to accomplish this action. This amount will be an estimate until actual final dollar amounts can be determined. Some actions (such as ordinance revisions) may only cost “local staff time” and should be noted so.

**Potential Funding Sources:** If applicable, indicate how the cost to complete the action will be funded. For example, funds may be provided from existing operating budgets or general funds, a previously established contingency fund, a cost-sharing federal or state grant program, etc.

**Lead Agency/Department Responsible:** Identify the local agency, department or organization that is best suited to implement the proposed action.

**Implementation Schedule:** Indicate when the action will begin and when the action is expected to be completed. Remember that some actions will require only a minimal amount of time, while others may require a long-term or continuous effort.

**Comments:** This space is provided for any additional information or details that may not be captured under the previous headings.

| <b>MITIGATION ACTION</b>      |  |
|-------------------------------|--|
| <b>Proposed Action:</b>       |  |
| <b>BACKGROUND INFORMATION</b> |  |
| <b>Site and Location:</b>     |  |
| <b>History of Damages:</b>    |  |

| <b>MITIGATION ACTION DETAILS</b>           |  |
|--|--|
| <b>Hazard(s) Addressed:</b>                |  |
| <b>Category:</b>                           |  |
| <b>Priority (High, Moderate, Low):</b>     |  |
| <b>Estimated Cost:</b>                     |  |
| <b>Potential Funding Sources:</b>          |  |
| <b>Lead Agency/Department Responsible:</b> |  |
| <b>Implementation Schedule:</b>            |  |

| <b>COMMENTS</b> |
|-----------------|
|                 |

## Mitigation Action Progress Report Form

|                        |   |          |
|------------------------|---|----------|
| Progress Report Period | From Date:  | To Date: |
| Action/Project Title   |   |          |
| Responsible Agency     |   |          |
| Contact Name           |   |          |
| Contact Phone/Email    |   |          |
| Project Status         | <input type="checkbox"/> Project completed<br><input type="checkbox"/> Project canceled<br><input type="checkbox"/> Project on schedule<br><input type="checkbox"/> Anticipated completion date: _____<br><input type="checkbox"/> Project delayed<br>Explain _____ |          |

### Summary of Project Progress for this Report Period

1. What was accomplished for this project during this reporting period?

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2. What obstacles, problems, or delays did the project encounter?

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3. If uncompleted, is the project still relevant? Should the project be changed or revised?

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4. Other comments

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## Plan Update Evaluation Worksheet

| Plan Section          | Considerations  | Explanation |
|-----------------------|---|-------------|
| Planning Process      | Should new jurisdictions and/or districts be invited to participate in future plan updates?   |             |
|                       | Have any internal or external agencies been invaluable to the mitigation strategy?  |             |
|                       | Can any procedures (e.g., meeting announcements, plan updates) be done differently or more efficiently?   |             |
|                       | Has the Planning Team undertaken any public outreach activities?  |             |
|                       | How can public participation be improved?   |             |
|                       | Have there been any changes in public support and/or decision-maker priorities related to hazard mitigation?  |             |
| Capability Assessment | Have jurisdictions adopted new policies, plans, regulations, or reports that could be incorporated into this plan?  |             |
|                       | Are there different or additional administrative, human, technical, and financial resources available for mitigation planning?  |             |
|                       | Are there different or new education and outreach programs and resources available for mitigation activities?   |             |
|                       | Has NFIP participation changed in the participating jurisdictions?  |             |
| Risk Assessment       | Has a natural and/or technical or human-caused disaster occurred?   |             |
|                       | Should the list of hazards addressed in the plan be modified?   |             |
|                       | Are there new data sources and/or additional maps and studies available? If so, what are they and what have they revealed? Should the information be incorporated into future plan updates? |             |
|                       | Do any new critical facilities or infrastructure need to be added to the asset lists?   |             |
|                       | Have any changes in development trends occurred that could create additional risks?   |             |
|                       | Are there repetitive losses and/or severe repetitive losses to document?  |             |

# Worksheet 7.2

## Plan Update Evaluation Worksheet

| Plan Section                | Considerations  | Explanation |
|-----------------------------|---|-------------|
| Mitigation Strategy         | Is the mitigation strategy being implemented as anticipated? Were the cost and timeline estimates accurate?                           |             |
|                             | Should new mitigation actions be added to the Action Plan? Should existing mitigation actions be revised or eliminated from the plan? |             |
|                             | Are there new obstacles that were not anticipated in the plan that will need to be considered in the next plan update?                |             |
|                             | Are there new funding sources to consider?  |             |
|                             | Have elements of the plan been incorporated into other planning mechanisms?   |             |
| Plan Maintenance Procedures | Was the plan monitored and evaluated as anticipated?  |             |
|                             | What are needed improvements to the procedures?   |             |

# **APPENDIX C**

## **LOCAL MITIGATION PLAN REVIEW TOOL**

## LOCAL MITIGATION PLAN REVIEW TOOL

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The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA’s evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan’s strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

|  |  |   |
|--|--|---|
| <b>Jurisdiction:</b><br>MEMA District 7 (Adams, Amite, Franklin, Jefferson, Lawrence, Lincoln, Pike, Walthall, and Wilkinson Counties) | <b>Title of Plan:</b><br>MEMA District 7 Regional Hazard Mitigation Plan | <b>Date of Plan:</b><br>October 2017                                |
| <b>Local Point of Contact:</b> Ryan Wiedenman  |  | <b>Address:</b> 1616 E. Millbrook Rd., Ste 310<br>Raleigh, NC 27609 |
| <b>Title:</b> Senior Planner   |  |   |
| <b>Agency:</b> Atkins  |  |   |
| <b>Phone Number:</b> 919-431-5295  |  |   |
|  |  | <b>E-Mail:</b> ryan.wiedenman@atkinglobal.com                       |

|                        |               |              |
|------------------------|---------------|--------------|
| <b>State Reviewer:</b> | <b>Title:</b> | <b>Date:</b> |
|                        |               |              |

|   |               |              |
|---|---------------|--------------|
| <b>FEMA Reviewer:</b>                                 | <b>Title:</b> | <b>Date:</b> |
|   |               |              |
| <b>Date Received in FEMA Region</b> <i>(insert #)</i> |               |              |
| <b>Plan Not Approved</b>                              |               |              |
| <b>Plan Approvable Pending Adoption</b>               |               |              |
| <b>Plan Approved</b>                                  |               |              |

**SECTION 1:  
REGULATION CHECKLIST**

**INSTRUCTIONS:** The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been ‘Met’ or ‘Not Met.’ The ‘Required Revisions’ summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is ‘Not Met.’ Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

| <b>1. REGULATION CHECKLIST</b>  | <b>Location in Plan</b><br>(section and/or<br>page number)           | <b>Met</b> | <b>Not<br/>Met</b> |
|---|--|------------|--------------------|
| <b>Regulation (44 CFR 201.6 Local Mitigation Plans)</b>   |  |            |                    |
| <b>ELEMENT A. PLANNING PROCESS</b>  |  |            |                    |
| A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))  | Section 2; App. D  |            |                    |
| A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2)) | Section 2.4-2.7;<br>App. B; App. D                                   |            |                    |
| A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))  | Section 2.6-2.7;<br>App. B; App. D                                   |            |                    |
| A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))  | Section 7.3;<br>Jurisdiction-specific annexes (Section X.4)          |            |                    |
| A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))   | Section 10.4   |            |                    |
| A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))   | Section 10.3   |            |                    |
| <b><u>ELEMENT A: REQUIRED REVISIONS</u></b>   |  |            |                    |
| <b>ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT</b>   |  |            |                    |
| B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))  | Section 4; Section 5;<br>Jurisdiction-specific annexes (Section X.2) |            |                    |

| <b>1. REGULATION CHECKLIST</b>   |  | <b>Location in Plan<br/>(section and/or<br/>page number)</b> | <b>Met</b> | <b>Not<br/>Met</b> |
|--|--|--|------------|--------------------|
| <b>Regulation (44 CFR 201.6 Local Mitigation Plans)</b>  |  |  |            |                    |
| B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))   | Section 5;<br>Jurisdiction-specific annexes (Section X.2)  |  |            |                    |
| B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))  | Section 5; Section 6;<br>Jurisdiction-specific annexes (Section X.2 and X.3)   |  |            |                    |
| B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))  | Section 5.5.5 (Table 5.9); Jurisdiction-specific annexes (Section X.2.3; Table X.9)  |  |            |                    |
| <b><u>ELEMENT B: REQUIRED REVISIONS</u></b>  |  |  |            |                    |
| <b>ELEMENT C. MITIGATION STRATEGY</b>  |  |  |            |                    |
| C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))  | Section 7;<br>Jurisdiction-specific annexes (Section X.4)  |  |            |                    |
| C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))  | Section 5.5.4 (Table 5.8); Section 7.3.4 (Table 7.2);<br>Jurisdiction-specific annexes (Section X.2.3 and X.4.1; Table X.8 and Table X.47) |  |            |                    |
| C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))   | Section 8.2 (Table 8.2); Jurisdiction-specific annexes (Section X.5.1; Table X.52)   |  |            |                    |
| C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii)) | Section 8.3-8.4;<br>Section 9.2;<br>Jurisdiction-specific annexes (Section X.5.2)  |  |            |                    |
| C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))                      | Section 8.1.1;<br>Section 9.2;<br>Jurisdiction-specific annexes (Section X.5.2)  |  |            |                    |

| <b>1. REGULATION CHECKLIST</b>  |  | <b>Location in Plan<br/>(section and/or<br/>page number)</b> | <b>Met</b> | <b>Not<br/>Met</b> |
|---|--|--|------------|--------------------|
| <b>Regulation (44 CFR 201.6 Local Mitigation Plans)</b>   |  |  |            |                    |
| C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii)) | Section 7.3.1 (Table 7.1); Section 10.1-10.2; Jurisdiction-specific annexes (Section X.4.1; Table X.46)      |  |            |                    |
| <b><u>ELEMENT C: REQUIRED REVISIONS</u></b>   |  |  |            |                    |
| <b>ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION</b> (applicable to plan updates only)   |  |  |            |                    |
| D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))  | Section 6.4.3; Jurisdiction-specific annexes (Section X.3.3)   |  |            |                    |
| D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))  | Section 2.8; Section 8.5; Section 9.2; Jurisdiction-specific annexes (Section X.5.2)                         |  |            |                    |
| D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))   | Section 5.18 (Table 5.37); Section 9.2; Jurisdiction-specific annexes (Section X.2.16 and X.5.2; Table X.32) |  |            |                    |
| <b><u>ELEMENT D: REQUIRED REVISIONS</u></b>   |  |  |            |                    |
| <b>ELEMENT E. PLAN ADOPTION</b>   |  |  |            |                    |
| E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))   | App. A   |  |            |                    |
| E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))   | App. A   |  |            |                    |
| <b><u>ELEMENT E: REQUIRED REVISIONS</u></b>   |  |  |            |                    |
| <b>ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)</b>  |  |  |            |                    |
| F1.   |  |  |            |                    |
| F2.   |  |  |            |                    |

| 1. REGULATION CHECKLIST                          | Location in Plan<br>(section and/or<br>page number) | Met | Not<br>Met |
|--|---|-----|------------|
| Regulation (44 CFR 201.6 Local Mitigation Plans) |   |     |            |
| <b><u>ELEMENT F: REQUIRED REVISIONS</u></b>      |   |     |            |
|  |   |     |            |

## SECTION 2: PLAN ASSESSMENT

**INSTRUCTIONS:** The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically RiskMAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improvement
2. Resources for Implementing Your Approved Plan

***Plan Strengths and Opportunities for Improvement*** is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item, and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature, and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by section.

***Resources for Implementing Your Approved Plan*** provides a place for FEMA to offer information, data sources and general suggestions on the overall plan implementation and maintenance process. Information on other possible sources of assistance including, but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.

## **A. Plan Strengths and Opportunities for Improvement**

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

### **Element A: Planning Process**

*How does the Plan go above and beyond minimum requirements to document the planning process with respect to:*

- *Involvement of stakeholders (elected officials/decision makers, plan implementers, business owners, academic institutions, utility companies, water/sanitation districts, etc.);*
- *Involvement of Planning, Emergency Management, Public Works Departments or other planning agencies (i.e., regional planning councils);*
- *Diverse methods of participation (meetings, surveys, online, etc.); and*
- *Reflective of an open and inclusive public involvement process.*

### **Element B: Hazard Identification and Risk Assessment**

*In addition to the requirements listed in the Regulation Checklist, 44 CFR 201.6 Local Mitigation Plans identifies additional elements that should be included as part of a plan's risk assessment. The plan should describe vulnerability in terms of:*

- 1) *A general description of land uses and future development trends within the community so that mitigation options can be considered in future land use decisions;*
- 2) *The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; and*
- 3) *A description of potential dollar losses to vulnerable structures, and a description of the methodology used to prepare the estimate.*

*How does the Plan go above and beyond minimum requirements to document the Hazard Identification and Risk Assessment with respect to:*

- *Use of best available data (flood maps, HAZUS, flood studies) to describe significant hazards;*
- *Communication of risk on people, property, and infrastructure to the public (through tables, charts, maps, photos, etc.);*
- *Incorporation of techniques and methodologies to estimate dollar losses to vulnerable structures;*
- *Incorporation of Risk MAP products (i.e., depth grids, Flood Risk Report, Changes Since Last FIRM, Areas of Mitigation Interest, etc.); and*
- *Identification of any data gaps that can be filled as new data became available.*

### **Element C: Mitigation Strategy**

*How does the Plan go above and beyond minimum requirements to document the Mitigation Strategy with respect to:*

- *Key problems identified in, and linkages to, the vulnerability assessment;*
- *Serving as a blueprint for reducing potential losses identified in the Hazard Identification and Risk Assessment;*
- *Plan content flow from the risk assessment (problem identification) to goal setting to mitigation action development;*
- *An understanding of mitigation principles (diversity of actions that include structural projects, preventative measures, outreach activities, property protection measures, post-disaster actions, etc);*
- *Specific mitigation actions for each participating jurisdictions that reflects their unique risks and capabilities;*
- *Integration of mitigation actions with existing local authorities, policies, programs, and resources; and*
- *Discussion of existing programs (including the NFIP), plans, and policies that could be used to implement mitigation, as well as document past projects.*

### **Element D: Plan Update, Evaluation, and Implementation (Plan Updates Only)**

*How does the Plan go above and beyond minimum requirements to document the 5-year Evaluation and Implementation measures with respect to:*

- *Status of previously recommended mitigation actions;*
- *Identification of barriers or obstacles to successful implementation or completion of mitigation actions, along with possible solutions for overcoming risk;*
- *Documentation of annual reviews and committee involvement;*
- *Identification of a lead person to take ownership of, and champion the Plan;*
- *Reducing risks from natural hazards and serving as a guide for decisions makers as they commit resources to reducing the effects of natural hazards;*
- *An approach to evaluating future conditions (i.e. socio-economic, environmental, demographic, change in built environment etc.);*
- *Discussion of how changing conditions and opportunities could impact community resilience in the long term; and*
- *Discussion of how the mitigation goals and actions support the long-term community vision for increased resilience.*

## **B. Resources for Implementing Your Approved Plan**

*Ideas may be offered on moving the mitigation plan forward and continuing the relationship with key mitigation stakeholders such as the following:*

- *What FEMA assistance (funding) programs are available (for example, Hazard Mitigation Assistance (HMA)) to the jurisdiction(s) to assist with implementing the mitigation actions?*
- *What other Federal programs (National Flood Insurance Program (NFIP), Community Rating System (CRS), Risk MAP, etc.) may provide assistance for mitigation activities?*
- *What publications, technical guidance or other resources are available to the jurisdiction(s) relevant to the identified mitigation actions?*
- *Are there upcoming trainings/workshops (Benefit-Cost Analysis (BCA), HMA, etc.) to assist the jurisdictions(s)?*
- *What mitigation actions can be funded by other Federal agencies (for example, U.S. Forest Service, National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA) Smart Growth, Housing and Urban Development (HUD) Sustainable Communities, etc.) and/or state and local agencies?*

**SECTION 3:**  
**MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)**

**INSTRUCTIONS:** For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, which required Elements for each jurisdiction were ‘Met’ or ‘Not Met,’ and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it should be used as an optional worksheet to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

| MULTI-JURISDICTION SUMMARY SHEET |                   |   |                     |  |  |                      |                        |  |                        |   |                  |                       |
|----------------------------------|-------------------|---|---------------------|--|--|----------------------|------------------------|--|------------------------|---|------------------|-----------------------|
| #                                | Jurisdiction Name | Jurisdiction Type (city/borough/township/village, etc.) | Plan POC            | Mailing Address                                | Email  | Phone                | Requirements Met (Y/N) |  |                        |   |                  |                       |
|                                  |                   |   |                     |  |  |                      | A. Planning Process    | B. Hazard Identification & Risk Assessment | C. Mitigation Strategy | D. Plan Review, Evaluation & Implementation | E. Plan Adoption | F. State Requirements |
| 1                                | Adams County      | County  | Brad Bradford       | 201 S Wall St, Natchez, MS 39121               | rbradf<br>ord@<br>adam<br>scoun<br>tym.s.<br>gov | 601-<br>442-<br>7021 |                        |  |                        |   |                  |                       |
| 2                                | Natchez           | City  | Darryl Grennell     | 124 S Pearl St, Natchez, MS 39120              | mayor<br>@natc<br>hez.m<br>s.us                  | 601-<br>445-<br>7500 |                        |  |                        |   |                  |                       |
| 3                                | Amite County      | County  | Grant McCurley      | 243 S Broad St, Liberty, MS 39645              | gmccu<br>rley@<br>amite<br>count<br>yms.g<br>ov  | 601-<br>249-<br>9185 |                        |  |                        |   |                  |                       |
| 4                                | Gloster           | Town  | Leroy Billy Johnson | 251 S First St, PO Box 1019, Gloster, MS 39638 | gloste<br>rc@b<br>ellsou<br>th.net               | 601-<br>225-<br>4216 |                        |  |                        |   |                  |                       |

**MULTI-JURISDICTION SUMMARY SHEET**

| #  | Jurisdiction Name   | Jurisdiction Type<br>(city/borough/<br>township/<br>village, etc.) | Plan POC                      | Mailing Address                             | Email  | Phone                | Requirements Met (Y/N)    |  |                              |  |                        |                                  |
|----|---------------------|--|-------------------------------|---|--|----------------------|---------------------------|--|------------------------------|--|------------------------|----------------------------------|
|    |                     |  |                               |   |  |                      | A.<br>Planning<br>Process | B.<br>Hazard<br>Identification<br>& Risk<br>Assessment | C.<br>Mitigation<br>Strategy | D.<br>Plan Review,<br>Evaluation &<br>Implementation | E.<br>Plan<br>Adoption | F.<br>State<br>Require-<br>ments |
| 5  | Liberty             | Town   | Richard H. Stratton           | PO Box 301,<br>Liberty, MS<br>39645         | liberty<br>missis<br>sippi<br>@yah<br>oo.co<br>m   | 601-<br>657-<br>8071 |                           |  |                              |  |                        |                                  |
| 6  | Franklin<br>County  | County   | Mark S.<br>Thornton           | 38 Walnut<br>St,<br>Meadville,<br>MS 39653  | fcema<br>@tele<br>pak.n<br>et                      | 601-<br>384-<br>1720 |                           |  |                              |  |                        |                                  |
| 7  | Bude                | Town   | Earl Case                     | 125 W<br>Railroad Ave,<br>Bude, MS<br>39630 | towno<br>fbude<br>@ftc<br>web.n<br>et              | 601-<br>384-<br>2600 |                           |  |                              |  |                        |                                  |
| 8  | Meadville           | Town   | Lane B.<br>Reed               | 75 Main St,<br>Meadville,<br>MS 39653       | mdvill<br>ems@<br>ftcwe<br>b.net                   | 601-<br>384-<br>5208 |                           |  |                              |  |                        |                                  |
| 9  | Roxie               | Town   | Armand B.<br>Williams,<br>Sr. | 124 West St<br>SW, Roxie,<br>MS 39661       | roxie<br>ms@t<br>elepa<br>k.net                    | 601-<br>322-<br>7301 |                           |  |                              |  |                        |                                  |
| 10 | Jefferson<br>County | County   | Brenda<br>Hammitte            | 1267 Main<br>St, Fayette,<br>MS 39067       | jeffers<br>oncou<br>ntyc@<br>bellso<br>uth.n<br>et | 601-<br>597-<br>8422 |                           |  |                              |  |                        |                                  |

**MULTI-JURISDICTION SUMMARY SHEET**

| #  | Jurisdiction Name | Jurisdiction Type<br>(city/borough/<br>township/<br>village, etc.) | Plan POC             | Mailing Address                         | Email                         | Phone        | Requirements Met (Y/N) |   |                           |  |                     |                          |
|----|-------------------|--|----------------------|---|-------------------------------|--------------|------------------------|---|---------------------------|--|---------------------|--------------------------|
|    |                   |  |                      |   |                               |              | A.<br>Planning Process | B.<br>Hazard Identification & Risk Assessment | C.<br>Mitigation Strategy | D.<br>Plan Review, Evaluation & Implementation | E.<br>Plan Adoption | F.<br>State Requirements |
| 11 | Fayette           | City   | Roger W. King        | 59 Medgar Evers Blvd, Fayette, MS 39069 | poindex@fayette.ms.com        | 601-786-3682 |                        |   |                           |  |                     |                          |
| 12 | Lawrence County   | County   | Tony Norwood         | 731 E Broad St, Monticello, MS 39654    | tnorwood@co.lawrence.ms.us    | 601-660-5018 |                        |   |                           |  |                     |                          |
| 13 | Monticello        | Town   | Dave Nichols         | PO Box 822, Monticello, MS 39654        | dhnichols@bellsouth.net       | 601-587-0045 |                        |   |                           |  |                     |                          |
| 14 | New Hebron        | Town   | Cindy Bryan          | 506 Main Ave, New Hebron, MS 39140      | mayorcindybryan@gmail.com     | 601-694-2115 |                        |   |                           |  |                     |                          |
| 15 | Silver Creek      | Town   | Elizabeth G. Turnage | 20 2nd St, Silver Creek, MS 39663       | silvercreektown@bellsouth.net | 601-886-7866 |                        |   |                           |  |                     |                          |
| 16 | Lincoln County    | County   | Clifford Galey       | 212 E Chippewa St, Brookhaven, MS 39601 | blcd@cableone.net             | 601-754-3210 |                        |   |                           |  |                     |                          |

**MULTI-JURISDICTION SUMMARY SHEET**

| #  | Jurisdiction Name | Jurisdiction Type<br>(city/borough/<br>township/<br>village, etc.) | Plan POC                      | Mailing Address                                   | Email  | Phone                | Requirements Met (Y/N)    |  |                              |  |                        |                                  |
|----|-------------------|--|-------------------------------|---|--|----------------------|---------------------------|--|------------------------------|--|------------------------|----------------------------------|
|    |                   |  |                               |   |  |                      | A.<br>Planning<br>Process | B.<br>Hazard<br>Identification<br>& Risk<br>Assessment | C.<br>Mitigation<br>Strategy | D.<br>Plan Review,<br>Evaluation &<br>Implementation | E.<br>Plan<br>Adoption | F.<br>State<br>Require-<br>ments |
| 17 | Brookhaven        | City   | Joe C. Cox                    | PO Box 560,<br>Brookhaven,<br>MS 39602            | brook<br>mayor<br>@bbi<br>mail.n<br>et             | 601-<br>833-<br>1414 |                           |  |                              |  |                        |                                  |
| 18 | Pike County       | County   | Richard<br>Coghlan            | 1241<br>Parklane Rd,<br>McComb, MS<br>39648       | pikecd<br>@cabl<br>eone.<br>net                    | 601-<br>249-<br>6023 |                           |  |                              |  |                        |                                  |
| 19 | Magnolia          | City   | Anthony C.<br>Witherspo<br>on | 175 E<br>Railroad Ave<br>N, Magnolia,<br>MS 39652 | cityof<br>magn<br>oliams<br>@bell<br>south.<br>net | 601-<br>783-<br>5211 |                           |  |                              |  |                        |                                  |
| 20 | McComb            | City   | Whitney<br>Rawlings           | 115 3rd St,<br>McComb, MS<br>39648                | wrawl<br>ings@<br>mcco<br>mb-<br>ms.go<br>v        | 601-<br>684-<br>1450 |                           |  |                              |  |                        |                                  |
| 21 | Osyka             | Town   | Allen<br>Applewhit<br>e       | 215 Liberty<br>St, Osyka,<br>MS 39657             | osyka<br>ms1@<br>aol.co<br>m                       | 601-<br>542-<br>1092 |                           |  |                              |  |                        |                                  |
| 22 | Summit            | Town   | Percy<br>Robinson             | 706 W<br>Railroad Ave,<br>Summit, MS<br>39666     | towno<br>fsum<br>mit@<br>att.ne<br>t               | 601-<br>276-<br>9536 |                           |  |                              |  |                        |                                  |

**MULTI-JURISDICTION SUMMARY SHEET**

| #  | Jurisdiction Name | Jurisdiction Type<br>(city/borough/<br>township/<br>village, etc.) | Plan POC                | Mailing Address   | Email                       | Phone        | Requirements Met (Y/N)    |  |                              |  |                        |                                  |
|----|-------------------|--|-------------------------|---|-----------------------------|--------------|---------------------------|--|------------------------------|--|------------------------|----------------------------------|
|    |                   |  |                         |   |                             |              | A.<br>Planning<br>Process | B.<br>Hazard<br>Identification<br>& Risk<br>Assessment | C.<br>Mitigation<br>Strategy | D.<br>Plan Review,<br>Evaluation &<br>Implementation | E.<br>Plan<br>Adoption | F.<br>State<br>Require-<br>ments |
| 23 | Walthall County   | County   | Roland Vandeweghe       | 200 Ball Ave,<br>Tylertown,<br>MS 39667                 | emergency.manager@yahoo.com | 601-730-2003 |                           |  |                              |  |                        |                                  |
| 24 | Tylertown         | Town   | Ed Hughes               | 308 Beulah Ave,<br>Tylertown,<br>MS 39667               | cityhall@tylertown.ms.us    | 601-876-4011 |                           |  |                              |  |                        |                                  |
| 25 | Wilkinson County  | County   | Thomas C. Tolliver, Jr. | 525 Main St,<br>PO Box 516,<br>Woodville,<br>MS 39669   | ttolliver@bellsouth.net     | 601-870-1809 |                           |  |                              |  |                        |                                  |
| 26 | Centreville       | Town   | Larry J. Lee            | 1 Municipal Dr, PO Box 578,<br>Centreville,<br>MS 39631 | larry_leej@yahoo.com        | 601-645-5218 |                           |  |                              |  |                        |                                  |
| 27 | Crosby            | Town   | William Hall            | 326 N Hwy 33, PO Box 338, Crosby,<br>MS 39633           | townofcrosby@telepak.net    | 601-639-4516 |                           |  |                              |  |                        |                                  |
| 28 | Woodville         | Town   | Keshis Stewart Ford     | 510 Main St,<br>Woodville,<br>MS 39669                  | kmstewart79@yahoo.com       | 601-888-3338 |                           |  |                              |  |                        |                                  |

# APPENDIX D

## PLANNING PROCESS DOCUMENTATION

This appendix includes the following:

1. Meeting Agendas
2. Meeting Minutes
3. Meeting Sign-In Sheets
4. Public Survey Advertisements
5. Public Survey Results
6. Designation Letters
7. Surrounding County Contact Email

# **AGENDA**

## **MEMA District 7 Regional Hazard Mitigation Plan Hazard Mitigation Council Meeting**

**May 3, 2017**

**10:00 AM – 12:00 PM**

### **1) Introductions**

### **2) Overview of Mitigation/Icebreaker Exercise**

### **3) Project Overview**

- a) Key Objectives
- b) Project Tasks
- c) Project Schedule
- d) Project Staffing

### **4) Data Collection**

- a) GIS Data Inventory
- b) Capability Assessment Survey
- c) Public Participation Survey
- d) Existing Mitigation Actions

### **5) Roles & Responsibilities**

- a) Atkins
- b) County Leads
- c) Participating Jurisdictions

### **6) Next Steps**

- a) Data collection efforts
- b) Begin public outreach
- c) Repetitive loss list request
- d) Identify Municipal Points of Contact

### **7) Questions, Issues, or Concerns**

# **ATKINS**

# **AGENDA**

## **MEMA District 7 Regional Hazard Mitigation Plan Mitigation Strategy Meeting**

August 29, 2017

10:00 AM – Noon

- 1) Introductions**
- 2) Mitigation Refresher**
- 3) Project Schedule**
- 4) Risk Assessment Findings**
  - a) Hazard History and Profiles
  - b) Conclusions on Risk: PRI
- 5) Capability Assessment Findings**
  - a) Indicators
  - b) Results
- 6) Public Involvement Activities**
- 7) Mitigation Strategy**
  - a) Current Goals/Actions
  - b) New Actions
  - c) Discussion
- 8) Next Steps**
  - a) Mitigation Actions
  - b) Other Documentation Needed
- 9) Questions, Issues, or Concerns**

**Project Kickoff Meeting**  
**May 3, 2017**  
**Magnolia, MS**

Following the contractual Notice to Proceed, Atkins staff arranged for a project kickoff meeting. The MEMA District 7 Area Coordinator helped to arrange a meeting location. An email was distributed which invited representatives from the participating counties and municipalities, external stakeholders, and other local organizations to the meeting. The regional participants are collectively known as the Regional Hazard Mitigation Council (“RHMC” or “Council”). The meeting was held at the Pike County Safe Room and was attended by a range of stakeholders.

Tina Reed, MEMA District 7 Area Coordinator, started the meeting by welcoming the representatives from each county, participating municipal jurisdictions, and other stakeholders. Ms. Reed then introduced Ryan Wiedenman, Project Manager from the project consulting team, Atkins.

Mr. Wiedenman led the kickoff meeting and began by providing an overview of the items to be discussed at the meeting and briefly reviewed each of the handouts that were distributed in the meeting packets (agenda, project description, and presentation slides). He then provided a brief overview of mitigation and discussed the Disaster Mitigation Act of 2000.

He gave a list of the participating jurisdictions for the regional plan, noting that nearly every local government in the region participated in the existing multi-jurisdictional hazard mitigation plan. This plan expires in 2018, so the planning team will plan to develop a draft to submit to FEMA by late 2017.

Mr. Wiedenman then explained the six different categories of mitigation techniques (emergency services; prevention; natural resource protection; structural projects; public education and awareness; and property protection) and gave examples of each. This explanation culminated with an Ice Breaker Exercise for the attendees.

Mr. Wiedenman instructed attendees on how to complete the exercise. Attendees were given an equal amount of fictitious FEMA money and asked to spend it in the various mitigation categories. Money could be thought of as grant money that communities received towards mitigation. Attendees were asked to target their money towards areas of mitigation that are of greatest concern for their community. Ideally, the exercise helps pinpoint areas of mitigation that the community may want to focus on when developing mitigation grants. Mr. Wiedenman also presented the Ice Breaker Exercise results which were:

- Prevention- \$5
- Property Protection- \$4
- Natural Resource Protection- \$10
- Structural- \$3
- Emergency Services- \$47
- Public Education- \$11

Mr. Wiedenman then discussed the key objectives and structure of the planning process, explaining the specific tasks to be accomplished for this project, including the planning process, risk assessment, vulnerability assessment, capability assessment, mitigation strategy and action plan, plan maintenance procedures, and documentation. The project schedule was presented along with the project staffing chart, which demonstrates the number of experienced individuals that will be working on this project.

The data collection needs and public outreach efforts were also discussed.

Mr. Wiedenman then reviewed the roles and responsibilities of Atkins, participating jurisdictions, and stakeholders. The presentation concluded with a discussion of the next steps to be taken in the project development, which included discussing data collection efforts, continuing public outreach, and the next meeting for the HMPT.

The meeting was opened for questions and comments, but nothing of note was brought up from a technical perspective.

Mr. Wiedenman thanked everyone for attending and identified himself as the point of contact for any questions or issues. The meeting was adjourned.

**Mitigation Strategy Meeting**  
**August 29, 2017**  
**McComb, MS**

Ms. Tina Reed with MEMA welcomed everyone to the meeting and went over safety and administrative topics. She then passed the meeting over to Mr. Ryan Wiedenman to discuss the findings and information that Atkins pulled together.

Mr. Wiedenman initiated the meeting with a review of the meeting handouts, which included an agenda, presentation slides, proposed goals for the plan, mitigation actions from each county's existing plans, and capability assessment tables. Mr. Wiedenman reviewed the project schedule and stated that a draft of the Hazard Mitigation Plan would be presented to the Hazard Mitigation Council at the end of October.

He then presented the findings of the risk assessment, explaining the process for preparing Hazard Profiles and showed information collected on each hazard. He indicated that each hazard must be evaluated and then profiled and assessed to determine a relative risk for each hazard.

Mr. Wiedenman reviewed the Hazard Profiles and the following bullets summarize the information presented:

Flood-Related Hazards

- DAM/LEVEE FAILURE. There are 12 high hazard dams in the region with a concentration in Adams County.
- EROSION. There have been several instances of erosion reported in areas around the county that have caused issues with roads and bridges.
- FLOOD. There have been thousands of NFIP losses since 1978 and 8 of the 9 counties in the region had over \$1 million in losses according to the NCDC.

Fire-Related Hazards

- DROUGHT. There have been nine years (out of the past seventeen, 2000-2016) where drought conditions have been reported as severe to exceptional in the region.
- LIGHTNING. The flash density in the region is between 12 and 28 flashes per square kilometer per year.
- WILDFIRE. There is some vulnerability to wildfires throughout the region, with a somewhat greater risk in the eastern part of the region due to populations in the wildland urban interface.

Geologic Hazards

- EARTHQUAKES. There have been no recorded earthquake events in MEMA District 7 since 1985 and overall risk is relatively low.

## Wind-Related Hazards

- EXTREME HEAT. Heat events occur frequently in the region with major heat waves in 2000, 2005, 2006, 2007, and 2010.
- HAILSTORM. Hail stones as large as 2.75 inches in diameter have been recorded several times.
- HURRICANES AND TROPICAL STORMS. There have been 8 federal disaster declarations related to hurricanes/tropical storms.
- SEVERE THUNDERSTORM/HIGH WIND. Wind speeds up to 83 knots have been recorded in the region due to thunderstorms.
- TORNADOES. A tornado of F2 or greater has been recorded in every county in the region and an F4 has been recorded several times in the region.
- WINTER STORM. Snowfall of up to 10 inches has been recorded in some instances historically.
- RADIOLOGICAL EVENT. No major events have been recorded but much of the region is located in the 50-mile buffer area for fixed nuclear sites.

The results of the hazard identification and profiling process were used to generate a Priority Risk Index (PRI), which categorizes and prioritizes potential hazards as high, moderate or low risk based on probability, impact, spatial extent, warning time, and duration. The highest PRI was assigned to Hurricane/Tropical Storm followed by Tornado, Flood, Severe Thunderstorm/High Wind.

In concluding the review of Hazard Profiles, several comments were made concerning the hazards. Several county EMA directors noted that they felt that Erosion should be a higher risk as there were many areas where this hazard had caused issues in the past. They also noted that a major concern for radiological events is evacuees from neighboring counties. Mr. Wiedenman stated if anyone had additional information for the hazard profiles, or had concerns with any of the data presented, they should call or email him.

Mr. Wiedenman presented the Capability Assessment Findings. Atkins has developed a scoring system that was used to rank the participating jurisdictions in terms of capability in four major areas (Planning and Regulatory; Administrative and Technical; Fiscal; Political). Important capability indicators include National Flood Insurance Program (NFIP) participation, Building Code Effective Grading Schedule (BCEGS) score, Community Rating System (CRS) participation, and the Local Capability Assessment Survey conducted by Atkins.

Mr. Wiedenman reviewed the Relevant Plans and Ordinances, Relevant Staff/Personnel Resources, and Relevant Fiscal Resources. All of these categories were used to rate the overall capability of the participating counties and jurisdictions. Most jurisdictions are in the limited range for Planning and Regulatory Capability and in the limited range for Fiscal Capability. There is variation between the jurisdictions for Administrative and Technical Capability, mainly with respect to availability staff skilled in GIS and planning. Based upon the scoring methodology developed by Atkins, it was determined that most of the participating jurisdictions have limited to moderate capability to implement hazard mitigation programs and activities.

Mr. Wiedenman also discussed the results of the public participation survey that was posted on several of the participating counties' and municipal websites. As of the meeting date, 219 responses had been received. Mr. Wiedenman explained that the survey would close on September 30, so the HMPT could make one final push to get the survey out to the public. Based on preliminary survey results, respondents felt that Tornado posed the greatest threat to their neighborhood, followed by Hurricane and Tropical Storms, and Severe Thunderstorm and High Wind. 77 percent of the respondents were interested in making their homes more resistant to hazards. However, 53 percent don't know who to contact regarding reducing their risks to hazards.

Mr. Wiedenman gave an overview of Mitigation Strategy Development and presented the existing goals for each plan as well as a set of recommended goals that Atkins developed based on the previous plans' goals. The Hazard Mitigation Council accepted the existing goals for the plan. Mr. Wiedenman then provided an overview and examples of suggested mitigation actions tailored for MEMA District 7 counties and their municipalities. Mr. Wiedenman then asked each county and the municipalities to provide a status update for their existing mitigation actions (completed, deleted, or deferred) by September 22. Mr. Wiedenman also asked council members to include any new mitigation actions by that date.

Mr. Wiedenman thanked the group for taking the time to attend and explained that if council members had any issues or questions about the planning process or their next steps, they could contact him. The meeting was adjourned.

**MEMA District 7 Regional Hazard Mitigation Plan  
Hazard Mitigation Council Meeting**

**May 3, 2017  
10:00AM-12:00PM**

| Name               | Title           | Organization        | Phone Number | E-mail Address             |
|--------------------|-----------------|---------------------|--------------|----------------------------|
| Mark S. Thornton   | EMA Director    | Franklin Co.<br>EMA | 601-394-1720 | fcema@telepak.net          |
| Roland Vandenweghe | EMA Div.        | Walworth EMA        | 601-730-2003 | emergency.mgmt@yale2.com   |
| Grant McCurley     | EMA Dir.        | Amite Co EMA        | 601-249-9185 | gmcCurley@mitelcountys.gov |
| Tina Reed          | MEMA ACS        | MEMA                | 769-257-3572 | treed@memas.gov            |
| Bill PATRIEK       | MEMA MIT.       | MEMA                | 601-933-6607 | bpatriek@memas.gov         |
| RICHARD COGALAN    | PIKE EMA DIR.   | PIKE EMA            | 601-249-6023 | PIKED@CALHOME.NET          |
| Lorelle Robins     | MEMA<br>HPLanor | MEMA                | 228-594-3127 | lrobins@memas.gov          |
|                    |                 |                     |              |                            |

MEMA District 7 Regional Hazard Mitigation Plan  
Hazard Mitigation Council Meeting

August 29, 2017  
10:00AM-12:00PM

| Name               | Title                                    | Organization        | Phone Number   | E-mail Address                 |
|--------------------|--|---------------------|----------------|--------------------------------|
| Tony Norwood       | Director                                 | Lawrence Co. EOC    | 601-660-5018   | tnorwood@co.lawrence.ms.us     |
| Thomas C. Holliver | Director                                 | Wilkinson Co. EOC   | 601-870-1809   | Holliver@bellsouth.net         |
| Roland Vandenberg  | EMA Dir.                                 | Walthall Co.        | 601-730-2003   | emergency.manager@y9600.com    |
| Brenda Hammitte    | Director                                 | Jefferson Co.       | 601-597-8422   | jeffersoncounty@bellsouth.net  |
| Ruby Husband       | <del>McCom</del><br>Asst. Superintendent | McComb School Dist. | (601) 684-4661 | husbandr@mccomb.k12.ms.us      |
| Greg Gilmore       | Safety (District)                        | McComb School Dist  | 601-684-4661   | gilmoreg_98@yahoo.com          |
| DARLY W. Smith     | Deputy EMA Director                      | Adams Co EMA        | 601-442-7021   | diservices@adamscountymiss.gov |
|                    |  |                     |                |                                |

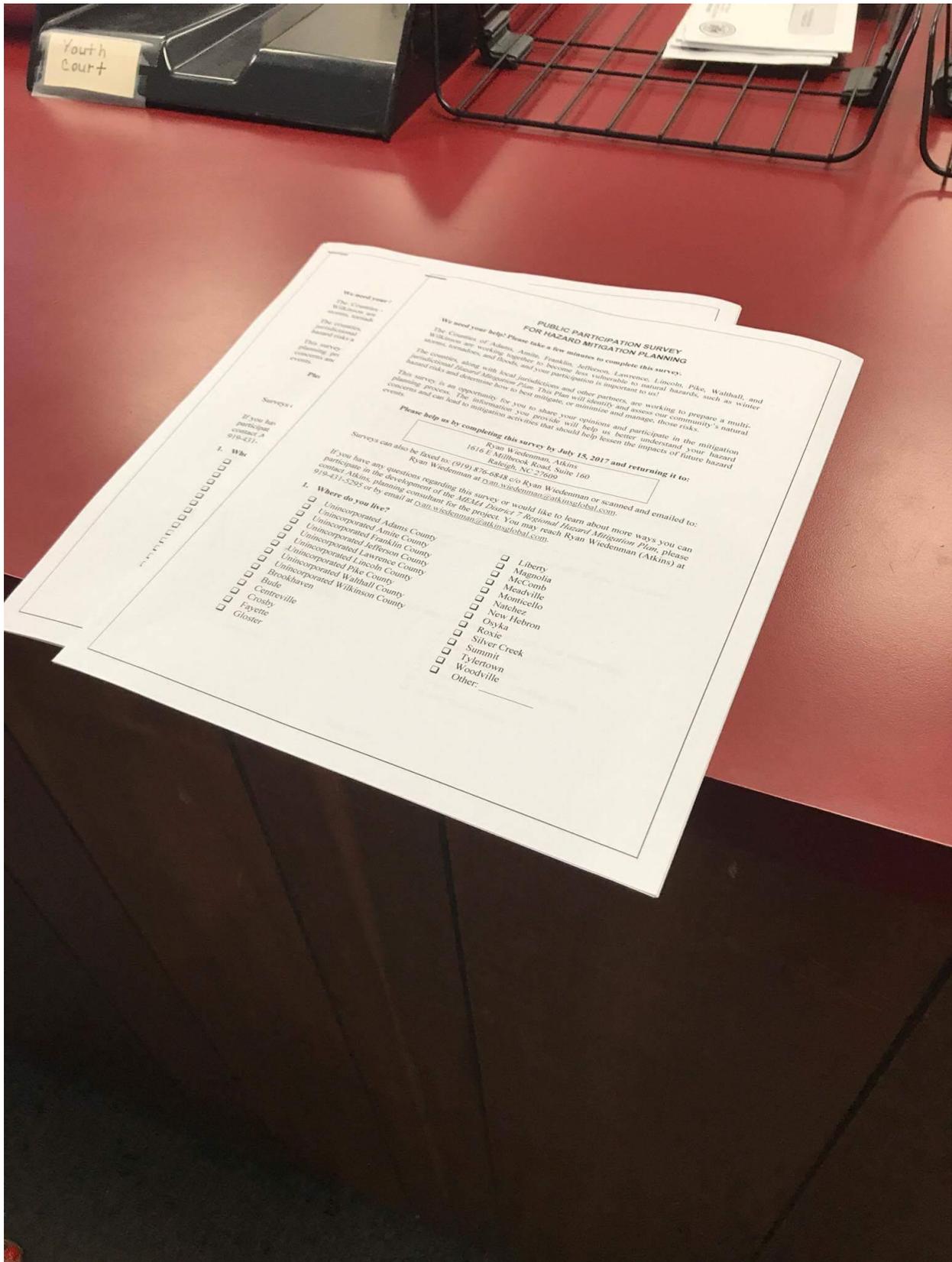
ATKINS

| Name               | Title                                  | Organization       | Phone Number | E-mail Address              |
|--------------------|--|--------------------|--------------|-----------------------------|
| Martha Watts       | Mayor                                  | Town of Monticello | 601 581 0045 | mayor@monticello.ms.gov     |
| Percy Robinson     | Mayor                                  | Town of Summit     | 601-249-8568 | Prmayor@Bellsouth.net       |
| Tina Reed          | AC                                     | MEMA               | 769-257-3572 | treed@mema.ms.gov           |
| RICHARD COGHEAN    | Director                               | PIKE EMA           | 601-684 3564 | PIKECO@CABLEONE.NET         |
| Cl. Hood R. Galley | BLCO Director                          | Beakham-Lynch EMA  | 601-754-3210 | blcd@cableone.net           |
| Grant McCurley     | Director<br>Amite Co EMA               | Amite Co EMA       | 601-657-1011 | gmcCurley@amiteCountyms.gov |
| MARK S. Thornton   | Director<br>Franklin Co. EMA           | →                  | 601-384-6104 | Scena@telepak.net           |
| Bill Pateck        | Office Director<br>Mfg. of Mississippi | MEMA               | 601 933 6607 | bpateck@mema.ms.gov         |
| Loretta Perkins    | MEMA Planner                           | : MEMA             | 228 594-3127 | lperkins@mema.ms.gov        |
|                    |  |                    |              |                             |

ATKINS

# Public Survey Advertisements

## Adams County



Youth Court

We need your help!  
The Citizens of Adams, Anson, Franklin, Jefferson, Lawrence, Lincoln, Pike, Waltham, and Wilkes are working together to become less vulnerable to natural hazards, such as winter storms, tornadoes, and floods, and your participation is important to us!

### PUBLIC PARTICIPATION SURVEY FOR HAZARD MITIGATION PLANNING

The counties, along with local jurisdictions and other partners, are working to prepare a multi-jurisdictional Hazard Mitigation Plan. This Plan will identify and assess our community's natural hazard risks and determine how to best mitigate, or minimize and manage, those risks.

This survey is an opportunity for you to share your opinions and participate in the mitigation planning process. The information you provide will help us better understand your hazard concerns and can lead to mitigation activities that should help lessen the impacts of future hazard events.

Please help us by completing this survey by July 15, 2017 and returning it to:  
Ryan Wiedenman, Atkins  
1616 E. Millbrook Road, Suite 160  
Raleigh, NC 27609  
Ryan Wiedenman at (919) 878-0848 or Ryan Wiedenman or scanned and emailed to:  
atkins@atkinsglobal.com

If you have any questions regarding this survey or would like to learn about more ways you can participate in the development of the "M&M Barrier 7 Regional Hazard Mitigation Plan, please contact Atkins planning consultant for the project. You may reach Ryan Wiedenman (Atkins) at 919-417-5295 or by email at [ryan.wiedenman@atkinsglobal.com](mailto:ryan.wiedenman@atkinsglobal.com).

If you are participating online at 919-417-5295

1. Where do you live?

- Unincorporated Adams County
- Unincorporated Anson County
- Unincorporated Franklin County
- Unincorporated Jefferson County
- Unincorporated Lawrence County
- Unincorporated Lincoln County
- Unincorporated Pike County
- Breakhaven
- Centreville
- Crosby
- Fayette
- Glister

- Liberty
- Magnolia
- McComb
- Montville
- Natchez
- New Hebron
- Oxya
- Roxie
- Silver Creek
- Summit
- Tylertown
- Woodville
- Other:

**PUBLIC PARTICIPATION SURVEY  
FOR HAZARD MITIGATION PLANNING**

**We need your help! Please take a few minutes to complete this survey.**

The Counties of Adams, Amite, Franklin, Jefferson, Lawrence, Lincoln, Pike, Walthall, and Wilkinson are working together to become less vulnerable to natural hazards, such as winter storms, tornadoes, and floods, and your participation is important to us!

The counties, along with local jurisdictions and other partners, are working to prepare a multi-jurisdictional *Hazard Mitigation Plan*. This Plan will identify and assess our community's natural hazard risks and determine how to best mitigate, or minimize and manage, those risks.

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**Please help us by completing this survey by July 15, 2017 and returning it to:**

Ryan Wiedenman, Atkins  
1616 E Millbrook Road, Suite 160  
Raleigh, NC 27609

Surveys can also be faxed to: (919) 876-6848 c/o Ryan Wiedenman or scanned and emailed to: Ryan Wiedenman at [ryan.wiedenman@atkinsglobal.com](mailto:ryan.wiedenman@atkinsglobal.com).

If you have any questions regarding this survey or would like to learn about more ways you can participate in the development of the *MEMA District 7 Regional Hazard Mitigation Plan*, please contact Atkins, planning consultant for the project. You may reach Ryan Wiedenman (Atkins) at 919-431-5295 or by email at [ryan.wiedenman@atkinsglobal.com](mailto:ryan.wiedenman@atkinsglobal.com).

**1. Where do you live?**

- |  |                                       |
|--|---------------------------------------|
| <input type="checkbox"/> Unincorporated Adams County     | <input type="checkbox"/> Liberty      |
| <input type="checkbox"/> Unincorporated Amite County     | <input type="checkbox"/> Magnolia     |
| <input type="checkbox"/> Unincorporated Franklin County  | <input type="checkbox"/> McComb       |
| <input type="checkbox"/> Unincorporated Jefferson County | <input type="checkbox"/> Meadville    |
| <input type="checkbox"/> Unincorporated Lawrence County  | <input type="checkbox"/> Monticello   |
| <input type="checkbox"/> Unincorporated Lincoln County   | <input type="checkbox"/> Natchez      |
| <input type="checkbox"/> Unincorporated Pike County      | <input type="checkbox"/> New Hebron   |
| <input type="checkbox"/> Unincorporated Walthall County  | <input type="checkbox"/> Osyka        |
| <input type="checkbox"/> Unincorporated Wilkinson County | <input type="checkbox"/> Roxie        |
| <input type="checkbox"/> Brookhaven                      | <input type="checkbox"/> Silver Creek |
| <input type="checkbox"/> Bude                            | <input type="checkbox"/> Summit       |
| <input type="checkbox"/> Centreville                     | <input type="checkbox"/> Tylertown    |
| <input type="checkbox"/> Crosby                          | <input type="checkbox"/> Woodville    |
| <input type="checkbox"/> Fayette                         | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Gloster                         |                                       |

**We need your help! Please**

The Counties of Adams, Wilkinson are working to storms, tornadoes, and flo

The counties, along with jurisdictional *Hazard Mit* hazard risks and determin

This survey is an opport planning process. The i concerns and can lead to events.

**Please help us by**

[Redacted box]

Surveys can also be fax Ryan

If you have any question participate in the develop contact Atkins, planning 919-431-5295 or by ema

**1. Where do you live?**

- Unincorporated
- Brookhaven
- Bude
- Centreville
- Crosby
- Fayette
- Gloster

with a happy birthday? Submit names with a \$5 dollar donation

COGNITIVE DEVELOPMENT DISTRICT 7



**Amite County Emergency Management and Civil Defense**

May 8 at 13:30 · 🌐

Good Afternoon, Amite county and our surrounding counties are in the process of updating our Hazard Mitigation Plan and we need your help. If you live in Amite County would you please take the time to answer the questions in the survey listed in the link below we would great appreciate it.

<https://goo.gl/forms/9THxMLytcGz1ppBv1>

### Public Participation Survey for Hazard Mitigation Planning (MEMA 7)

We need your help! Please take a few minutes to complete this survey.

The Counties of Adams, Amite, Franklin, Jefferson, Lawrence, Lincoln, Pike, Walthall, and Wilkinson are working together to become less vulnerable to natural hazards, such as winter storms, tornadoes, and floods, and your participation is important to us!

The counties, along with local jurisdictions and other partners, are working to prepare a multi-jurisdictional Hazard Mitigation Plan. This Plan will identify and assess our community's natural hazard risks and determine how to best mitigate, or minimize and manage, those risks.

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Please help us by completing this survey by July 15, 2017.

If you have any questions regarding this survey or would like to learn about more ways you can participate in the development of the MEMA District 7 Regional Hazard Mitigation Plan, please contact Atkins, planning consultant for the project. You may reach Ryan Wiedenman (Atkins) at 919-431-5295 or by email at [ryan.wiedenman@atkinsglobal.com](mailto:ryan.wiedenman@atkinsglobal.com).

1. Where do you live?

### Public Participation Survey for Hazard Mitigation Planning (MEMA 7)

[docs.google.com](https://docs.google.com)

 Patsy McKenzie Mir and 5 others 7 Shares

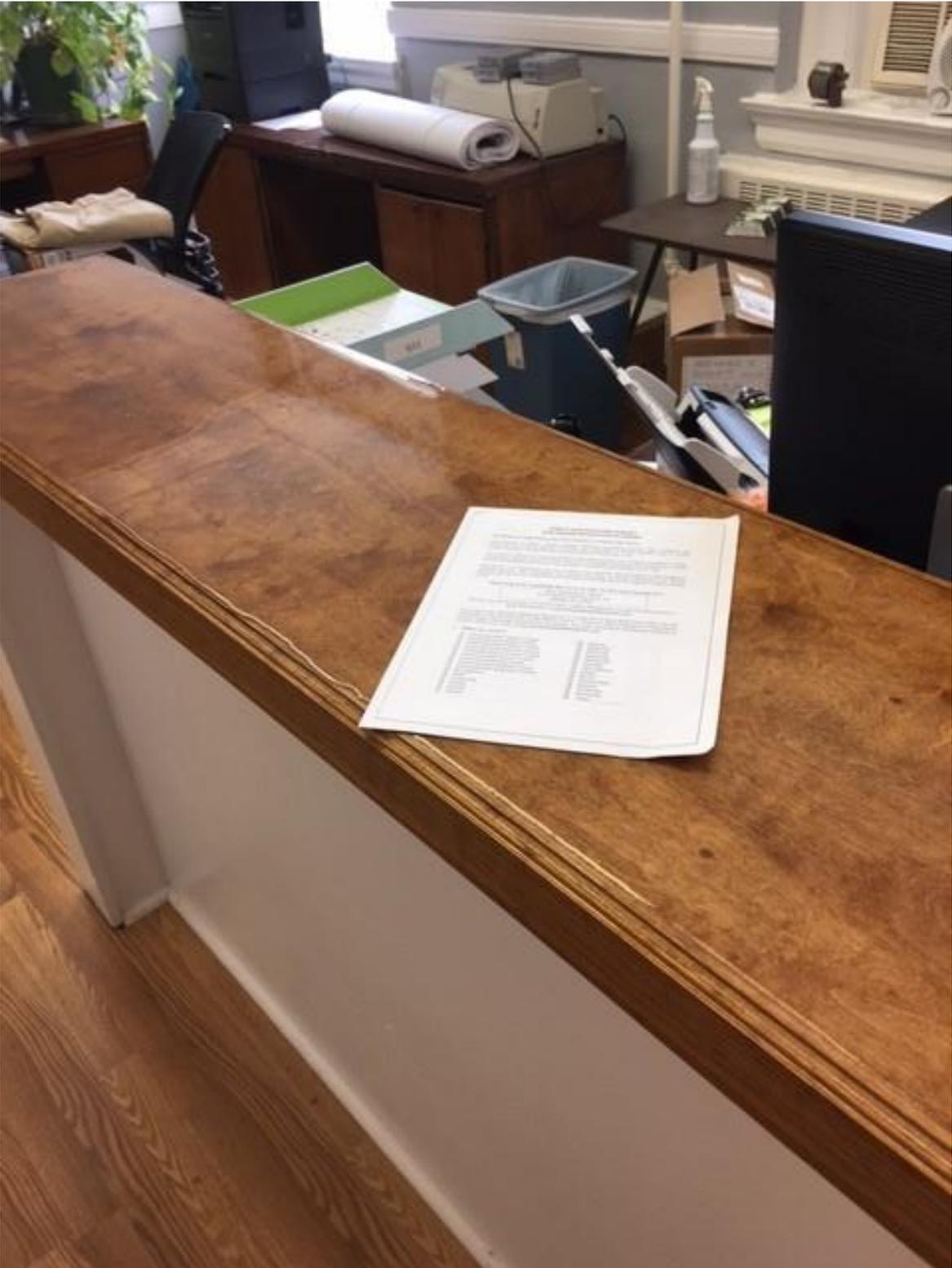
 Like  Comment  Share

1,309 people reached >

[Boost Post](#)



Franklin County



Direct

Your Story

Yvonne

Shayla

Donna



What's on your mind this morning?



Live



Photo



Check In



Brenda White Hammitte shared a link.



Just now · 🌐

**Public Participation Survey for Hazard Mitigation Planning (MEMA 7)**

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1. Where do you live?

**Public Participation Survey for Hazard Mitigation Planning (MEMA 7)**  
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Comment



Share

Sharlet Mcknight-Moore commented on this.



Jessie Dorsey added 3 new photos — 🎉 celebrating my son's birthday with Leon



Lawrence County

Public Participation Survey for Hazard Mitigation Planning

The University of Idaho State Firewise, Software, Community Outreach, Fire, Wildland, and Wetlands are working together to increase and maintain natural resources such as forest lands, riparian and flood wetlands, and other natural resources in riparian areas.

The resources they will work on include soil erosion, tree mortality, and riparian habitat degradation. The Plan will identify and assess the resources' habitat health and determine how to best manage or restore the riparian habitat.

The survey is an opportunity for you to share your opinion and concerns in the riparian planning process. The information we receive will help us better understand your forest resources and the best strategies to protect them. Your input is important to the success of this project.

Please help us by completing the survey by April 30, 2017 and returning it to:

Eric Probst, State  
1000 S. Jefferson Street, Room 100  
Bozeman, MT 59717

Survey information based on 2016 U.S. Forest Service Wildland Fire Assessment System (W-FAS) survey. For more information, visit [www.fs.fed.us/wfas/](http://www.fs.fed.us/wfas/).

If you have any questions regarding the survey, or would like to know about other ways you can participate in the development of the Hazard Mitigation Planning Process, please contact Eric Probst at [eric.probst@statefirewise.org](mailto:eric.probst@statefirewise.org) or call 406.234.2343.

1. Where do you live?

|                          |                                     |                          |              |
|--------------------------|-------------------------------------|--------------------------|--------------|
| <input type="checkbox"/> | Unincorporated Idaho County         | <input type="checkbox"/> | Libby        |
| <input type="checkbox"/> | Unincorporated Idaho County         | <input type="checkbox"/> | Maguire      |
| <input type="checkbox"/> | Unincorporated Franklin County      | <input type="checkbox"/> | McCall       |
| <input type="checkbox"/> | Unincorporated Jefferson County     | <input type="checkbox"/> | Manitou      |
| <input type="checkbox"/> | Unincorporated Latah County         | <input type="checkbox"/> | Marblehead   |
| <input type="checkbox"/> | Unincorporated Lewis & Clark County | <input type="checkbox"/> | Opportunity  |
| <input type="checkbox"/> | Unincorporated Panhandle            | <input type="checkbox"/> | Payette      |
| <input type="checkbox"/> | Unincorporated Park County          | <input type="checkbox"/> | Shoshone     |
| <input type="checkbox"/> | Unincorporated Blaine County        | <input type="checkbox"/> | Stibbs       |
| <input type="checkbox"/> | Bozeman                             | <input type="checkbox"/> | Timber Lake  |
| <input type="checkbox"/> | Butte                               | <input type="checkbox"/> | Townsend     |
| <input type="checkbox"/> | Camden                              | <input type="checkbox"/> | Traverse     |
| <input type="checkbox"/> | Coeur d'Alene                       | <input type="checkbox"/> | Wendover     |
| <input type="checkbox"/> | Crater Lake                         | <input type="checkbox"/> | White Salmon |
| <input type="checkbox"/> | Elgin                               | <input type="checkbox"/> | Yreka        |

Be sure to notify  
Customer Office  
The Missouri &  
Louisiana offices

**PUBLIC PARTICIPATION SURVEY  
FOR HAZARD MITIGATION PLANNING**

We need your help! Please take a few minutes to complete this survey.

The Counties of Adams, Alpine, Franklin, Jefferson, Lawrence, Lincoln, Polk, Waukegan, and Wilkeson are working together to develop the Information to Inform? Research, such as hazard studies, inventories, and needs, and your participation is important to us!

The committee, along with local organizations and other partners, are working to prepare a multi-jurisdictional Hazard Mitigation Plan. The Plan will identify and address the community's current hazard risks and determine how to best mitigate, or reduce and manage, those risks.

Your survey is an opportunity for you to share local opinions and participate in the mitigation planning process. The information you provide will help us better understand your hazard concerns and our need to mitigate activities that directly help reduce the impacts of future hazard events.

Please help us by completing this survey by July 23, 2017 and returning it to:

Ryan Wickham, Administrator  
1001 S. Millbrook Road, Suite 100  
Barnesville, GA 30004

Surveys can also be found on: (770) 676-0848 or Ryan Wickham on Facebook and email to Ryan Wickham at [ryan.wickham@gaemergency.com](mailto:ryan.wickham@gaemergency.com)

If you have any questions regarding the survey or would like to learn about other ways you can participate in the development of the Information to Inform? Research Hazard Mitigation Plan, please contact Adam, Planning Coordinator for the project. You may reach Ryan Wickham (Administrator) at (770) 676-0848 or by email at [ryan.wickham@gaemergency.com](mailto:ryan.wickham@gaemergency.com)

1. Where do you live?

- |  |                                       |
|--|---------------------------------------|
| <input type="checkbox"/> Unincorporated Adams County     | <input type="checkbox"/> Liberty      |
| <input type="checkbox"/> Unincorporated Polk County      | <input type="checkbox"/> Maple        |
| <input type="checkbox"/> Unincorporated Franklin County  | <input type="checkbox"/> Waukegan     |
| <input type="checkbox"/> Unincorporated Jefferson County | <input type="checkbox"/> Woodville    |
| <input type="checkbox"/> Unincorporated Lawrence County  | <input type="checkbox"/> Wrensboro    |
| <input type="checkbox"/> Unincorporated Lincoln County   | <input type="checkbox"/> Yonkers      |
| <input type="checkbox"/> Unincorporated Polk County      | <input type="checkbox"/> New Britain  |
| <input type="checkbox"/> Unincorporated Waukegan County  | <input type="checkbox"/> Cooke        |
| <input type="checkbox"/> Barnesville                     | <input type="checkbox"/> River        |
| <input type="checkbox"/> Dale                            | <input type="checkbox"/> Silver Creek |
| <input type="checkbox"/> Cantonville                     | <input type="checkbox"/> Sumner       |
| <input type="checkbox"/> Cooke                           | <input type="checkbox"/> Pikesville   |
| <input type="checkbox"/> Franklin                        | <input type="checkbox"/> Waukegan     |
| <input type="checkbox"/> Grant                           | <input type="checkbox"/> Other _____  |



### We Need Your Help

Please take a few minutes to complete this survey.

PUBLIC PARTICIPATION SURVEY FOR HAZARD MITIGATION PLANNING

[Click here to download file.](#)



# Brookhaven

*Brookhaven*  
MISSISSIPPI

How Do I? City Hall About Live / Visit Contact    

## Events & Meetings

---

## City News

NOVEMBER 18, 2016  
[City Begins New Paving Plan](#)

NOVEMBER 18, 2016  
[City May Get Funds for New Fire Station](#)

[Hazard Mitigation Survey](#)

-  AREA INFORMATION
-  LOCAL ORGANIZATIONS
-  SCHOOLS
-  BUY LOCAL
-  MAP
-  LOCAL WEATHER

Search  

### UPCOMING EVENTS

There are no upcoming events at this time.

### NEWS

- [Water Department 2006 Annual Water Quality Report](#)
- [City Begins New Paving Plan](#)
- [City May Get Funds for New Fire Station](#)
- [Tourism Council Meeting](#)
- [Brookhaven Board Meeting](#)

### BROOKHAVEN WEATHER

76°  
Overcast





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## Pike County Civil Defense/Emergency Management

Published by Carlene Alfred Stathart on May 8 at 9:08am

Good morning everyone. Pike and Surrounding Counties are in the process of updating our Hazardous Mitigation Plan and we need your help. If you would take the time to complete this survey, we would greatly appreciate it.

Sincerely,

Pike County Civil Defense/Emergency Mgt... See More

**Public Participation Survey for Hazard Mitigation Planning (MEMA 7)**

We need your help! Please take a few minutes to complete this survey.

The Counties of Adams, Amite, Franklin, Jefferson, Lawrence, Lincoln, Pike, Waltham, and Warrick are working together to determine the communities at risk from hazards, such as major storms, flooding, and fires, and your participation is important to us!

The counties, along with local businesses and other partners, are working to prepare a new comprehensive Hazard Mitigation Plan. This Plan will identify and assess the vulnerability to natural hazards and determine how to best mitigate or minimize and manage those risks.

This survey is an opportunity for you to share your thoughts and perspectives on the mitigation planning process. The information you provide will help us better understand your local concerns and determine mitigation activities that will best improve the safety of those at-risk areas.

Please complete this survey by July 18, 2017.

If you have any questions regarding this survey, or would like to learn about more ways you can participate in the development of the updated Adams, Jefferson, Lawrence, Lincoln, Pike, Waltham, and Warrick Hazard Mitigation Plan, please contact the project planning coordinator for the project, Eric P. Smith, at [eric.smith@pikecountymissouri.gov](mailto:eric.smith@pikecountymissouri.gov) or 417-437-5298 or by email at [eric.smith@pikecountymissouri.gov](mailto:eric.smith@pikecountymissouri.gov).

1. Where do you live?

## Public Participation Survey for Hazard Mitigation Planning (MEMA 7)

We need your help! Please take a few minutes to complete this survey. The Counties of Adams, Amite, Franklin, Jefferson, Lawrence, Lincoln, Pike, Waltham,

[DOCS-GOOGLE.COM](https://www.google.com)

3,654 people reached

Boost Post

Like Comment Share

Gar L. Brumfield, Charles Buoch and 13 others

Chronological

19 shares

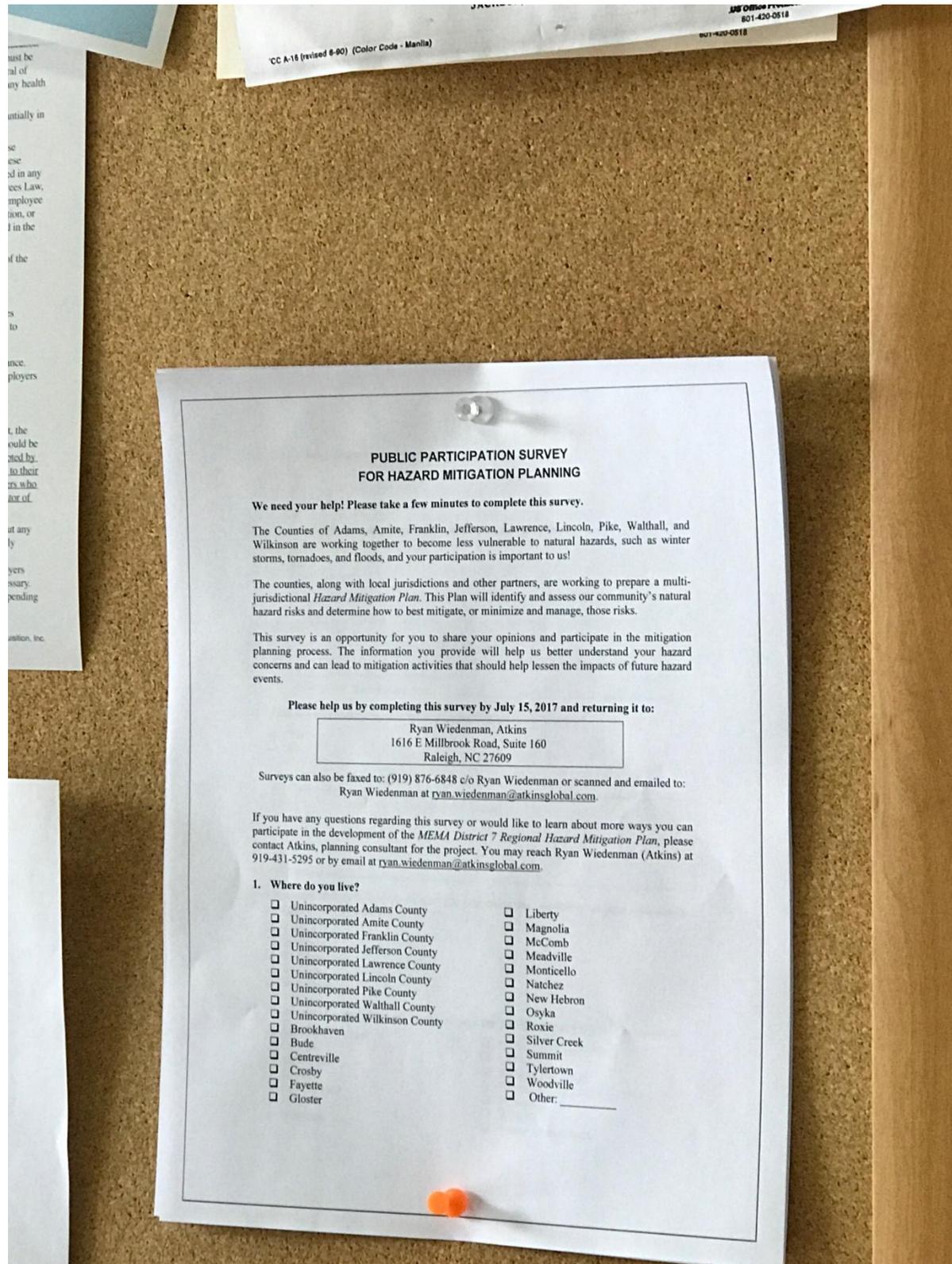
Share Civil Man

You can

English & Français

Unsubscribe

# Walthall County



CC A-16 (revised 8-00) (Color Code - Manila)

801-420-0518

## PUBLIC PARTICIPATION SURVEY FOR HAZARD MITIGATION PLANNING

We need your help! Please take a few minutes to complete this survey.

The Counties of Adams, Amite, Franklin, Jefferson, Lawrence, Lincoln, Pike, Walthall, and Wilkinson are working together to become less vulnerable to natural hazards, such as winter storms, tornadoes, and floods, and your participation is important to us!

The counties, along with local jurisdictions and other partners, are working to prepare a multi-jurisdictional *Hazard Mitigation Plan*. This Plan will identify and assess our community's natural hazard risks and determine how to best mitigate, or minimize and manage, those risks.

This survey is an opportunity for you to share your opinions and participate in the mitigation planning process. The information you provide will help us better understand your hazard concerns and can lead to mitigation activities that should help lessen the impacts of future hazard events.

Please help us by completing this survey by July 15, 2017 and returning it to:

Ryan Wiedenman, Atkins  
1616 E Millbrook Road, Suite 160  
Raleigh, NC 27609

Surveys can also be faxed to: (919) 876-6848 c/o Ryan Wiedenman or scanned and emailed to:  
Ryan Wiedenman at [ryan.wiedenman@atkinglobal.com](mailto:ryan.wiedenman@atkinglobal.com).

If you have any questions regarding this survey or would like to learn about more ways you can participate in the development of the *MEMA District 7 Regional Hazard Mitigation Plan*, please contact Atkins, planning consultant for the project. You may reach Ryan Wiedenman (Atkins) at 919-431-5295 or by email at [ryan.wiedenman@atkinglobal.com](mailto:ryan.wiedenman@atkinglobal.com).

### 1. Where do you live?

- |  |                                       |
|--|---------------------------------------|
| <input type="checkbox"/> Unincorporated Adams County     | <input type="checkbox"/> Liberty      |
| <input type="checkbox"/> Unincorporated Amite County     | <input type="checkbox"/> Magnolia     |
| <input type="checkbox"/> Unincorporated Franklin County  | <input type="checkbox"/> McComb       |
| <input type="checkbox"/> Unincorporated Jefferson County | <input type="checkbox"/> Meadville    |
| <input type="checkbox"/> Unincorporated Lawrence County  | <input type="checkbox"/> Monticello   |
| <input type="checkbox"/> Unincorporated Lincoln County   | <input type="checkbox"/> Natchez      |
| <input type="checkbox"/> Unincorporated Pike County      | <input type="checkbox"/> New Hebron   |
| <input type="checkbox"/> Unincorporated Walthall County  | <input type="checkbox"/> Osyka        |
| <input type="checkbox"/> Unincorporated Wilkinson County | <input type="checkbox"/> Roxie        |
| <input type="checkbox"/> Brookhaven                      | <input type="checkbox"/> Silver Creek |
| <input type="checkbox"/> Bude                            | <input type="checkbox"/> Summit       |
| <input type="checkbox"/> Centreville                     | <input type="checkbox"/> Tybertown    |
| <input type="checkbox"/> Crosby                          | <input type="checkbox"/> Woodville    |
| <input type="checkbox"/> Fayette                         | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Gloster                         |                                       |

conducting free "Do-it-Yourself" No Fault Divorce Clinics on the 2<sup>nd</sup> and 4<sup>th</sup> Fridays of August 2017 from 2:00 p.m. - 6:00 p.m.

### PUBLIC PARTICIPATION SURVEY FOR HAZARD MITIGATION PLANNING

**We need your help! Please take a few minutes to complete this survey.**

The Counties of Adams, Amite, Franklin, Jefferson, Lawrence, Lincoln, Pike, Walthall, and Wilkinson are working together to become less vulnerable to natural hazards, such as winter storms, tornadoes, and floods, and your participation is important to us!

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- |  |                                       |
|--|---------------------------------------|
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| <input type="checkbox"/> Unincorporated Jefferson County | <input type="checkbox"/> Meadville    |
| <input type="checkbox"/> Unincorporated Lawrence County  | <input type="checkbox"/> Monticello   |
| <input type="checkbox"/> Unincorporated Lincoln County   | <input type="checkbox"/> Natchez      |
| <input type="checkbox"/> Unincorporated Pike County      | <input type="checkbox"/> New Hebron   |
| <input type="checkbox"/> Unincorporated Walthall County  | <input type="checkbox"/> Osyka        |
| <input type="checkbox"/> Unincorporated Wilkinson County | <input type="checkbox"/> Roxie        |
| <input type="checkbox"/> Brookhaven                      | <input type="checkbox"/> Silver Creek |
| <input type="checkbox"/> Bude                            | <input type="checkbox"/> Summit       |
| <input type="checkbox"/> Centreville                     | <input type="checkbox"/> Tylertown    |
| <input type="checkbox"/> Crosby                          | <input type="checkbox"/> Woodville    |
| <input type="checkbox"/> Fayette                         | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Gloster                         |                                       |

**PUBLIC PARTICIPATION SURVEY  
FOR HAZARD MITIGATION PLANNING**

**We need your help! Please take a few minutes to complete this survey.**

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**1. Where do you live?**

- |  |                                       |
|--|---------------------------------------|
| <input type="checkbox"/> Unincorporated Adams County     | <input type="checkbox"/> Liberty      |
| <input type="checkbox"/> Unincorporated Amite County     | <input type="checkbox"/> Magnolia     |
| <input type="checkbox"/> Unincorporated Franklin County  | <input type="checkbox"/> McComb       |
| <input type="checkbox"/> Unincorporated Jefferson County | <input type="checkbox"/> Meadville    |
| <input type="checkbox"/> Unincorporated Lawrence County  | <input type="checkbox"/> Monticello   |
| <input type="checkbox"/> Unincorporated Lincoln County   | <input type="checkbox"/> Natchez      |
| <input type="checkbox"/> Unincorporated Pike County      | <input type="checkbox"/> New Hebron   |
| <input type="checkbox"/> Unincorporated Walthall County  | <input type="checkbox"/> Osyka        |
| <input type="checkbox"/> Unincorporated Wilkinson County | <input type="checkbox"/> Roxie        |
| <input type="checkbox"/> Brookhaven                      | <input type="checkbox"/> Silver Creek |
| <input type="checkbox"/> Bude                            | <input type="checkbox"/> Summit       |
| <input type="checkbox"/> Centreville                     | <input type="checkbox"/> Tylertown    |
| <input type="checkbox"/> Crosby                          | <input type="checkbox"/> Woodville    |
| <input type="checkbox"/> Fayette                         | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Gloster                         |                                       |

# MEMA DISTRICT 7

Regional Hazard Mitigation Plan  
Public Participation Survey Results



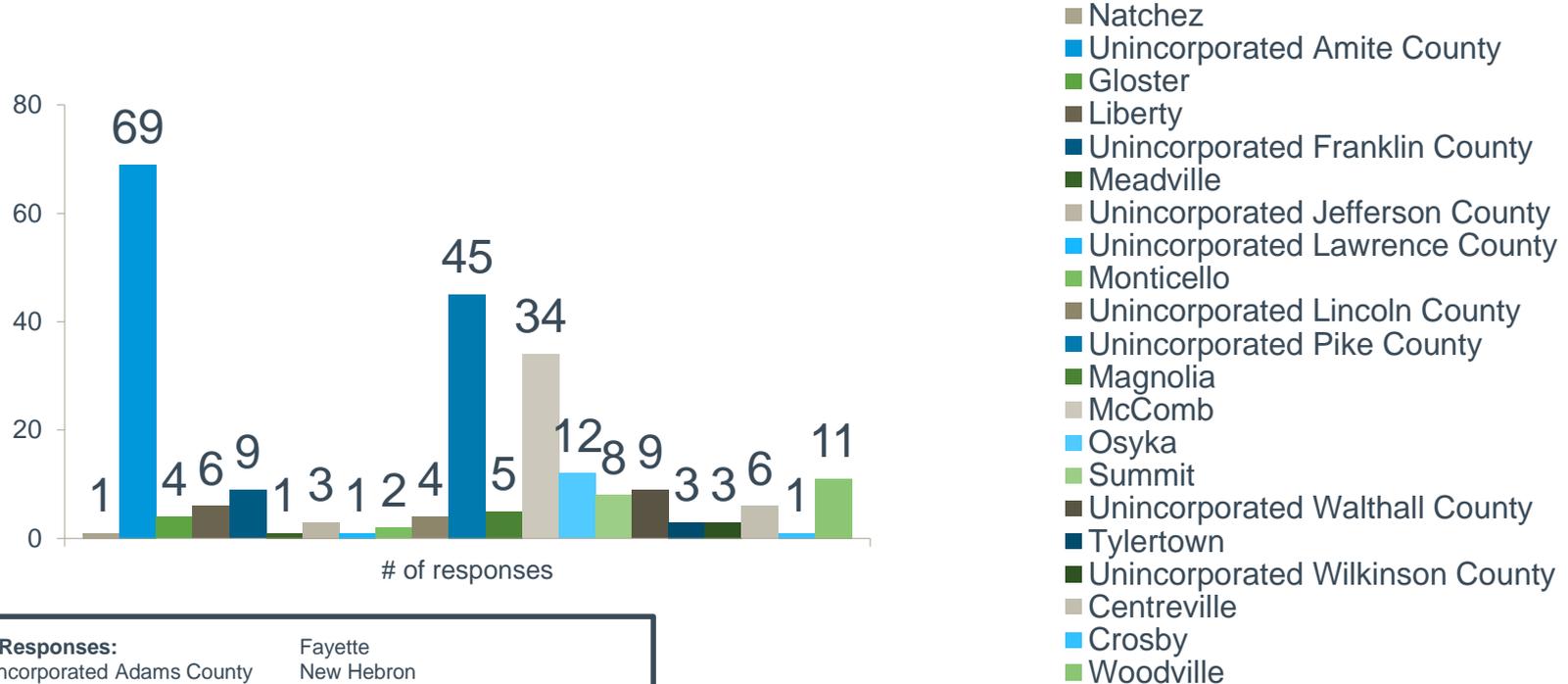
# Public Participation Survey

- Provides an opportunity for the public to share opinions and participate in the planning process
- Link to survey posted on county websites
- 239 completed surveys received

# Public Participation Survey Highlights

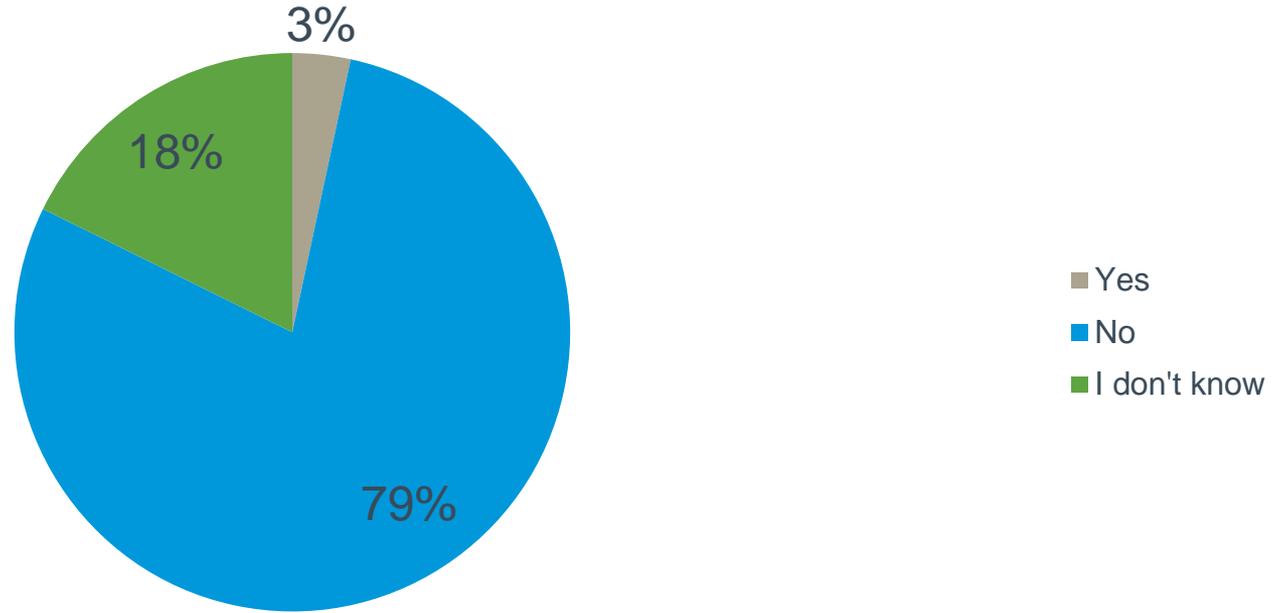
- 77% of respondents are interested in making their homes safer from hazards
- 33% have already taken action to make their homes safer from hazards
- 49% do not know who to contact regarding risks from hazards

# 1. Where do you live?

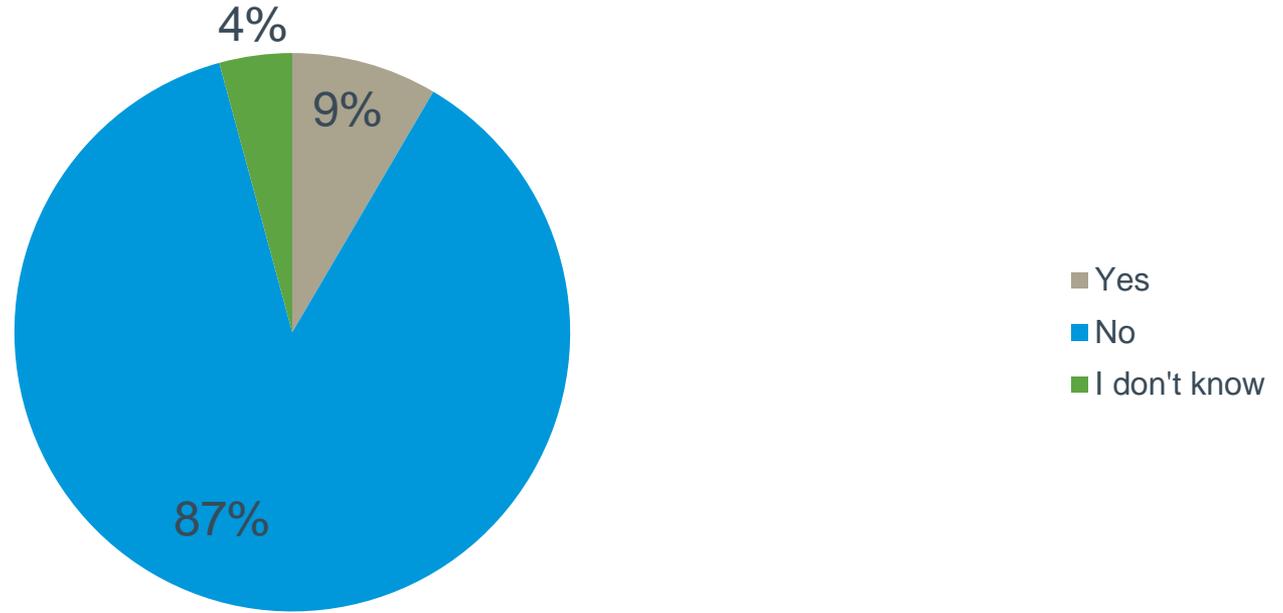


| No Responses:               |              |
|-----------------------------|--------------|
| Unincorporated Adams County | Fayette      |
| Bude                        | New Hebron   |
| Roxie                       | Silver Creek |
|                             | Brookhaven   |

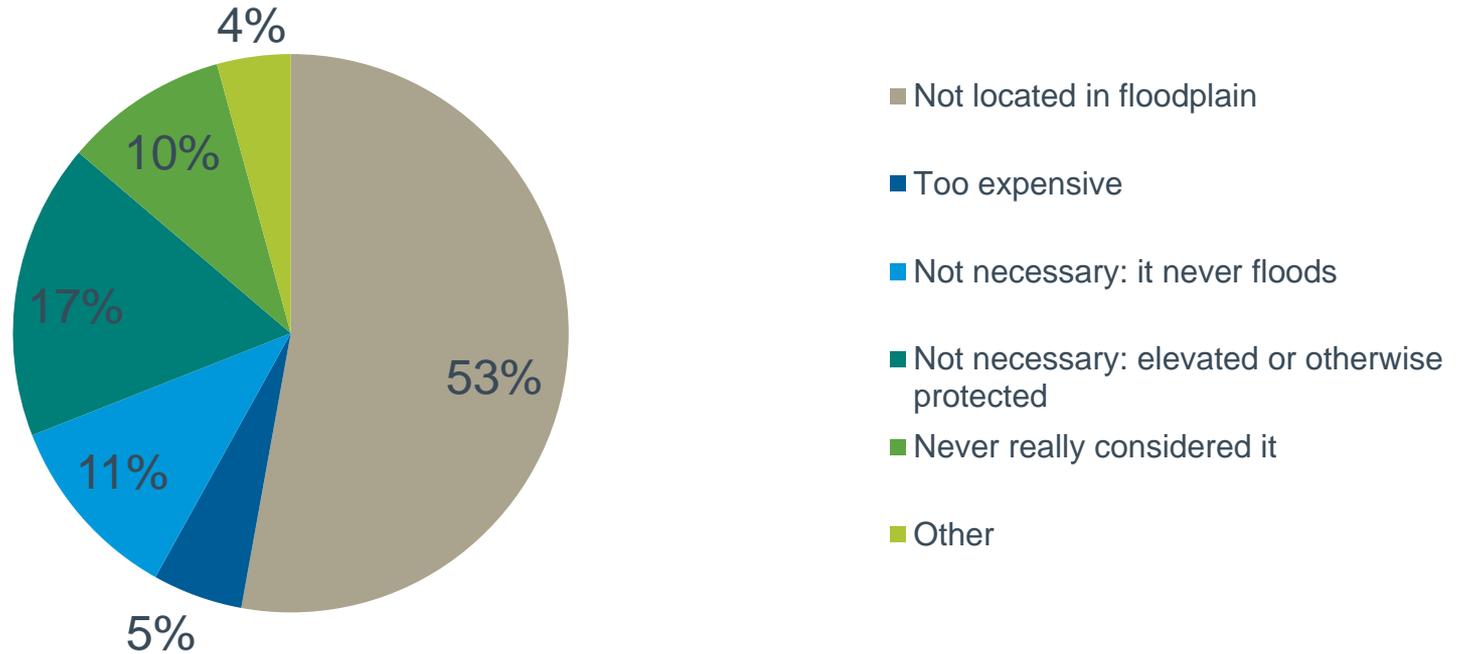
## 2. Is your home in a floodplain?



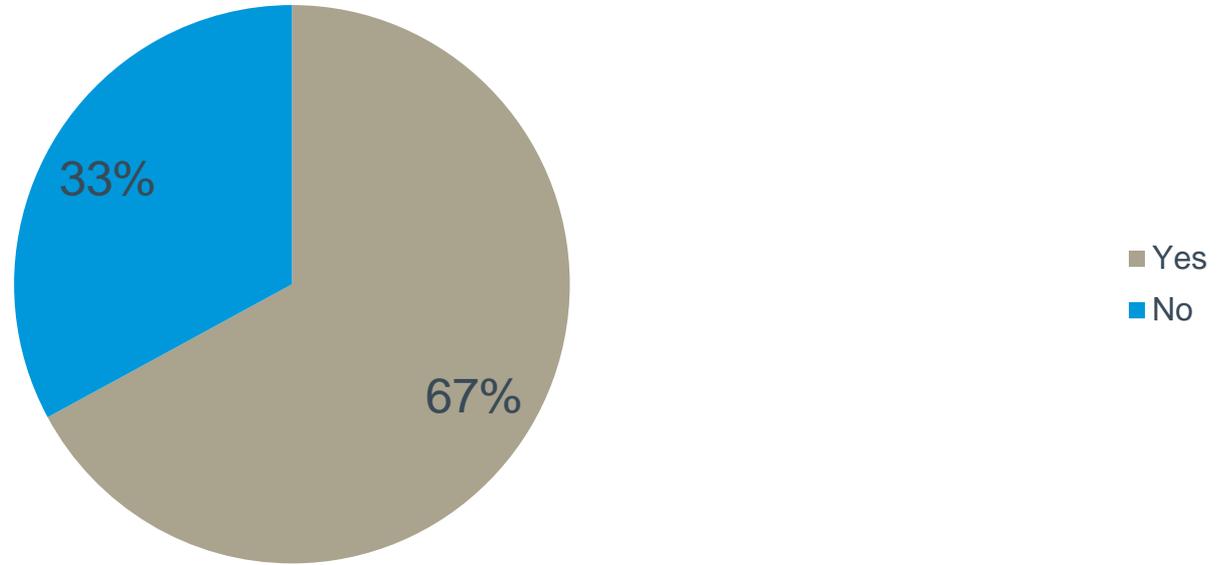
### 3. Do you have flood insurance?



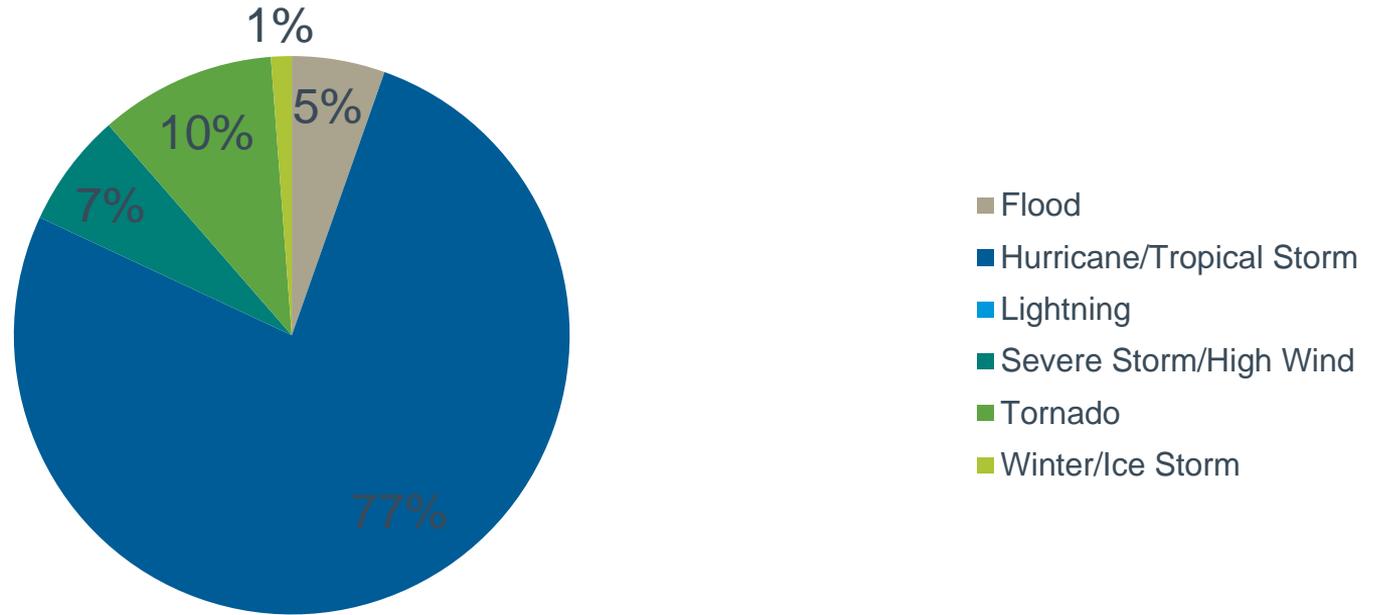
# 3a. Why no flood insurance?



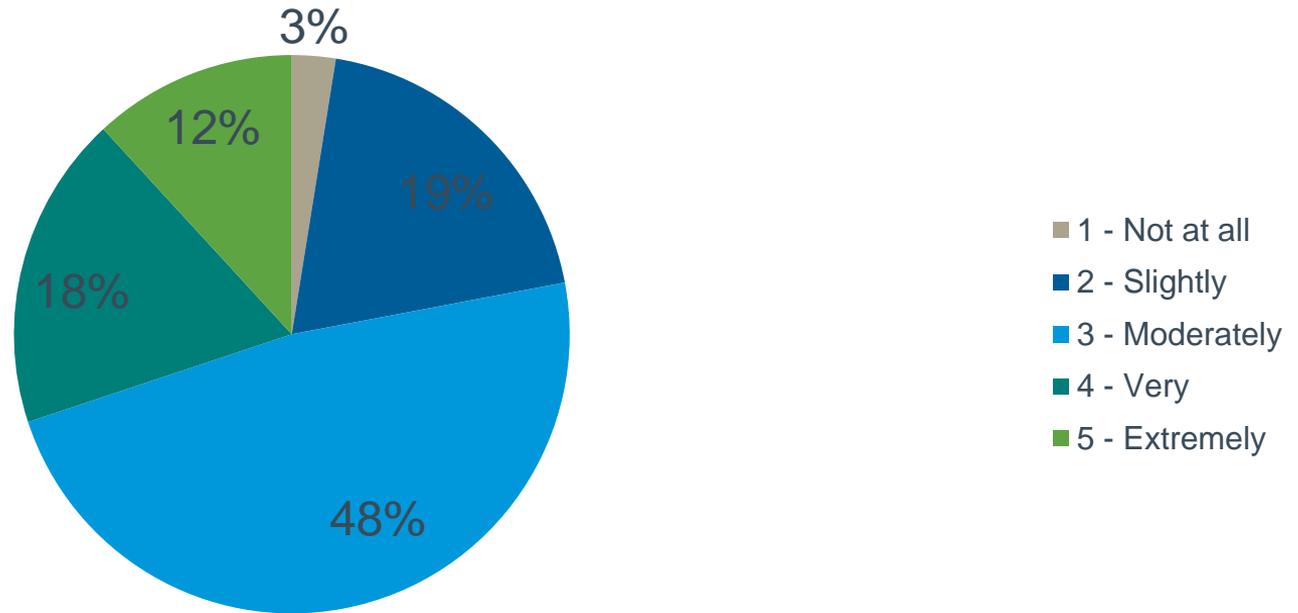
# 4. Have you experienced a disaster?



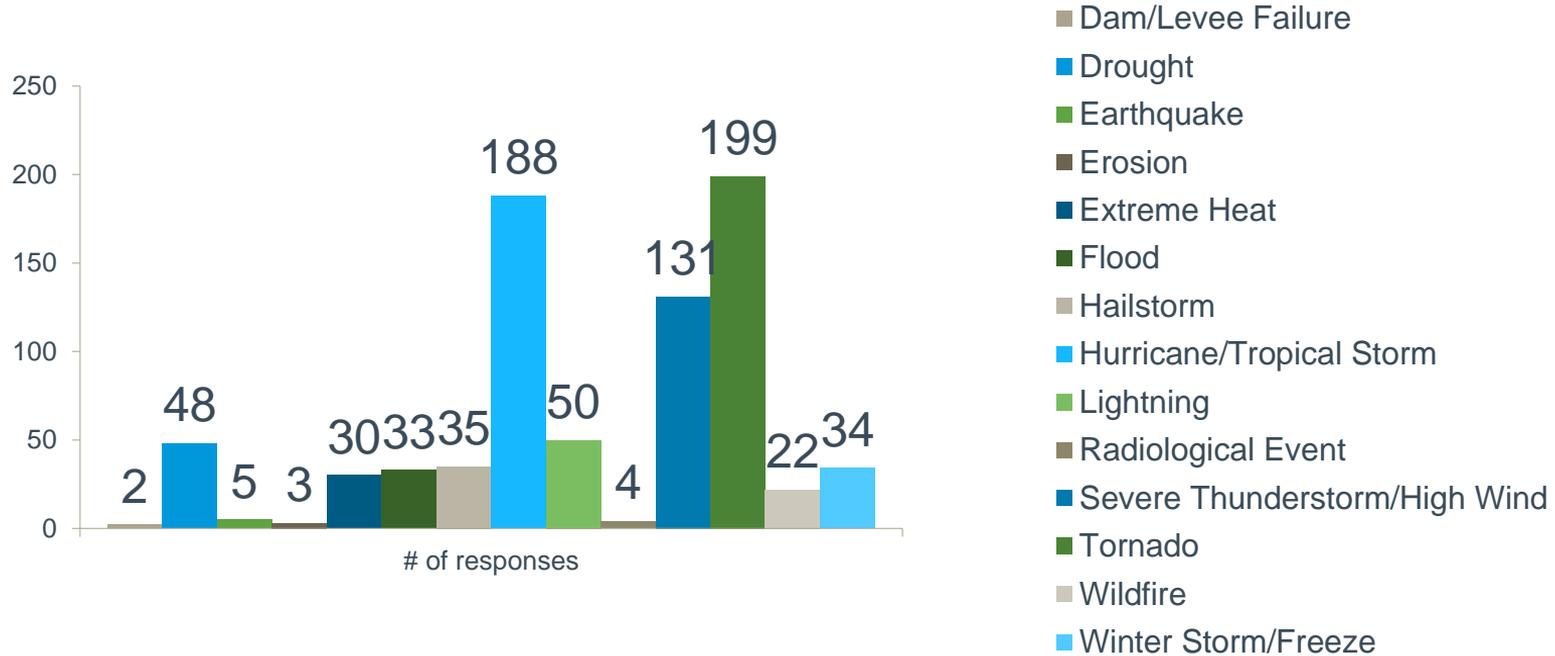
# 4a. Examples of disasters experienced



# 5. How concerned about possibility of being impacted by disaster?



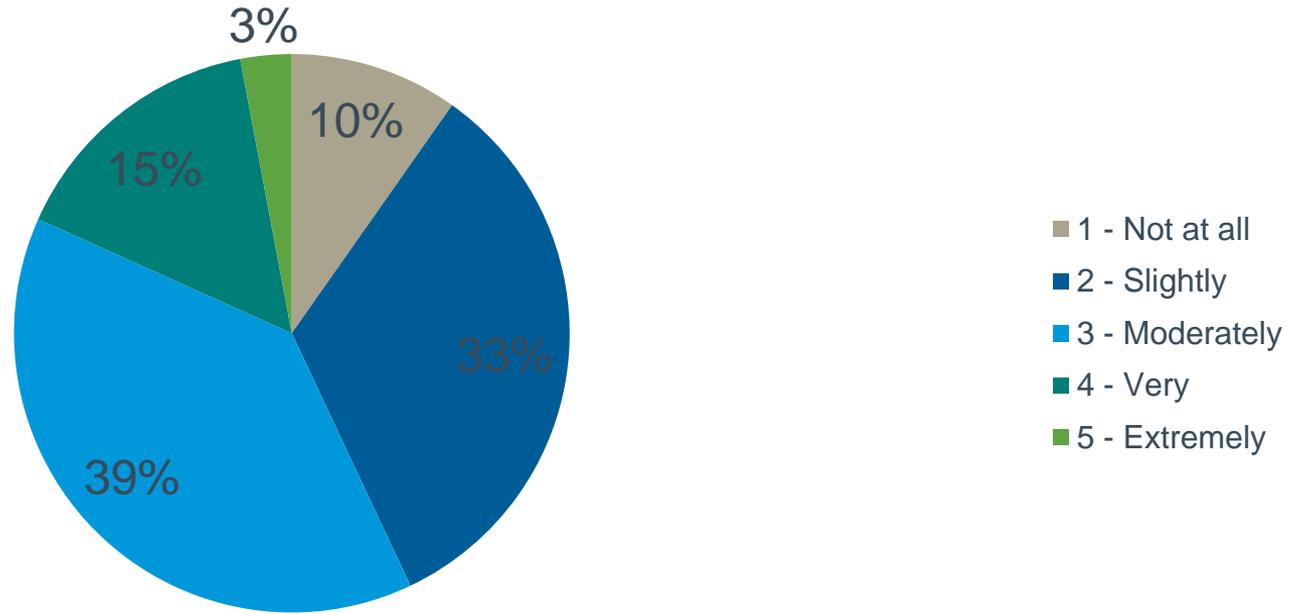
# 6. Hazards of greatest concern?



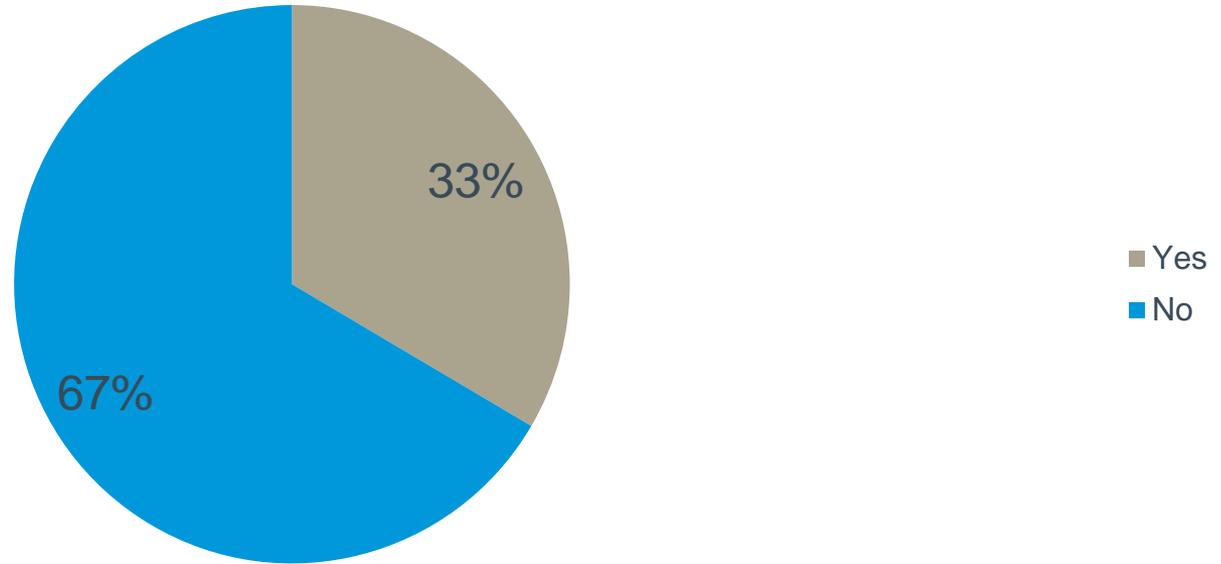
# 7. Other hazards not listed?

- Aircraft accident
- Bioterrorism
- Civil unrest
- Depletion/pollution of groundwater
- Electromagnetic pulse (EMP)
- Fracking
- Gas pipeline incident
- Hazardous materials incident
- House fire
- Power outage
- Theft/criminals

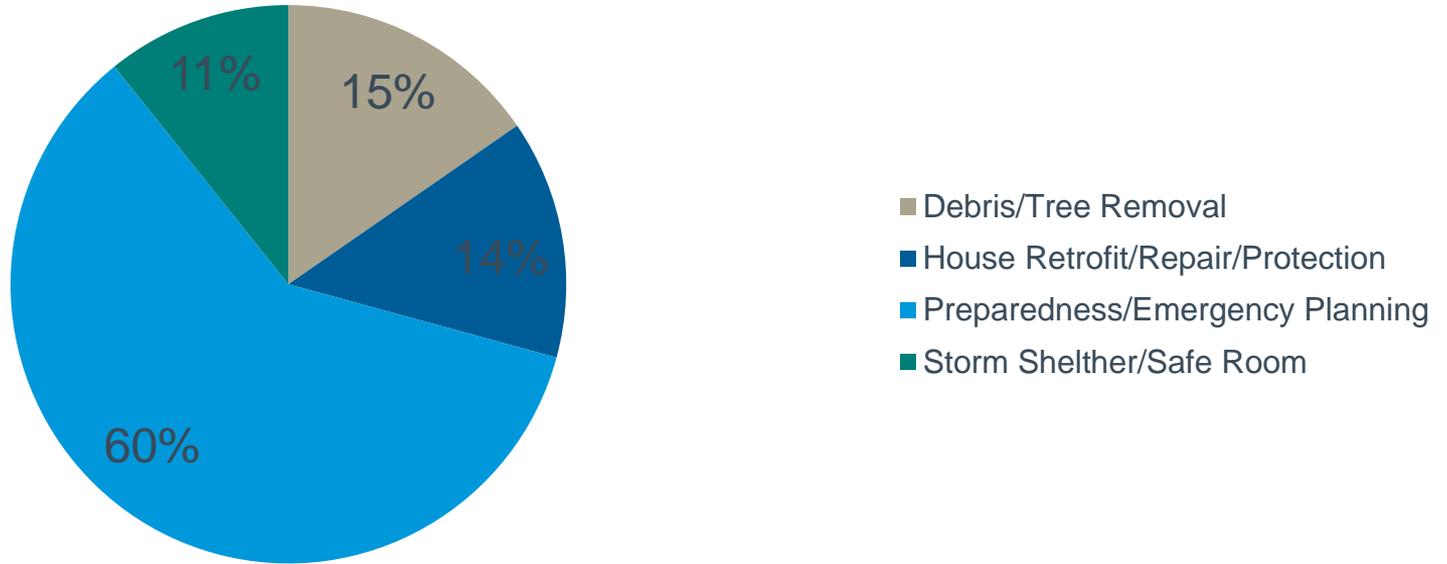
# 8. How prepared if disaster occurs?



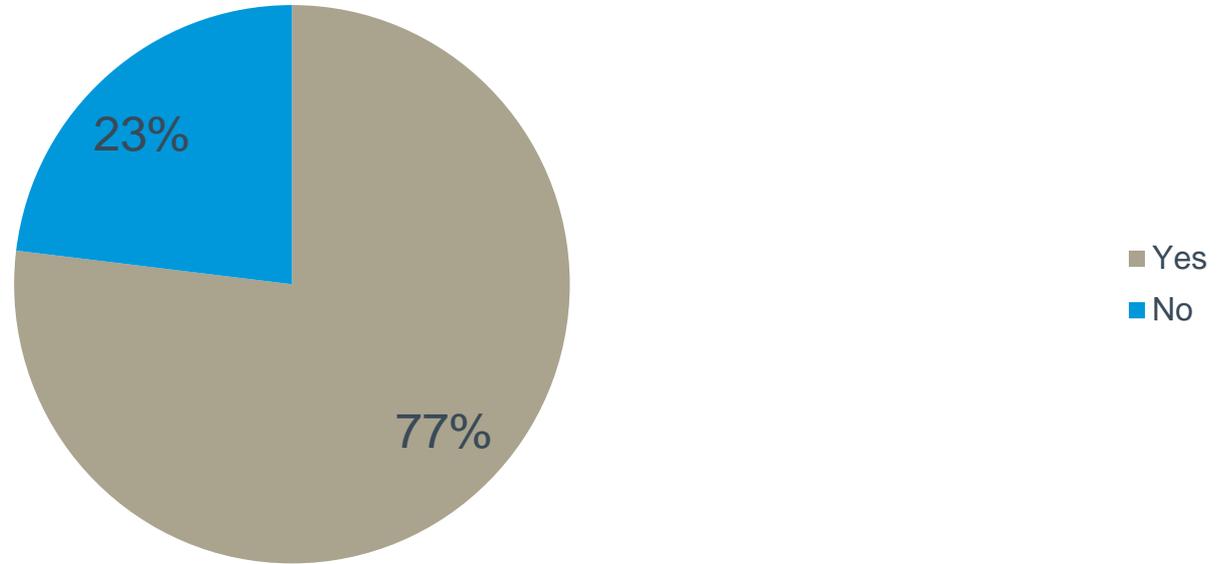
# 9. Taken action to be safer from hazards?



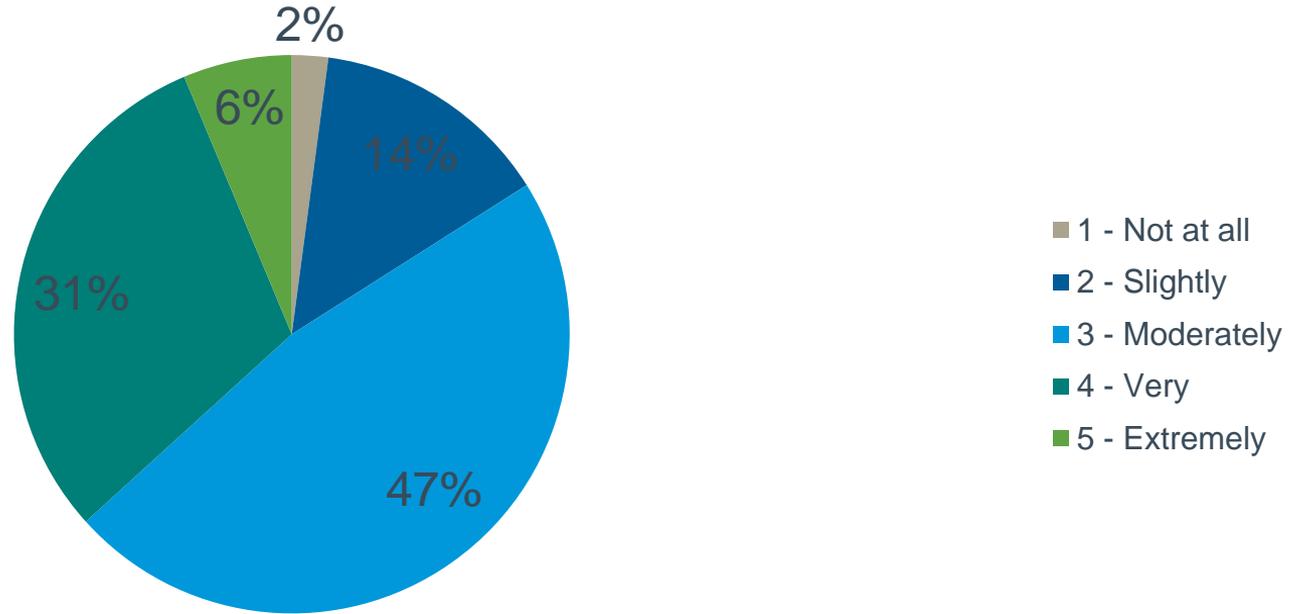
# 9a. Examples of actions taken



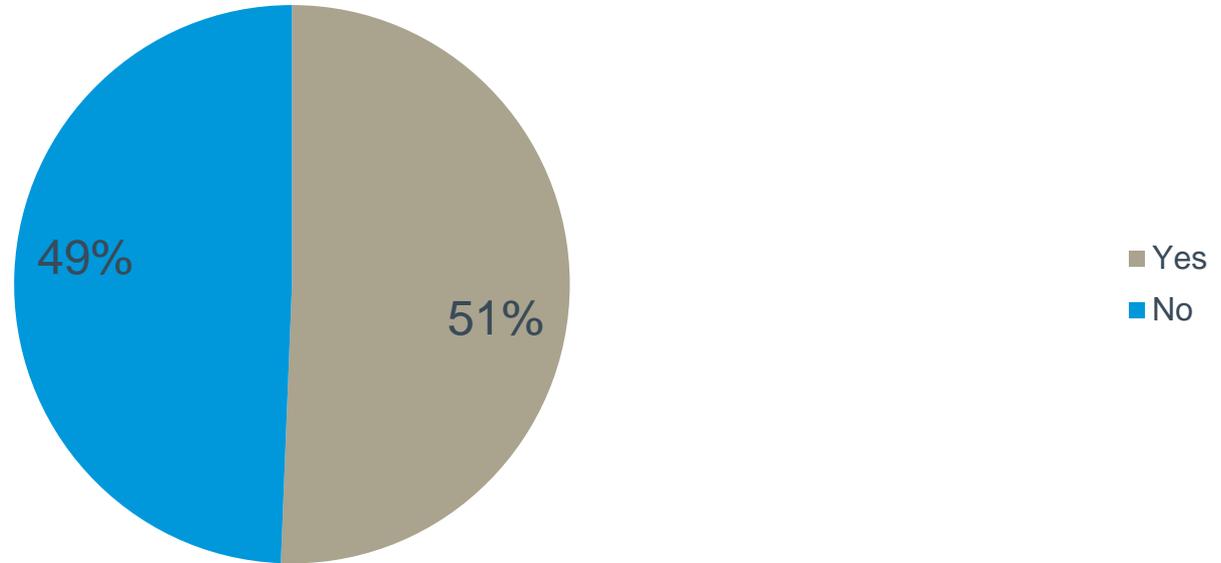
# 10. Interested in being safer from hazards?



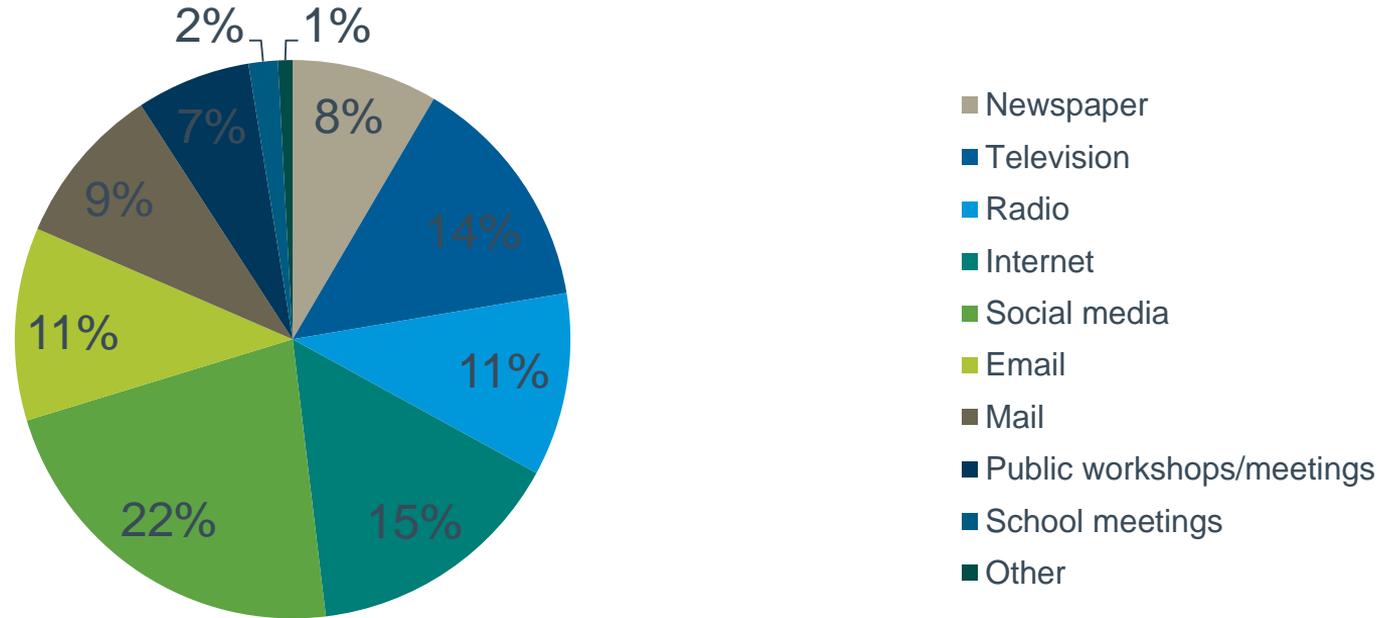
# 11. How informed about risks and impacts of disasters?



# 12. Know who to contact regarding risks from hazards?



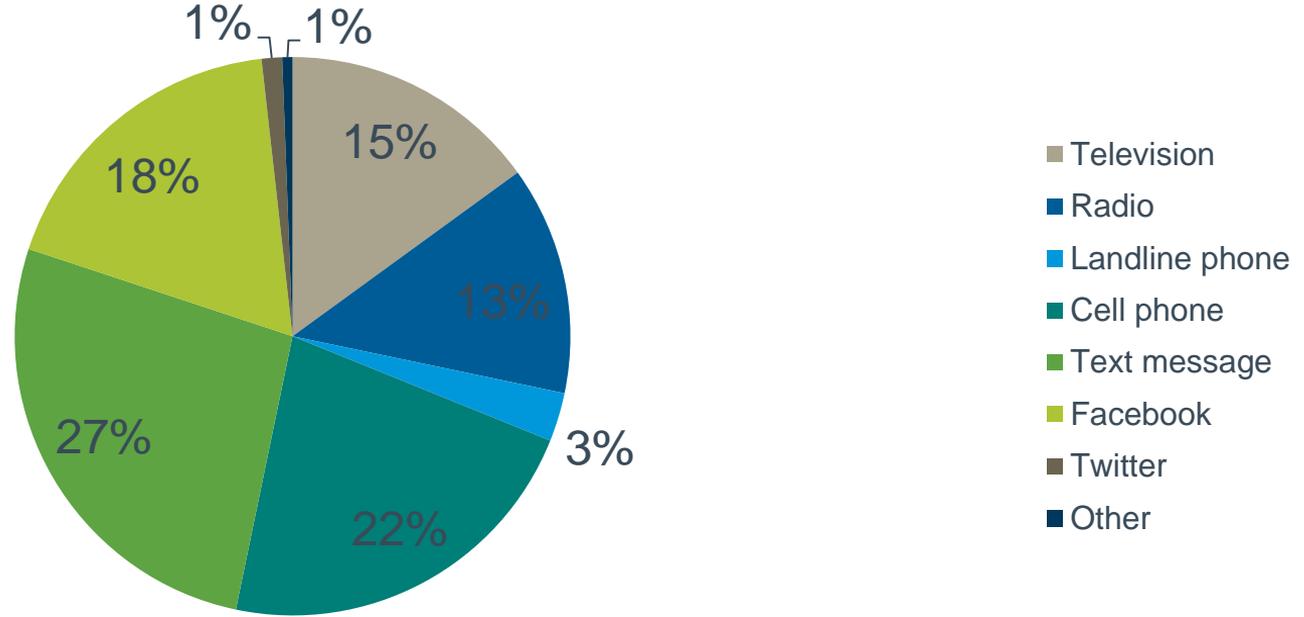
# 13. Preferred way to receive info. about being safer from hazards?



# 13. Other ways to receive information

- Text messages
- Police/fire radio scanner
- Town hall/church/club meetings

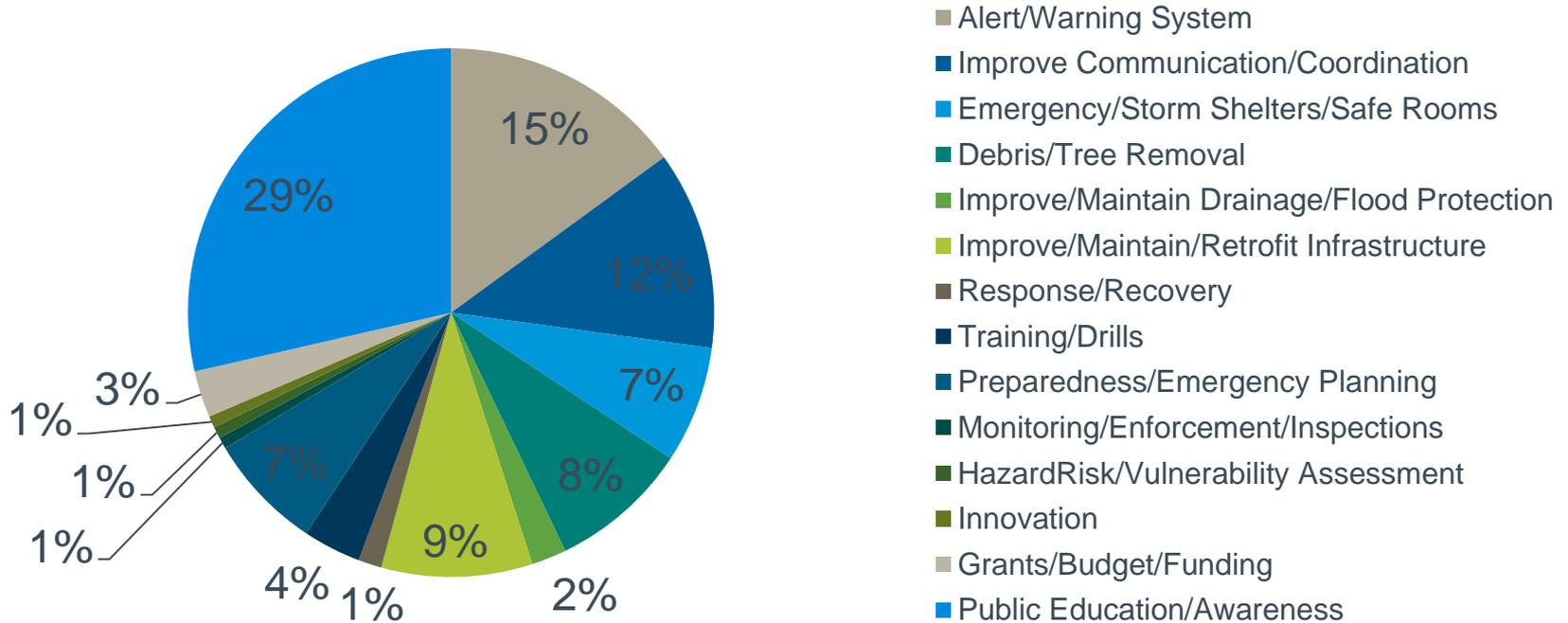
# 14. Preferred way to receive alerts/warnings about hazard events?



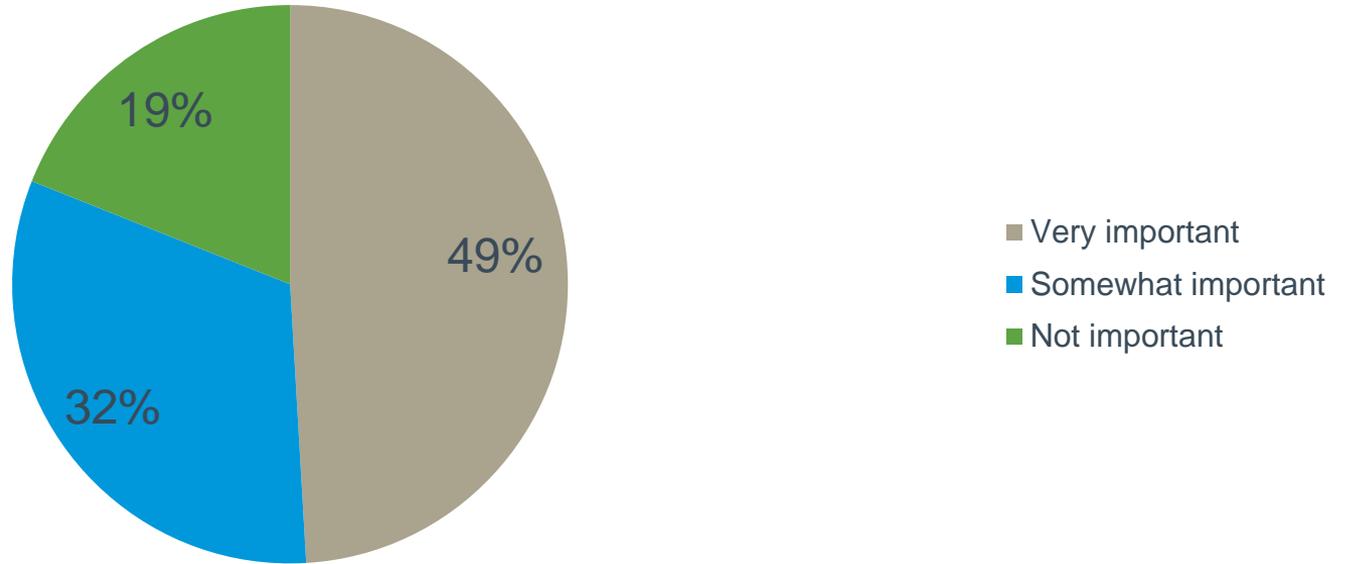
# 14. Other ways to receive alerts/warnings

- Email
- Police/fire radio scanner
- Weather radio
- Red Cross

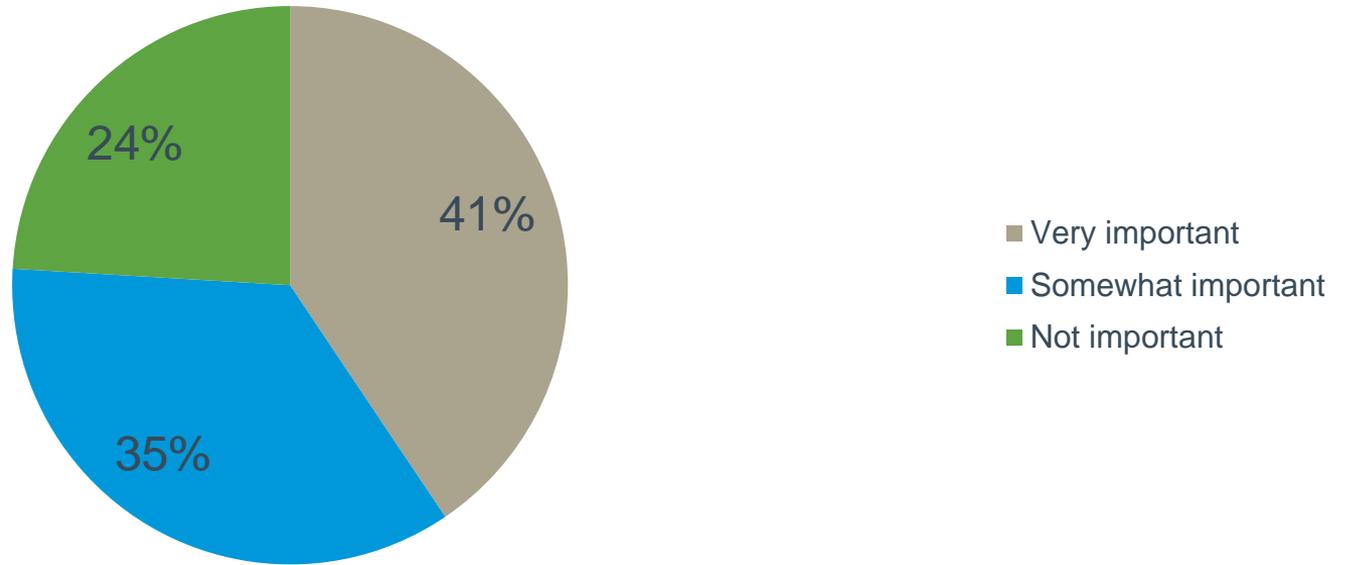
# 15. Steps local gov't could take to reduce risk



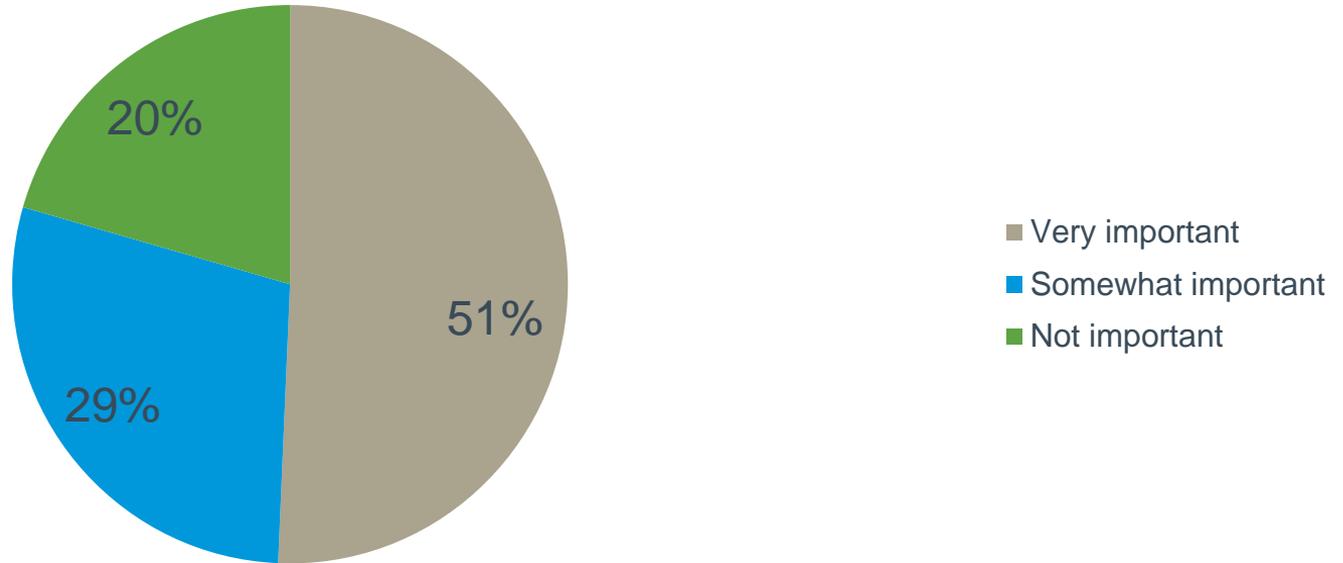
# 16. Mitigation Actions: Prevention



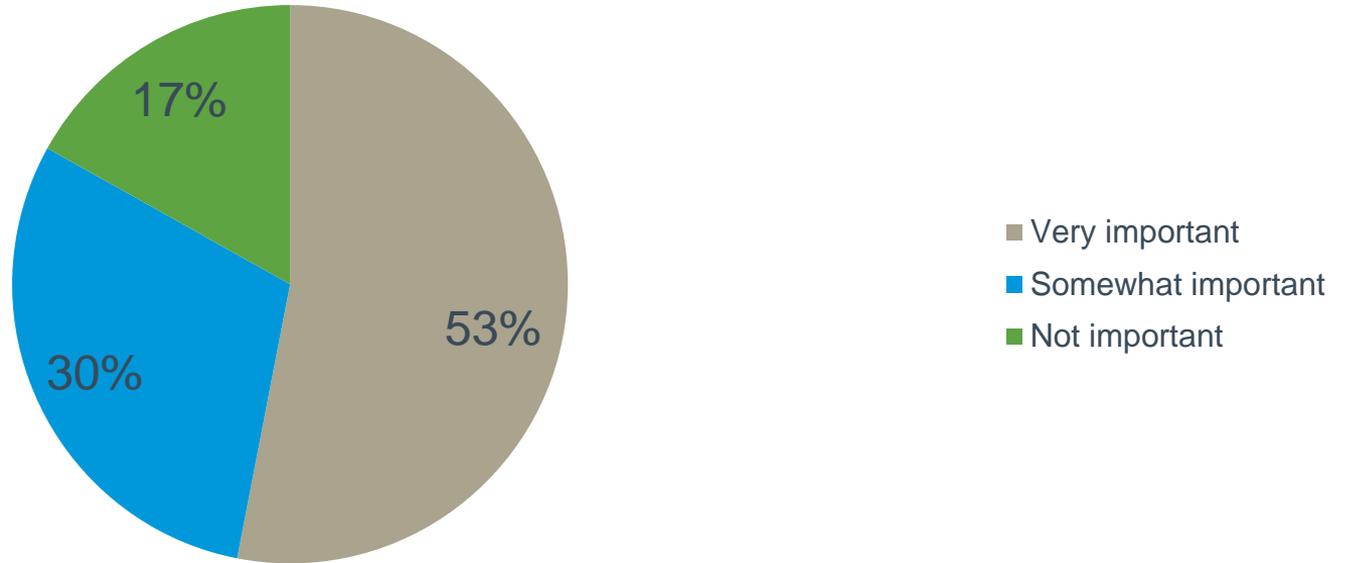
# 16. Mitigation Actions: Property Protection



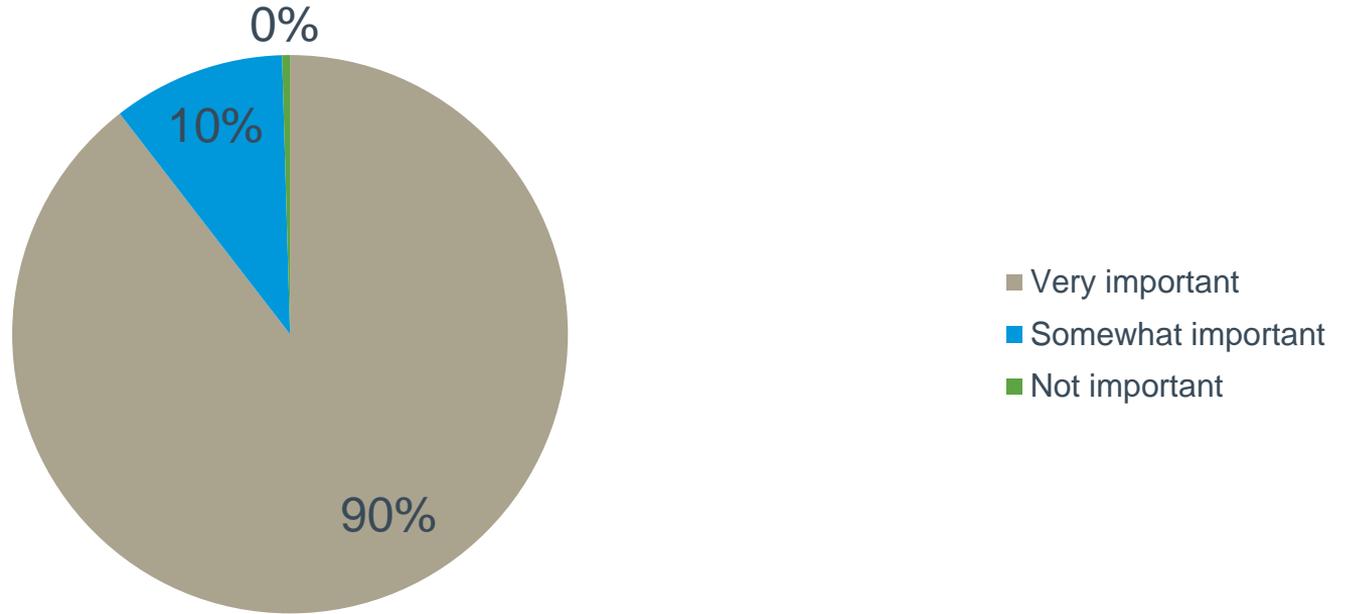
# 16. Mitigation Actions: Natural Resource Protection



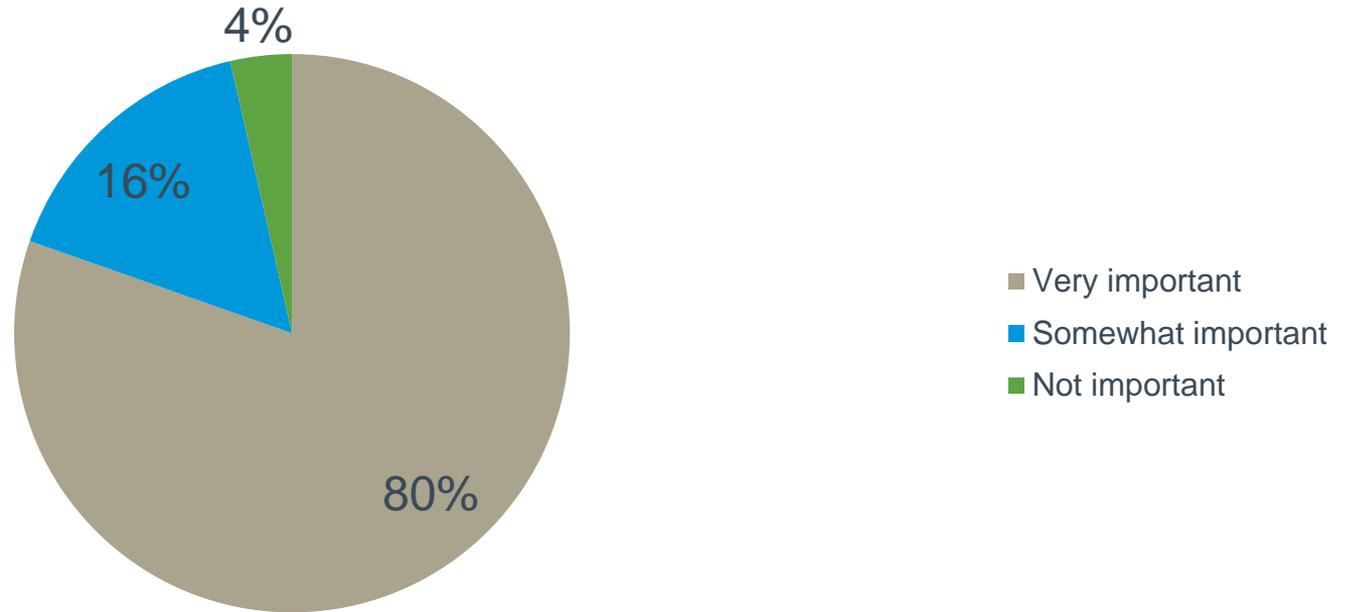
# 16. Mitigation Actions: Structural Projects



# 16. Mitigation Actions: Emergency Services

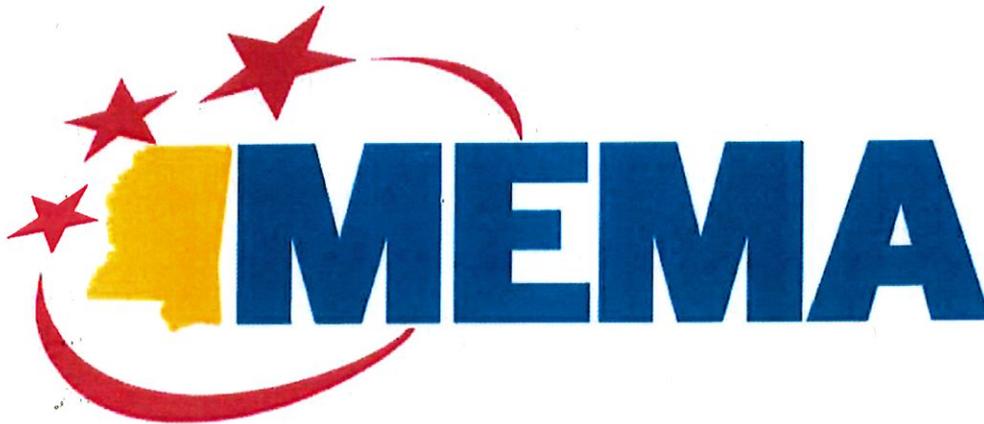


# 16. Mitigation Actions: Public Education and Awareness



# 16. Mitigation Actions: Summary

- Highest importance
  - Emergency Services
  - Public Education and Awareness
- Moderate importance
  - Structural Projects
  - Natural Resource Protection
  - Prevention
- Lowest importance
  - Property Protection



**DESIGNATED REPRESENTATIVE**

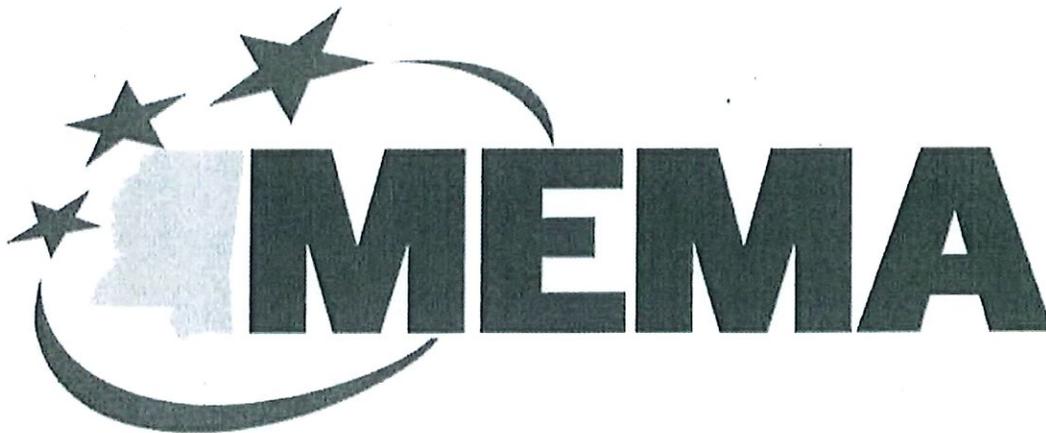
We, the Board of Supervisors of Adams County do hereby designate Robert Bradford to represent the County in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 19<sup>th</sup> day of September, 2016

President

Adams County Board of Supervisors

Designee email address or phone number: rbradford@adamscountymiss.gov



DESIGNATED REPRESENTATIVE

We, the City of Natchez do hereby designate Brad Bradford to represent the City in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 30<sup>th</sup> day of May, 2017

A large, stylized handwritten signature in blue ink, written over a horizontal line. The signature is highly cursive and appears to be the name of the Mayor.

Mayor

City of Natchez



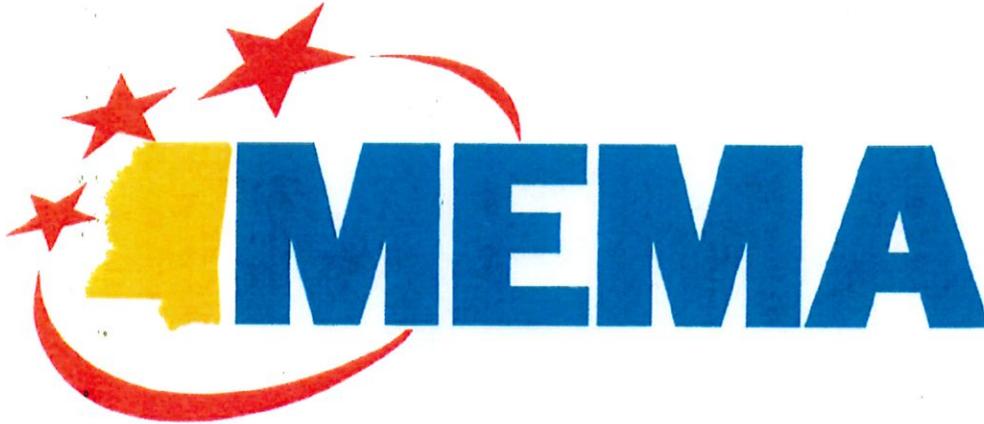
DESIGNATED REPRESENTATIVE

We, the City of Natchez do hereby designate Robert Bradford to represent the City in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 11<sup>th</sup> day of October, 2016

  
\_\_\_\_\_  
Mayor  
City of Natchez

Designee email address or phone number: rbradford@adamscountymiss.gov



DESIGNATED REPRESENTATIVE

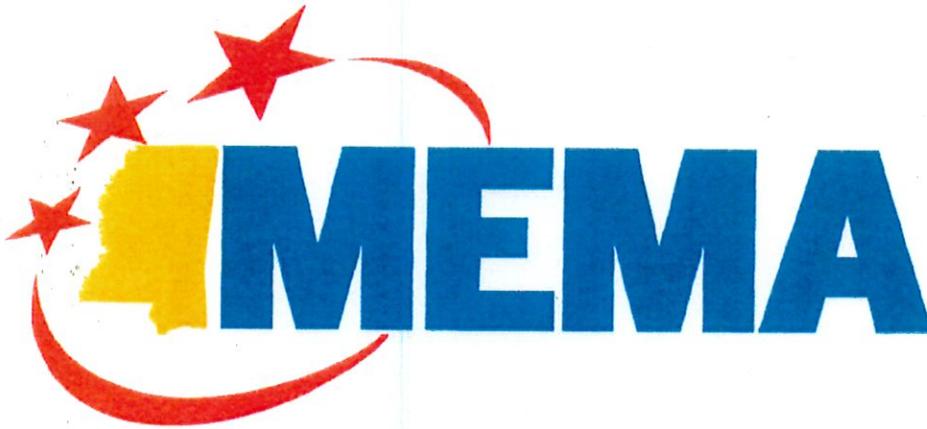
We, the Board of Supervisors of Amite County do hereby designate Grant McCurley to represent the County in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 26 day of September, 2016

President

Amite County Board of Supervisors

Designee email address or phone number: 601-249-9185 gmcCurley@amiteCounty.ms.gov



DESIGNATED REPRESENTATIVE

We, the Town of Gloster do hereby designate Gary Sterling to represent the Town in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

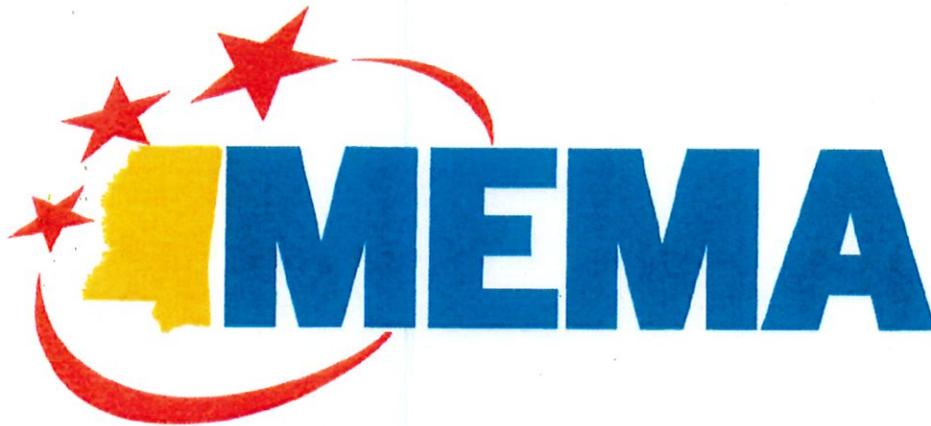
IN WITNESS WHEREOF, We have subscribed our signature this, the 4 day of October, 2016

Billy Johnson

Mayor

Town of Gloster

Designee email address or phone number: Sterling.gary@gmail.com  
601-657-0478



DESIGNATED REPRESENTATIVE

We, the Town of Liberty do hereby designate Grant McCurley to represent the Town in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

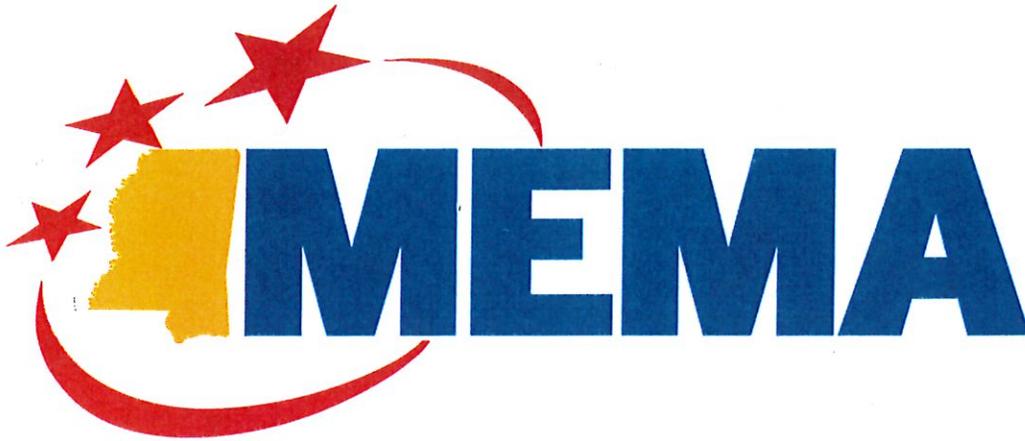
IN WITNESS WHEREOF, We have subscribed our signature this, the 4 day of October, 2016

Richard H. Smith

Mayor

Town of Liberty

Designee email address or phone number: gmcCurley@amite County ms.gov 601-249-9185



DESIGNATED REPRESENTATIVE

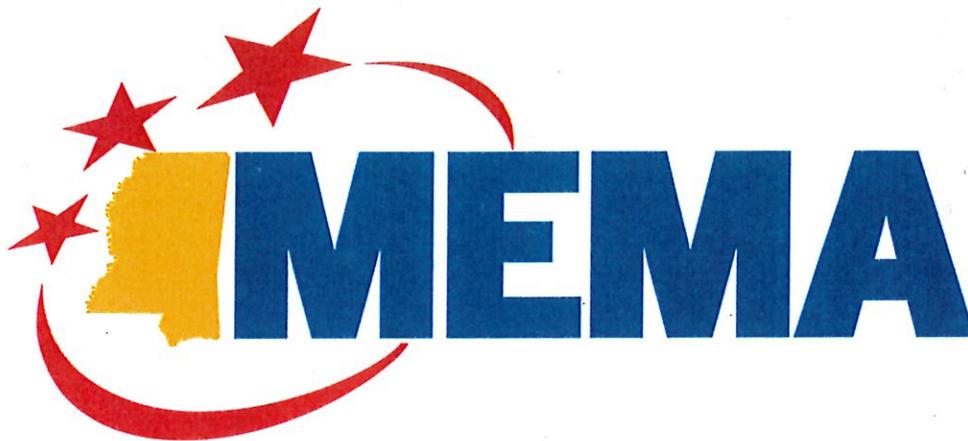
We, the Board of Supervisors of FRANKLIN County do hereby designate MARK THORNTON to represent the County in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 19<sup>TH</sup> day of SEPT., 2016

  
\_\_\_\_\_  
President

FRANKLIN County Board of Supervisors

Designee email address or phone number: fcema@telepak.net  
601-384-1720



DESIGNATED REPRESENTATIVE

We, the Town of Bude do hereby designate Marx S. Thornton to represent the Town in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 4th day of October, 2016

Earl Case

Mayor

Town of Bude

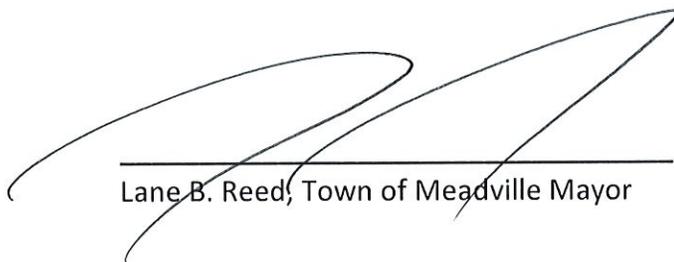
Designee email address or phone number: fcema@telpak.net

# MEMA

## Designated Representative

We, The Town of Meadville do hereby designate Mark Thornton to represent the Town in all matters pertaining to the development of District Seven (7) Regional Hazard Mitigation Plan.

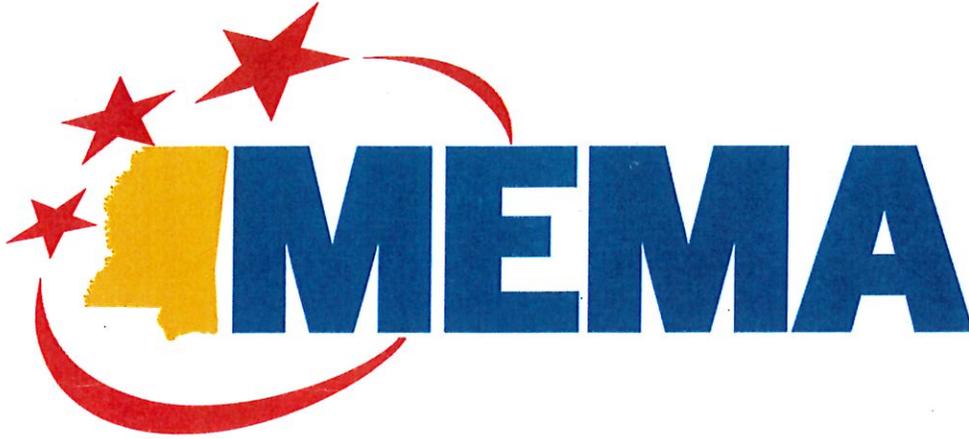
IN WITNESS WHEREOF, We have subscribed our signature this, the 13<sup>th</sup> day of December, 2016.



\_\_\_\_\_

Lane B. Reed, Town of Meadville Mayor

Designee email address and phone number: \_\_\_\_\_



DESIGNATED REPRESENTATIVE

We, the Town of Roxie do hereby designate MARK J. Thornton to represent the Town in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

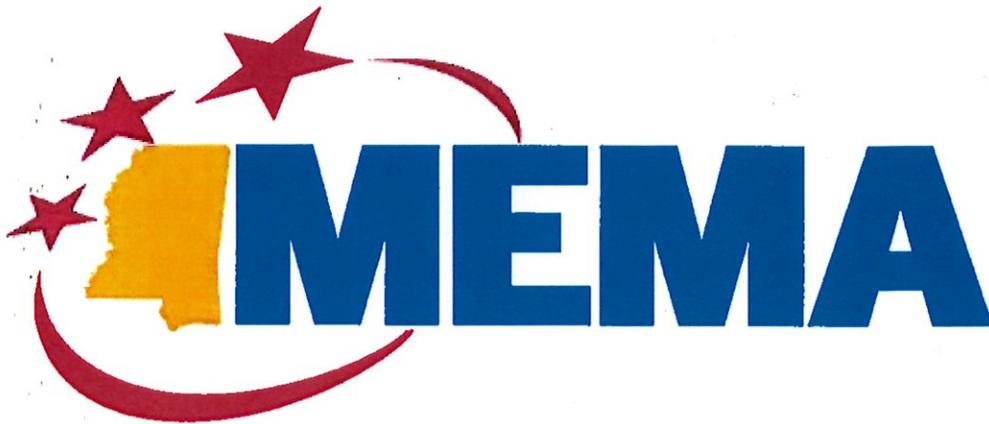
IN WITNESS WHEREOF, We have subscribed our signature this, the 4<sup>th</sup> day of Oct., 2016

*Raymond B. Williams, Jr.*

Mayor

Town of Roxie

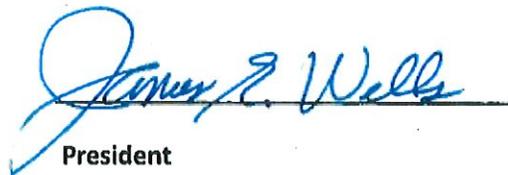
Designee email address or phone number: mayor@raymond.b.williams@legat.net



DESIGNATED REPRESENTATIVE

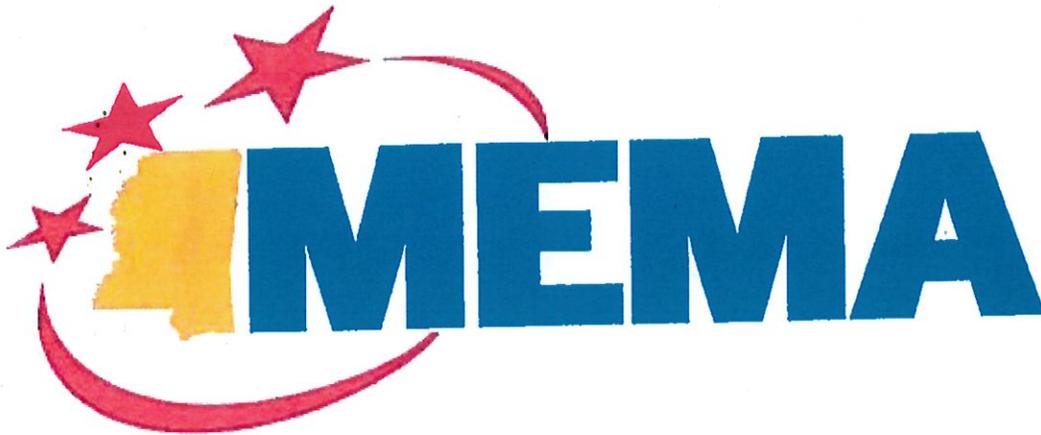
We, the Board of Supervisors of Jefferson County do hereby designate Brenda Hammitte to represent the County in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 19th day of September, 2016

  
\_\_\_\_\_  
President

Jefferson County Board of Supervisors

Designee email address or phone number: jeffersoncountyc@bellsouth.net



DESIGNATED REPRESENTATIVE

We, the City of Fayette do hereby designate Trent L. Hudson to represent the City in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

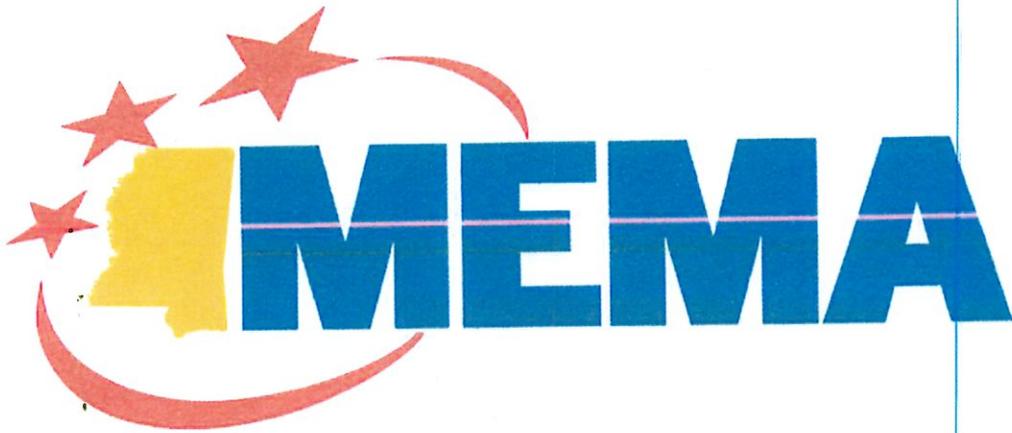
IN WITNESS WHEREOF, We have subscribed our signature this, the 23 day of September, 2016

Rozers W. King

Mayor

City of Fayette

Designee email address or phone number: poindex@fayettems.com



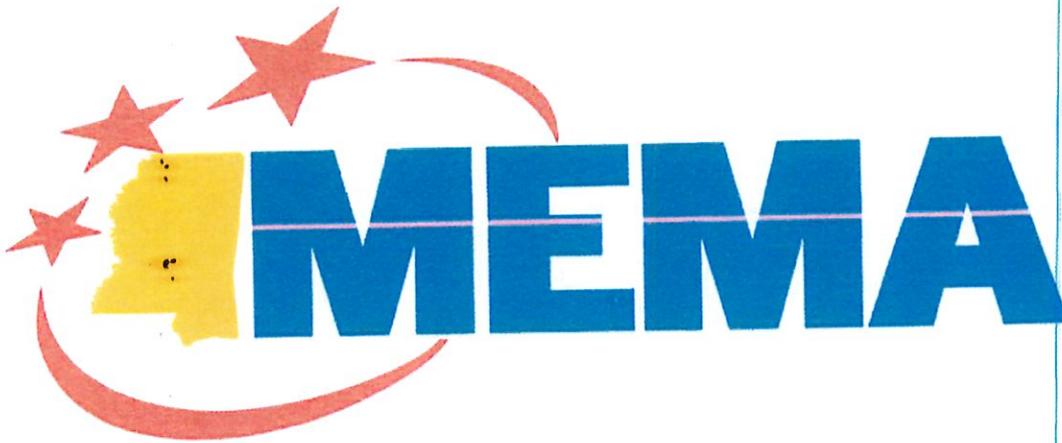
**DESIGNATED REPRESENTATIVE**

We, the Board of Supervisors of Lawrence County do hereby designate Tony Norwood to represent the County in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 16 day of May, 2017

President, Steve Garrett

Lawrence County Board of Supervisors



DESIGNATED REPRESENTATIVE

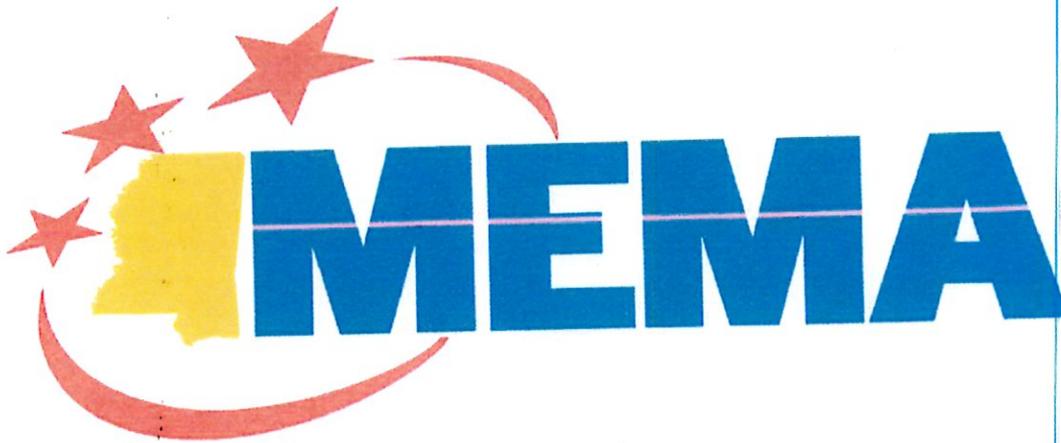
We, the Town of Monticello MS do hereby designate Tony Norwood to represent the Town in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 16 day of May, 2017

A handwritten signature in black ink, appearing to read "Dave Nichols", is written over a horizontal line.

Mayor, Dave Nichols

Town of Monticello



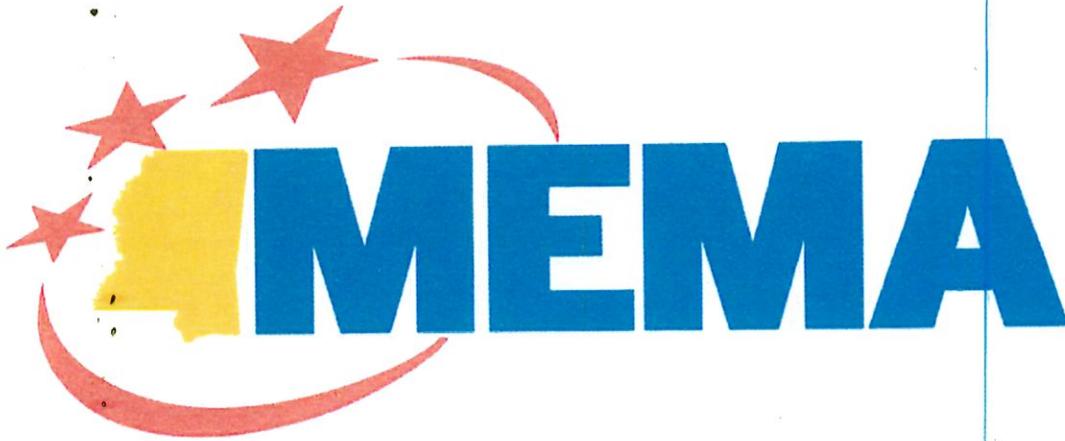
DESIGNATED REPRESENTATIVE

We, the Town of New Hebron do hereby designate Tony Norwood to represent the Town in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 10<sup>th</sup> day of May, 2017

Mayor, Cindy Bryan

Town of New Hebron



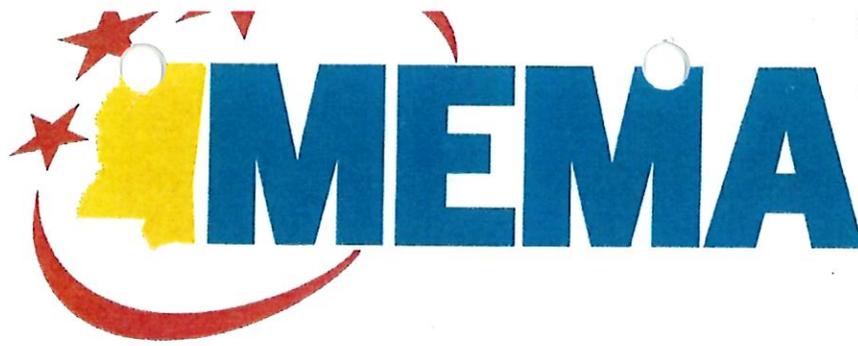
DESIGNATED REPRESENTATIVE

We, the Town of Silver Creek MS do hereby designate Tony Norwood to represent the Town in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 9<sup>th</sup> day of May, 2017

Mayor, Elizabeth Turnage

Town of Silver Creek



INTENT TO PARTICIPATE IN THE 2017 UPDATE OF THE DISTRICT 7  
REGIONAL HAZARD MITIGATION PLAN

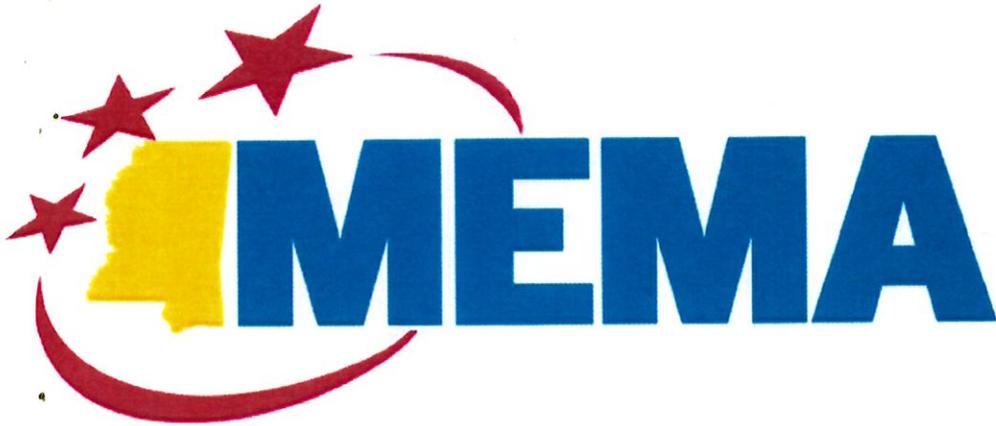
We, the City of Brookhaven do hereby resolve to participate in the development of the District Seven (7) Regional Hazard Mitigation Plan. This participation is limited to allowing City employee(s) to attend meetings with District 7 representatives and others to gather requested information pertaining to the City of Brookhaven for inclusion into the plan. There is a 10% local government cost share, to be apportioned in whatever manner the local governments sees fit.

IN WITNESS WHEREOF, We have subscribed our signature this, the 20 day of September, 2016

De C. C.

Mayor

City of Brookhaven



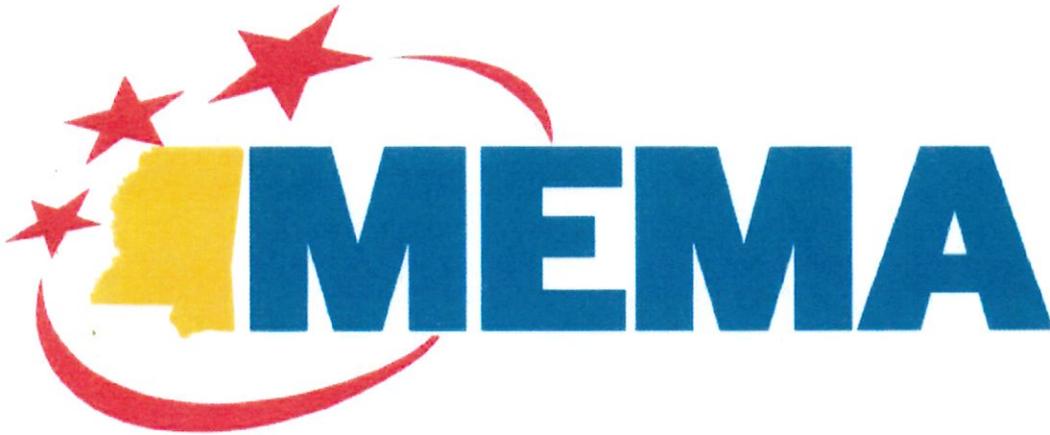
DESIGNATED REPRESENTATIVE

We, the Board of Supervisors of Pike County do hereby designate Richard Caghan to represent the County in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 16<sup>th</sup> day of June, 2017

President

Pike County Board of Supervisors



DESIGNATED REPRESENTATIVE

We, the City of Magnolia do hereby designate T.J. Bowman to represent the City in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 30<sup>th</sup> day of June, 2016

Mayor

City of Magnolia



DESIGNATED REPRESENTATIVE

We, the City of McComb do hereby designate Richard Cighlar to represent the City in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 13<sup>th</sup> day of June, 2017



Whitney Rawlings

Mayor

City of McComb



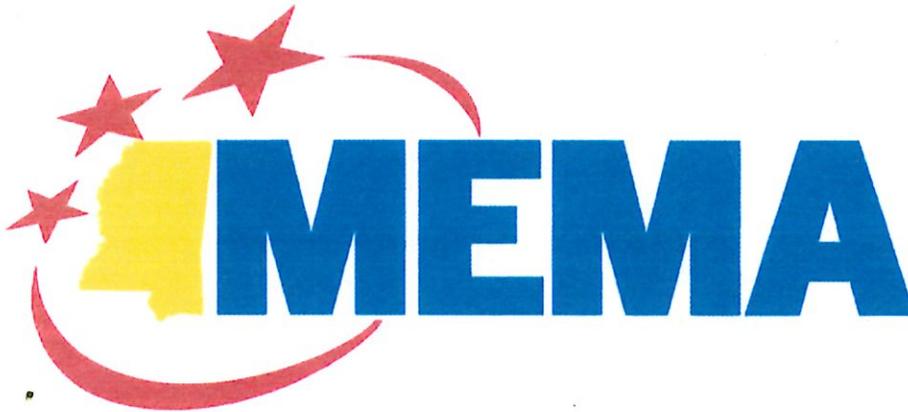
**DESIGNATED REPRESENTATIVE**

We, the Town of OSYKA do hereby designate Richard Coghlan to represent the Town in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 12<sup>th</sup> day of June, 2017

Mayor Allen Applewhite

Town of Osyka



DESIGNATED REPRESENTATIVE

We, the Village of Summit do hereby designate Percy Robinson to represent the Village in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 9<sup>th</sup> day of May, 2017

Percy Robinson

Mayor

Village of Summit



**DESIGNATED REPRESENTATIVE**

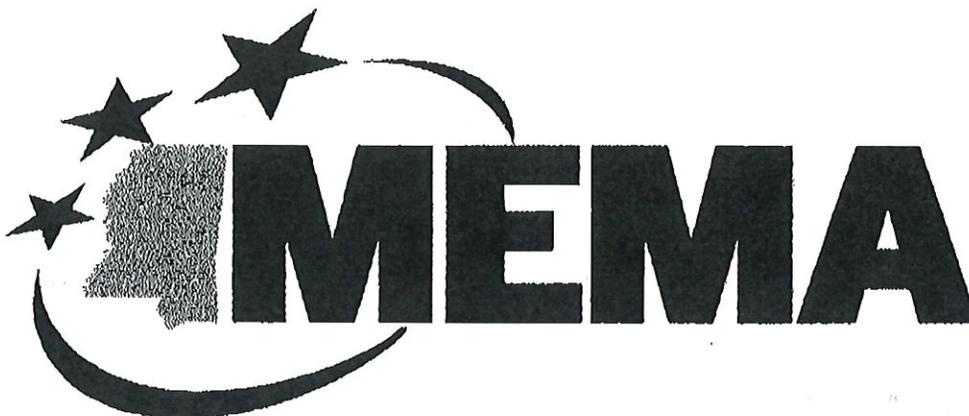
**We, the Board of Supervisors of Walthall County do hereby designate Roland Vandenweghe to represent the County in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.**

**IN WITNESS WHEREOF, We have subscribed our signature this, the 14th day of Aug, 2017**

*Larry Montgomery*  
by: *Cindy C. Birch*  
President

**Walthall County Board of Supervisors**

**Designee email address or phone number: emergency.manager@yahoo.com or 601-730-2003**



**DESIGNATED REPRESENTATIVE**

**We, the Town of Tylertown, MS do hereby designate Roland Vandenweghe to represent the Town in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.**

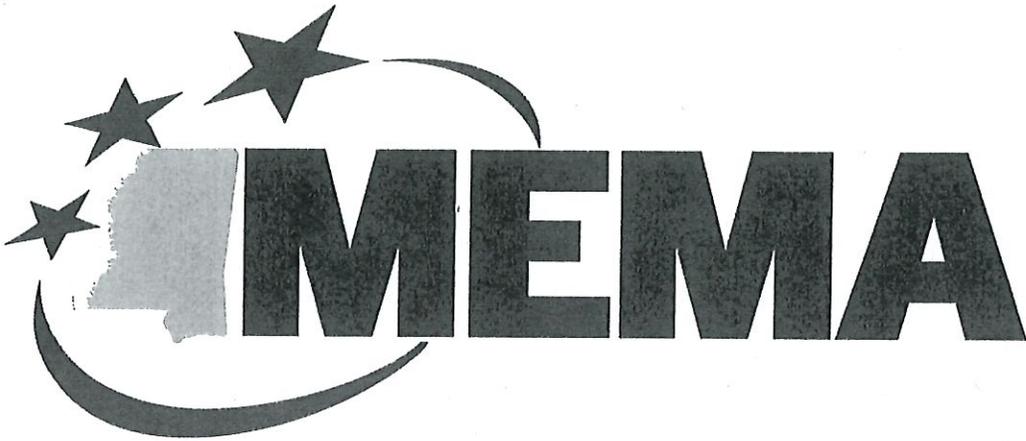
**IN WITNESS WHEREOF, We have subscribed our signature this, the 14<sup>th</sup> day of August, 2017**

A large, stylized handwritten signature in black ink, which appears to read 'Roland Vandenweghe', is written over a horizontal line.

**Mayor**

**Town of Tylertown, MS**

**Designee email address or phone number: emergency.manager@yahoo.com or 601-730-2003**



DESIGNATED REPRESENTATIVE

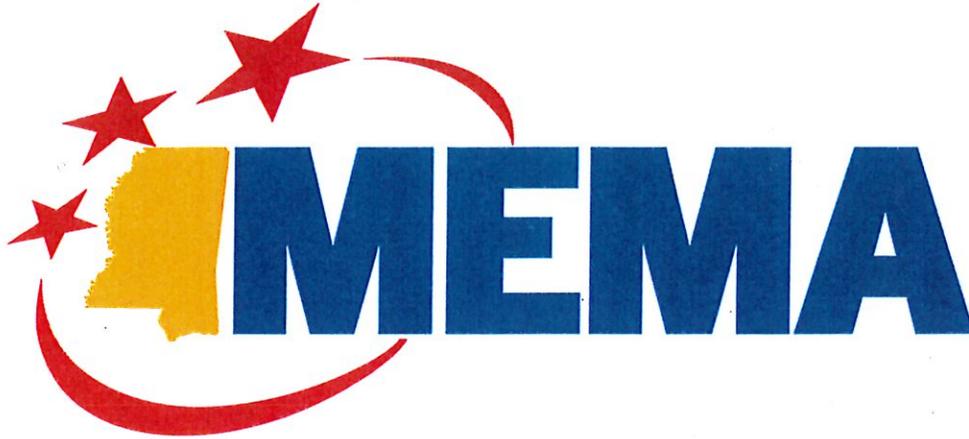
We, the Board of Supervisors of Wilkinson County do hereby designate Thomas TOLLIVER to represent the County in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 13 day of September, 2016

A handwritten signature in cursive script, appearing to read "K. Paul", is written over a horizontal line.

President  
Wilkinson County Board of Supervisors

Designee email address or phone number: \_\_\_\_\_



DESIGNATED REPRESENTATIVE

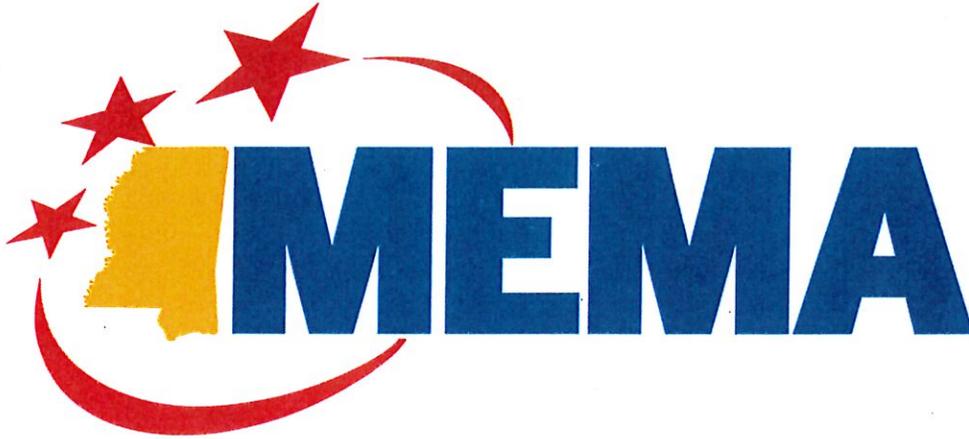
We, the Town of Centreville do hereby designate Larry Lee to represent the Town in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 13<sup>th</sup> day of September, 2016

Mayor

Town of Centreville

Designee email address or phone number: Larry\_Leej@yahoo.com



DESIGNATED REPRESENTATIVE

We, the Town of Crisby do hereby designate William Hill to represent the Town in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

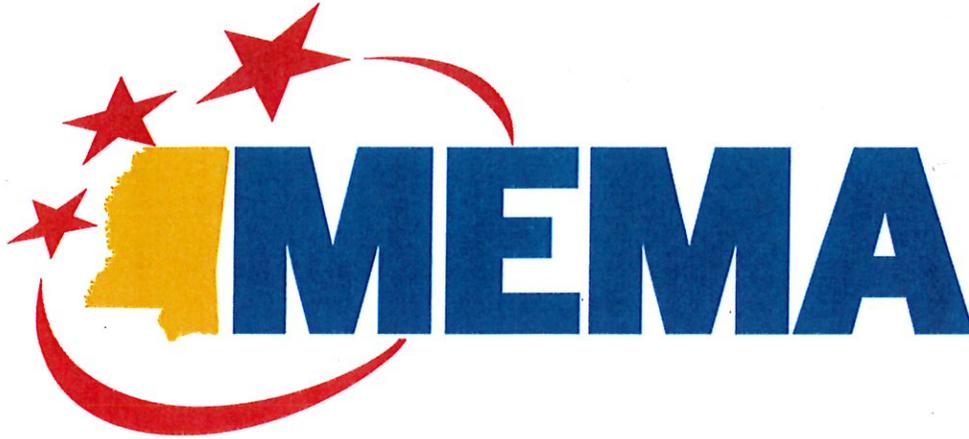
IN WITNESS WHEREOF, We have subscribed our signature this, the 13 day of Sept, 2016

  
\_\_\_\_\_

Mayor

Town of Crisby

Designee email address or phone number: Saintbillyb@yahoo.com



DESIGNATED REPRESENTATIVE

We, the Town of Woodville do hereby designate GARY D'AGUILLA to represent the Town in all matters pertaining to the development of the District Seven (7) Regional Hazard Mitigation Plan.

IN WITNESS WHEREOF, We have subscribed our signature this, the 13 day of September, 2016

Gary D'Agulla

Mayor

Town of Woodville

Designee email address or phone number: \_\_\_\_\_

## Surrounding County Contact Email

The screenshot shows the Microsoft Outlook interface for composing an email. The title bar reads 'MEMA District 7 Hazard Mitigation Plan Draft - Message (HTML)'. The ribbon includes 'File', 'Message', 'Insert', 'Options', 'Format Text', and 'Review'. The 'Message' tab is active, showing options for 'Paste', 'Clipboard', 'Basic Text', 'Names', 'Include', 'Assign Policy', 'Tags', and 'Office Add-ins'. The 'To...' field contains five email addresses: marvinratliff@ccmsgov.us, gjennings@co.simpson.ms.us, iragsdale@co.jefferson-davis.ms.us, agreeer@marioncountymms.com, and rdrane@copiahcountymms.gov. The 'Cc...' field is empty. The 'Subject' field contains 'MEMA District 7 Hazard Mitigation Plan Draft'. The email body text is as follows:

All,

One of FEMA's requests regarding the development of Hazard Mitigation Plans is that communities that develop a plan give an explicit opportunity to neighboring communities to provide comments/feedback during the drafting stage of the plan. As such, even though your community is not a part of that plan, we are interested in any comments/feedback you would like to provide as a surrounding community on the MEMA District 7 Hazard Mitigation Plan Draft, which can be downloaded at the link below.

<https://atkins.box.com/s/skpisgrmpyc9ia97sgbdbjg3ehs0kkib>

Any comments we receive will be much appreciated and will be brought up for discussion with the members of the MEMA D7 Hazard Mitigation Planning Team. If you have any questions or concerns, please feel free to direct them to me (Ryan Wiedenman with Atkins, via email).

Thanks very much for your time!

**Ryan Wiedenman, AICP, CFM**  
Senior Planner, Land Planning



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