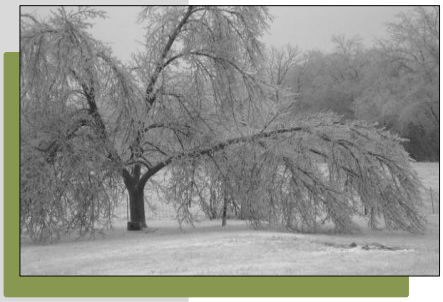
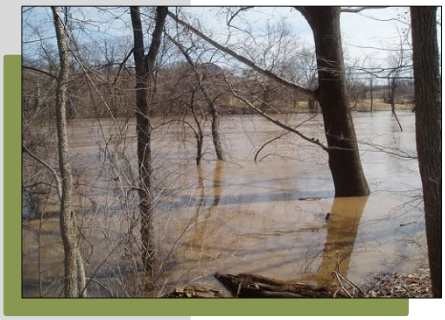
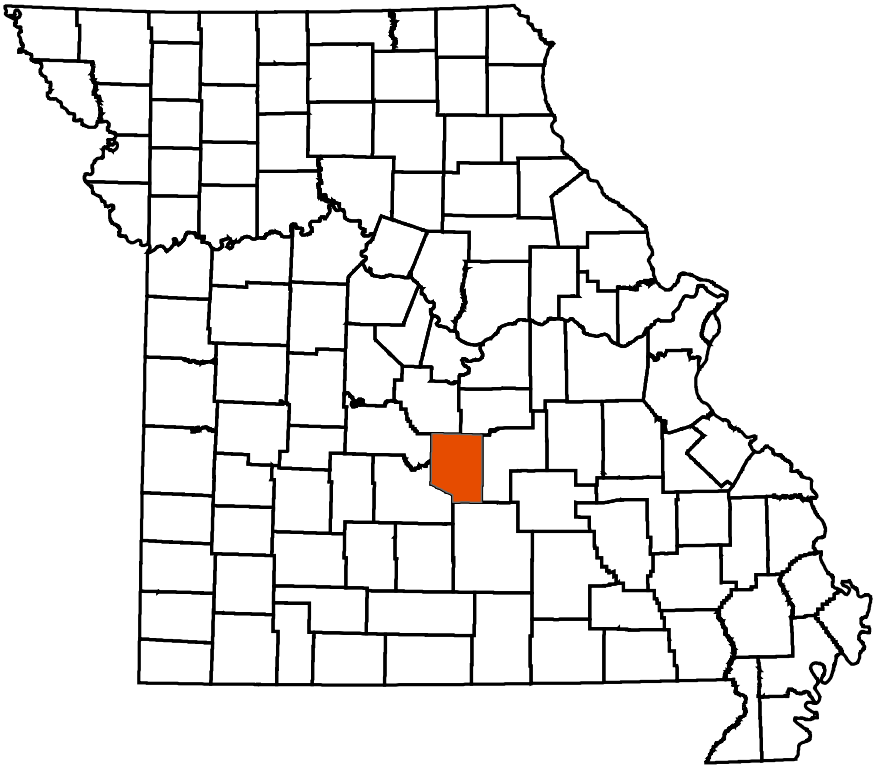




Pulaski County Multi-Jurisdiction Natural Hazard Mitigation Plan



Meramec Regional Planning Commission • February 2021

4 Industrial Drive,
St. James, MO 65559

Phone: (573) 265-2993

Fax: (573) 265-3550

U.S. Department of Homeland Security
FEMA Region VII
11224 Holmes Road
Kansas City, MO 64131

FEMA

February 17, 2021

Mr. James Remillard, Acting Director
State Emergency Management Agency
P. O. Box 116
Jefferson City, Missouri 65102

Subject: Review of the Pulaski County Multi-jurisdiction Hazard Mitigation Plan Update

Dear Mr. Remillard:

The purpose of this letter is to provide the status of the above referenced Local Hazard Mitigation Plan, pursuant to the requirements of 44 CFR Part 201 - Mitigation Planning and the Local Multi-Hazard Mitigation Planning Guidance. The Local Hazard Mitigation Plan Review Tool documents the Region's review and compliance with all required elements of 44 CFR Part 201.6, as well as identifies the jurisdictions participating in the planning process. FEMA's approval will be for a period of five years effective starting with the approval date indicated below.

Prior to the expiration of the plan the community will be required to review and revise their plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities. After the review or revisions are completed the plan will need to be resubmitted for approval by FEMA in order to continue to be eligible for mitigation project grant funding.

Plan Name	Date Submitted	Date Approved	Date of Plan Adoption	Date of Plan Expiration	Review Status
Pulaski County	January 5, 2021	February 17, 2021	August 20, 2020	February 17, 2026	Approved

If you have any questions or concerns, please contact Joe Chandler, Planning Team Lead, at (816) 283-7071.

Sincerely,

CATHERINE R SANDERS

Digitally signed by CATHERINE R SANDERS
Date: 2021.02.22 17:31:47 -06'00'

Catherine R. Sanders, Director
Mitigation Division

CONTRIBUTORS

Pulaski County Hazard Mitigation Planning Committee

The individuals who participated in the Pulaski County hazard mitigation planning committee are as follows:

Jurisdictional Representatives

Name	Title	Department	Jurisdiction/Agency/Organization
Gene Newkirk	Presiding Commissioner	County Commission	Pulaski County
David Ernst	Pulaski County Clerk	County Clerk's Office	Pulaski County
Ryan Hicks	Emergency Management Director	Office of Emergency Mgt.	Pulaski County
Glen Smith	Mayor	Administration	City of Crocker
Mike Null	Mayor	Administration	City of Dixon
Glenda Pennington	City Clerk	Administration	City of Dixon
Rick Hobbs	Fire Chief	Fire Department	City of Richland
Anita Ivey	City Administrator	Administration	City of St. Robert
Steve Long	Director of Public Works	Public Works	City of St. Robert
Doug Yurecko	Fire Chief/EMD	Office of Emergency Management/ Waynesville Rural Fire Protection District	City of Waynesville
Ed Fowler	Fire Investigator	Waynesville Rural Fire Protection District	City of Waynesville
Duane Doyle	Superintendent	Administration	Dixon R-1
Dr. Gary Doerhoff	Superintendent	Administration	Crocker R-II
Dr. Randy Caffey	Superintendent	Administration	Laquey R-V
Doug Jacobson	Superintendent	Administration	Swedeborg R-III
Brian Lee	Superintendent	Administration	Richland R-IV
Dr. Chris Berger	Asst. Superintendent	Administration	Waynesville R-VI
Bill Cobb	Exec. Dir. Of Operations	Operations	Waynesville R-VI

*Sign in sheets from planning meetings are included in Appendix B.

The individuals who represented stakeholders on the Pulaski County hazard mitigation planning committee are as follows:

Participating Stakeholder Representatives

Name	Title	Agency/Organization
John Wright		Life Care of Waynesville
Brett Hendrix	Region I SEMA Area Coordinator	MO State Emergency Management Agency

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EXECUTIVE SUMMARY

The purpose of hazard mitigation is to reduce or eliminate long-term risk to people and property from hazards. Pulaski County and participating cities and school districts developed this multi-jurisdictional local hazard mitigation plan update to reduce future losses to the county and its communities and schools resulting from hazard events. The plan is an update of a plan that was approved on April 1, 2016. The original plan was approved in 2011. The plan was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 and to achieve eligibility for the Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance Grant Programs.

The county Multi-Hazard Mitigation Plan is a multi-jurisdictional plan that covers the following 12 jurisdictions that participated in the planning process:

- Pulaski County
- City of Crocker
- City of Dixon
- City of Richland
- City of St. Robert
- City of Waynesville
- Dixon R-I School District
- Crocker R-II School District
- Swedeborg R-III School District
- Richland R-IV School District
- Laquey R-V School District
- Waynesville R-VI School District

Pulaski County and the jurisdictions listed above have developed a multi-jurisdictional Hazard Mitigation Plan that was originally approved by FEMA in 2011 with an update approved by FEMA on April 1, 2016. This current planning effort serves as an update (hereafter referred to as the 2021 Hazard Mitigation Plan.)

The plan update process followed a methodology prescribed by FEMA, which began with the formation of a Mitigation Planning Committee (MPC) comprised of representative from Pulaski County and participating jurisdictions. The MPC updated the risk assessment that identified and profiled hazards that pose a risk to Pulaski County and analyzed the vulnerability to these hazards. The MPC also examined the capabilities in place to mitigate them. The MPC determined that the planning area is vulnerable to several hazards that are identified, profiled and analyzed in this plan. Riverine and flash flooding, winter storms, severe thunderstorms/hail/ lightening/high winds and tornadoes are among the hazards that historically have had a significant impact.

Based upon the risk assessment, the MCP reviewed goals for reducing risk from hazards. The goals are listed below:

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning and hazard mitigation activities.

Goal 2: Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Goal 5: Establish priorities for reducing risks to the people and their property with emphasis on long-term and maximum benefits to the public rather than short-term benefit of special interests.

Goal 6: Secure resources for investment in hazard mitigation.

To meet the identified goals, the MPC developed recommended mitigation actions, which are detailed in Chapter 4 of this plan. The MPC developed an implementation plan for each action, which identifies priority level, responsible agency, timeline, cost estimate, potential funding sources and progress to date.

PREREQUISITES

44 CFR requirement 201.6(c)(5): The local hazard mitigation plan shall include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan. For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

This plan has been reviewed by and adopted with resolutions or other documentation of adoption by all participating jurisdictions and schools districts. The documentation of adoptions is included in Appendix D.

The following jurisdictions participated in the development of this plan and have adopted the multi-jurisdictional plan.

- Pulaski County
- City of Crocker
- City of Dixon
- City of Richland
- City of St. Robert
- City of Waynesville
- Dixon R-I School District
- Crocker R-II School District
- Swedeborg R-III School District
- Richland R-IV School District
- Laquey R-V School District
- Waynesville R-VI School District

Model Resolution

RESOLUTION NO. _____

A RESOLUTION TO ADOPT THE PULASKI COUNTY MULTI-JURISDICTION NATURAL HAZARDS MITIGATION PLAN

WHEREAS, (Government/District) recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 emphasizing the need for pre-disaster mitigation of potential hazards and made available hazard mitigation grants to state and local governments; and

WHEREAS, an adopted Multi-Jurisdiction Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

WHEREAS, (Government/District) fully participated in the FEMA prescribed mitigation planning process to prepare this Mitigation Plan; and

WHEREAS, the Missouri State Emergency Management Agency and Federal Emergency Management Agency officials have reviewed the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and

WHEREAS, (Government/District) desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Pulaski County Multi-Jurisdiction Natural Hazards Mitigation Plan; and

WHEREAS, adoption by the governing body of (Government/District) demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in this Mitigation Plan; and

WHEREAS, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

NOW, THEREFORE BE IT RESOLVED, that (Government/District) adopts the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan as an official plan and will submit this Adoption Resolution to the Missouri Emergency Management Agency and the Federal Emergency Management Agency officials to enable the plan's final approval.

_____ _____

Certifying Official Date

_____ _____

Witness Date

Table of Contents

1.1 Purpose

Pulaski County and 11 other jurisdictions prepared this local hazard mitigation plan to guide hazard mitigation planning for the purpose of better protecting the people and property of the county from the effects of natural hazard events. Hazard mitigation is defined by FEMA as "any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event." Hazard mitigation planning is the process through which hazards that threaten communities are identified, likely impacts of those hazards are determined, mitigation goals are set and appropriate strategies to lessen impacts are determined, prioritized and implemented.

The mission of the Pulaski County Hazard Mitigation Plan is to substantially and permanently reduce the county's vulnerability to natural hazards. This plan demonstrates the communities' commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources for the next five years. The plan is intended to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property and the natural environment. This can be achieved by increasing public awareness, documenting resources for risk reduction and loss prevention and identifying activities to guide the community towards the development of a safer, more sustainable community.

This plan was also developed to make Pulaski County and participating cities and school districts eligible for certain federal disaster assistance as required by the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288). Those programs include the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program and Flood Mitigation Assistance Program. The plan has been prepared in accordance with the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390) and developed and organized within the rules and regulations established under 44 CFR 201.6 published in the *Federal Register* on February 26, 2002 and finalized in October 31, 2007. Guidance for the development of this plan includes FEMA's Local Mitigation Planning

Handbook, March 2013 and FEMA's Local Mitigation Plan review Guide, October 1, 2011. Those jurisdictions within Pulaski County that do not adopt the 2021 plan will not be eligible for funding through these grant programs.

Neither Pulaski County, nor any cities in Pulaski County participate in the NFIP Community Rating System (CRS).

1.2 Background and Scope

The 2021 Pulaski Hazard Mitigation Plan is an update of the original plan developed and approved in 2011. The first update of the 2011 plan was approved by FEMA on April 1, 2016. The revised document will be valid for five years from approval by FEMA. It is a multi-jurisdictional plan that covers the participating jurisdictions within the County's borders, all of whom adopted both the 2011 and 2016 plan, including the following:

- Pulaski County
- City of Crocker
- City of Dixon
- City of Richland
- City of St. Robert
- City of Waynesville
- Dixon R-I School District
- Crocker R-II School District
- Swedeborg R-III School District
- Richland R-IV School District
- Laquey R-V School District
- Waynesville R-VI School District

The information and guidance in this plan document will be used to help guide and coordinate mitigation activities and decisions for local jurisdictions and organizations. Proactive mitigation planning will help reduce the cost of disaster response and recover to local communities and residents by protecting critical infrastructure, reducing liability exposure and minimizing overall community impacts and disruptions. Pulaski County has been affected by natural disasters in the past and participating jurisdictions and organizations are committed to reducing the impacts of future incidents and becoming eligible for hazard mitigation-related funding opportunities.

1.3 Plan Organization

The plan contains a mitigation action listing, a discussion of the purpose and methodology used to develop the plan, a profile on Pulaski County, as well as the hazard identification and vulnerability assessment of natural hazards. In addition, the plan offers a discussion of the community's current capability to implement the goals, objectives and strategies identified through the planning process.

The plan is organized as follows:

- Executive Summary
- Chapter 1: Introduction and Planning Process
- Chapter 2: Planning Area Profile and Capabilities
- Chapter 3: Risk Assessment
- Chapter 4: Mitigation Strategy
- Chapter 5: Plan Implementation and Maintenance
- Appendices

To assist in the explanation of the above identified contents, there are several appendices included which provide more detail on specific subjects. This plan is intended to improve the ability of Pulaski County and the jurisdictions within to handle disasters and will document valuable local knowledge on the most efficient and effective ways to reduce loss.

1.4 Planning Process

44 CFR Requirement 201.6(c)(1): [The plan shall document] 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.

The Pulaski County Hazard Mitigation Planning Committee (HMPC) first organized in 2019 when the Missouri State Emergency Management Agency (SEMA) provided grant funds and contracted with the Meramec Regional Planning Commission (MRPC) to develop a hazard mitigation plan for the county. MRPC is a council of local governments in south central Missouri serving Crawford, Dent, Gasconade, Maries, Osage, Phelps, Pulaski and Washington counties.

MRPC's role in developing and updating the Pulaski County Hazard Mitigation plan included assisting in the formation of the mitigation planning committee (HMPC) and facilitating the planning meetings; soliciting public input; and producing the draft and final plan for review by the HMPC, SEMA and FEMA. Staff carried out the research and documentation necessary for the planning process. In addition, MRPC compiled and presented the data for the plan, helped the HMPC with the prioritization process and insured that the final document met the DMA requirements established by federal regulations and the most current planning guidance.

In 2018, SEMA secured a grant to develop the Pulaski County Multi-Hazard Mitigation Plan and contracted with MRPC to facilitate the planning process for the plan development. MRPC staff has followed the most current planning guidance provided by FEMA for the purpose of insuring that the plan meets all of the requirements of the Disaster Mitigation Act as established by federal regulations.

The Pulaski County Multi-Hazard Mitigation Plan was developed as the result of a collaborative effort among Pulaski County, the City of City of Crocker, City of Dixon, City of Richland, City of St. Robert, City of Waynesville, Dixon R-I School District, Crocker R-II School District, Swedeborg R-III School District, Richland R-IV School District, Laquey R-V School District, Waynesville R-VI School District, public agencies, non-profit organizations, the private sector as well as regional, state and federal agencies. MRPC contacted and asked for volunteers to serve on the planning committee from the county and local city governments, school districts, the county health department, local businesses and utility companies. The mailing list is included in

Appendix B: Planning Process. This cross-section of local representatives was chosen for their experience and expertise in emergency planning and community planning in Pulaski County. Staff worked with the Pulaski County HMPC to collect and analyze information on hazards and disasters that have impacted the county as well as document mitigation activities that have occurred during the past five years.

Due to time and duty constraints, not all the jurisdictions that were invited to participate in the HMPC were able to attend meetings. However, all of the jurisdictions provided information to develop the document, reviewed the plan and provided input. Interviews were conducted with stakeholders from the community and several planning meetings were conducted during the plan development.

The 2021 planning process began with a meeting held at the Pulaski County Courthouse on February 20, 2020. MRPC staff provided an overview of the hazard mitigation planning process and review of the existing hazard mitigation plan. The group reviewed and discussed hazard mitigation goals and what progress had been made on hazard mitigation action items over the past four years. The group began the process of reviewing the list of action items - making note of those action items that had been accomplished, those that were no longer applicable and considered adding projects to the list. The group agreed to review plan chapters as they were completed through email or postings on the MRPC website The second meeting was held on June 23, 2020 via Zoom and conference call. The HMPC received a report on the public survey and asked that the survey be promoted again in order to get more responses. They also completed their review and revision of the list of action items and applying the STAPLEE method (Social, Technical, Administrative, Political, Legal, Economic; Environmental) and applying cost benefit analysis to best determine priorities. A full description of the prioritization process is included in Chapter 4. The group agreed to review plan chapters as they were completed through email or postings on the MRPC website.

The final list of prioritized action items were mailed out to all jurisdictions and entities that had been invited to participate on the HMPC. Recipients were asked to review and provide feedback if they had concerns about how any of the projects were ranked, or if they had corrections or additions they wanted incorporated.

The third planning meeting was held via Zoom and conference call on September 29, 2020. The group reviewed and discussed the final results of the public survey and the first draft of the hazard mitigation plan. Chapters had been emailed out to jurisdictions and committee members for review and feedback. The HMPC were advised of the next steps – the public comment period and adoption of the plan document.

The draft plan was made available on-line and HMPC members were notified on where to find the document and asked to review and provide feedback.

All planning committee members were provided drafts of sections of the plan as they became available. Members of the planning committee reviewed the draft chapters and provided valuable input to MRPC staff. Additionally, through public committee meetings, press releases and draft plan posting on MRPC's website, ample opportunity was provided for public participation. An internet survey was provided for the public to provide input into the process. The results of that survey are included in the appendices. Jurisdictions in surrounding counties were also notified of where to view the revised plan and encouraged to provide input. Any comments, questions and discussions resulting from these activities were given strong consideration in the development of this plan.

Pulaski County further assisted in the planning process by issuing public notice of the planning meetings as well as scheduling meeting times at the County Courthouse in Waynesville and public notice of how to participate in Zoom/conference call meetings. County officials attended and participated in meetings.

The HMPC contributed to the planning process by:

- Attending and participating in meetings;
- Collecting data for the plan;
- Making decisions on plan content;
- Reviewing drafts of the plan document;
- Developing a list of needs:
- Prioritizing needs and potential mitigation projects; or
- Assisting with public participation and plan adoption

The HMPC did not formally meet on a regular basis as recommended in the plan due to COVID-19. However, mitigation has become a regular topic of discussion among the majority of jurisdictions included in the plan. A number of hazard mitigation projects have been completed in the county and hazard mitigation concepts are being incorporated into other planning projects Table 1.2 provides information on who actively participated in the planning process and who they represented:

Opal Gibbs, Susan Alexander, Dana Turner, Dr. George Lauritson, Luge Hardman, Michele Brown, John Doyle, Bruce Harrill, Dan Cordova, Duane Doyle, Dr. Gary Doerhoff and Dr. Brian Henry all participated indirectly by providing information, completing the community questionnaire, participating in phone calls and email discussions, providing feedback on action items, reviewing plan chapters and assisting with adoption of the plan.

Table 1.2 Jurisdictional Representatives Pulaski County Mitigation Planning Committee

Name	Title	Department	Jurisdiction/Agency/ Organization	Direct Participation	Indirect Participation
Gene Newkirk	Presiding Commissioner		Pulaski County	X	
David Ernst	County Clerk		Pulaski County	X	
Ryan Hicks	EMD	Office of Emergency Management	Pulaski County	X	
Glen Smith	Mayor		City of Crocker	X	
Opal Gibbs	City Clerk		City of Crocker		X
Mike Null	Mayor		City of Dixon		X
Glenda Pennington	City Clerk		City of Dixon		X
Susan Alexander	City Clerk		City of Richland		X
Dana Tanner	Mayor		City of Richland		X
Rick Hobbs	Fire Chief	Fire Department	City of Richland	X	
Dr. George Lauritson	Mayor		City of St. Robert		X
Anita Ivey	City Administrator		City of St. Robert	X	

Name	Title	Department	Jurisdiction/Agency/ Organization	Direct Participation	Indirect Participation
Steve Long	Public Works Director	Public Works	City of St. Robert	X	
Luge Hardman	Mayor		City of Waynesville		X
Michele Brown	City Clerk		City of Waynesville		X
Bruce Harrill	City Administrator		City of Waynesville		X
John Doyle	Asst. City Administrator		City of Waynesville		X
Dan Cordova	Police Chief		City of Waynesville		X
Doug Yurecko	Emergency Management Director	Office of Emergency Management/ Waynesville Rural Fire Protection District	City of Waynesville	X	
Ed Fowler		Waynesville Rural Fire Protection District		X	
Duane Doyle	Superintendent		Dixon R-I		X
Dr. Gary Doerhoff	Superintendent		Crocker R-II		X
Doug Jacobson	Superintendent		Swedeborg R-III	X	
Brian Lee	Superintendent		Richland R-IV	X	
Dr. Randy Caffey	Superintendent		Laquey R-V		X
Dr. Brian Henry	Superintendent		Waynesville R-VI		X
Billy Cobb	Executive Director of Operations		Waynesville R-VI	X	
John Wright		Life Care of Waynesville		X	
Brett Hendrix	SEMA Region I Coordinator	MO SEMA		X	

1.5 Multi-Jurisdictional Participation

44 CFR Requirement §201.6(a)(3): Multi-jurisdictional plans may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

Pulaski County invited incorporated cities, school districts, utility companies, medical facilities, nursing facilities, county health department, and not-for-profits to participate in the hazard mitigation planning process. Letters and/or emails were sent to each of the following:

- Pulaski County
- City of Crocker
- City of Dixon
- City of Richland
- City of St. Robert
- City of Waynesville
- Dixon R-I School District
- Crocker R-II School District
- Swedeborg R-III School District
- Richland R-IV School District
- Laquey R-V School District
- Waynesville R-VI School District
- Pulaski Co. Health Dept.
- Laclede Electric Co-Op, Inc.
- InterCounty Electric Co-Op, Inc.
- GascOsage Electric Co-Op, Inc.
- Pulaski County Public Water Supply District # 1
- Pulaski County Public Water Supply District # 2
- Pulaski County Public Water Supply District # 3
- Rosewood Manor Assisted Living
- Pulaski County Health Department
- Dixon Family Practice
- Mercy Clinic Family Medicine
- Pulaski Medical Clinic
- St. John's Clinic
- Phelps Health
- Sunset Village of the Ozarks, Inc.
- Life Care Center of Waynesville
- Dixon Nursing & Rehab
- Richland Care Center, Inc.
- Pulaski County Daily News
- Crocker Fire Protection District
- St. Robert Fire Department
- Pulaski County Growth Alliance
- MoDOT
- Missouri State Highway Patrol
- MO, SEMA

A copy of the mailing list and invitation letters are included in Appendix B: Planning Process.

The Disaster Mitigation Act requires that each jurisdiction must participate in the planning process and formally adopt the plan. There were a number of criteria established for participation. In order to be considered participating in the planning process, jurisdictions needed to do at least one of the following as well as adopt the plan:

- Providing a representative to serve on the planning committee;
- Participating in at least one or more meetings of the planning committee;
- Providing data for plan development through surveys and/or interviews;
- Identify goals and mitigation actions for the plan;
- Prioritize mitigation actions/projects for the plan;
- Review and comment on the draft plan document;
- Informing the public, local officials and other interested parties about the planning process and providing opportunities for them to comment on the plan;
- Provide in-kind match documentation; and
- Formally adopt the plan prior to submittal of the final draft to SEMA and FEMA for final approval.

Not all jurisdictions were able to attend the HMPC meetings. Most communities and school districts in Pulaski County are small and understaffed. It was not always feasible for representatives to travel to the meetings. However, all jurisdictions met at least one of the participation criteria. All jurisdictions were contacted by phone and asked to complete the data collection questionnaire. In some cases staff assisted jurisdictions with completion of the

questionnaire. All jurisdictions were also contacted via email and phone regarding completion of in-kind match forms and if there were any questions regarding the information on the data collection questionnaires. The jurisdictions that participated in the process, as well as their level of participation in the process are shown in Table 1.3. Documentation of meetings, including sign-in sheets are included in Appendix B: Planning Process.

Table 1.3 Jurisdictional Participation in the Planning Process

Jurisdiction	Meet-ing #1	Meet-ing #2	Meet-ing #3	Interviews	Data Collection Questionnaire/ Call	Update/Develop / Prioritize Mitigation Actions	Review/ Comment on Plan
Pulaski County	X	X	X	X	X	X	X
City of Crocker		X		X	X	X	X
City of Dixon			X		X	X	X
City of Richland	X	X		X	X	X	X
City of St. Robert	X	X	X	X	X	X	X
City of Waynesville	X	X		X	X	X	X
Dixon R-I					X	X	X
Crocker R-II					X	X	X
Swedeborg R-III	X				X	X	X
Richland R-IV	X	X	X		X	X	X
Laquey R-V					X	X	X
Waynesville R-VI	X		X		X	X	X

1.6 The Planning Steps

Pulaski County and MRPC worked together to develop the plan and based the planning process in FEMA's *Local Mitigation Planning Handbook (March 2013),* the *Local Mitigation Plan Review Guide (October 1, 2011),* and *Integrating Hazard Mitigation Into Local Planning: Case Studies and Tools for Community Officials (March 1, 2013).* The planning process has included organizing the county's resources, assessing the risks to the county, developing the mitigation plan and implementing the plan and monitoring the progress of plan implementation.

The planning committee based their activities on the 10-step planning process adapted from FEMA's Community Rating System (CRS) and Flood Mitigation Assistance programs. By following the 10-step planning process, the plan met funding eligibility requirements of the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, Community Rating System and Flood Mitigation Assistance Program.

Table 1.4 Pulaski County Planning Process

Community Rating System (CRS) Planning Steps (Activity 510)	Local Mitigation Planning Handbook Tasks (44 CFR Part 201)
Step 1: Organize	Task 1: Determine the Planning Area and Resources Task 2: Build the Planning Team 44 CFR 201.6(c)(1)
Step 2: Involve the public	Task 3: Create an Outreach Strategy 44 CFR 201.6(b)(2) & (3)
Step 3: Coordinate	Task 4: Review Community Capabilities 44 CFR 201.6(b)(2) & (3)
Step 4: Assess the hazard	Task 5: Conduct a Risk Assessment 44 CFR 201.6(c)(2)(i) 44 CFR 201.6(c)(2)(ii) & (iii)
Step 5: Assess the problem	
Step 6: Set goals	Task 6: Develop a Mitigation Strategy 44 CFR 201.6(c)(3)(i); 44 CFR 201.6(c)(3)(iii)
Step 7: Review possible activities	
Step 8: Draft an action plan	
Step 9: Adopt the plan	Task 8: Review and Adopt the Plan
Step 10: Implement, evaluate, revise	Task 7: Keep the Plan Current Task 9: Create a Safe and Resilient Community 44 CFR 201.6(c)(4)

Step 1: Organize the Planning Team (Handbook Tasks 1 & 2)

The planning area was determined by the boundaries of Pulaski County. MRPC staff provided general information on the hazard mitigation plan review process at regular MRPC board meetings – providing both written and oral reports on the review process, schedules for the various plans; which ones had been funded; described match requirements; and asked mayors and commissioners to think about who should be included on the planning committees for each respective county.

The planning team was selected by contacting the leadership of each jurisdiction, explaining the process, and asking them to send appropriate representation to the planning meetings. In addition they were asked to provide input on who they wanted to include on the planning committee. Stakeholders such as electric cooperatives and sewer districts were also contacted and invited. In addition, it was suggested that representatives of some of the local critical facilities be included on the planning committee, such as medical clinics and nursing homes. All meetings were also publicized to allow additional interested parties to attend and participate. Pulaski County Commission offered to host the meetings at the courthouse. The first meeting was held on February 20, 2020 and due to COVID-19, the second meeting was delayed until June 23, 2020 and accomplished using Zoom and conference call. A third meeting was held on September 29, 2020 via Zoom and conference call for final review of the public survey and draft document.

At the first meeting on February 20, 2020, MRPC staff made introductions and provided an overview of the Pulaski County Hazard Mitigation plan. The group reviewed and discussed the goals and objectives. A good deal of the meeting was spent sharing information on what progress had been made in five years and discussing current and future needs and starting the review of action items. Staff offered to help those jurisdictions present with completion of their data collection surveys. Staff wrapped up the meeting by providing handouts on the current action items and asking the group to review them and come prepared to the next meeting to

complete the review and update of action items. Staff also explained the process that would be used to prioritize the action items at the next meeting – using both the STAPLEE method and analyzing the cost benefit and provided handouts on both methods.
At the request of the committee, the second meeting was held via Zoom and conference call due to COVID-19. At the second meeting on June 23, 2020, the group reviewed, edited and prioritized the complete list of action items. MRPC staff shared the results of the public survey and after reviewing the results, the committee asked that it be publicized again and the members would also work to get additional responses. Staff went on to provide an explanation of the prioritization process using both the STAPLEE and cost benefit scoring. The committee then provided input on prioritizing each of the action items. Staff took those recommendations and developed a matrix of the action items with the STAPLEE and cost benefit scores. This matrix was emailed out to all of the individuals and organizations on the mailing list for the planning committee with a request for feedback. All suggestions for changes were incorporated into the plan. The group also reviewed the list of critical facilities in the plan and provided feedback on any changes or additions to that list. It was decided that staff would share plan chapters with the committee as they were completed. If necessary the group would meet again but no date was set.

The third meeting was held via Zoom and conference all on September 29, 2020 to review and discuss the results of the public survey and review the first draft of the plan document. Copies of the plan chapters had been shared with committee members over the course of several months as they were completed. MRPC staff also went over the public comment period and adoption process for the plan document.

Table 1.5 Schedule of Pulaski County Hazard Mitigation Planning Committee meetings outlines the dates that meetings were held and topics covered. Documentation of the planning process can be found in Appendix B: Planning Process.

Table 1.5 Schedule of Pulaski County Hazard Mitigation Planning Committee Meetings

Meeting	Topics	Date
Planning Meeting #1	Overview of hazard mitigation planning purpose and Pulaski County plan; grant programs linked to approved plan; participation requirements and public involvement; data collection questionnaires; discussion of hazards; critical facilities	February 20, 2020
Planning Meeting #2	Overview of hazard mitigation planning and Pulaski Co. HMP; discussion of action items for the next 5 years; prioritization of action items; road and bridge projects; integration of other data, reports, studies, and plans	June 23, 2020
Planning Meeting #3	Review and discussion of the public survey. Review of the first draft of the plan document. Overview of the public comment process and plan adoption process.	September 29, 2020

Step 2: Plan for Public Involvement (Handbook Task 3)

44 CFR Requirement 201.6(b): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval.

The HMPC followed the same process for public involvement and input as suggested by SEMA and FEMA and as was followed during earlier planning processes. The first planning committee meeting was held at the Pulaski County Courthouse. The second meeting was held via Zoom and conference call. Public notices were placed at the courthouse and the MRPC offices and press releases were done prior to the meeting to make the public aware. Meetings were also posted on the MRPC webpage. The public was notified each time the plan or sections of the plan were presented for review and discussion. A public survey was conducted and the results shared with the planning committee. A sample of the survey and the results of the survey are included in **Appendix C: Public Survey**. Planning committee members and public officials within the county as well as in surrounding counties were contacted, directed to the MRPC website (www.meramecregion.org) where a copy of the draft plan could be viewed or downloaded. The document was made available on the website on September 30, 2020. Hard copies of the final draft were placed at the Pulaski County Courthouse. A hard copy of the draft could be obtained directly from MRPC by request. Members of the local media, both radio, newspaper and online were invited to attend planning meetings. Information was shared by these media outlets with the public on the planning process and where to find draft copies of the plan. Copies of public notices and press release are included in Appendix B. Results of the public survey are included in Appendix C: Public Survey.

No comments were received from the public other than what was found in the public survey. Which are included in the Appendices.

Step 3: Coordinate with Other Departments and Agencies and Incorporate Existing Information (Handbook Task 3)

44 CFR Requirement 201.6(b): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (2) 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 private and non-profit interests to be involved in the planning process. (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Every effort was made to encourage input from stakeholders whose goals and interests interface with hazard mitigation in Pulaski County including:

- Neighboring communities
- Local and regional agencies involved in hazard mitigation activities
- Agencies with the authority to regulate development

- Businesses
- Academia
- Other private and non-profit interests

Mailing lists and copies of correspondence for jurisdictions, stakeholders and neighboring communities are included in **Appendix C: Planning Process**. Postcards were mailed to neighboring jurisdictions providing information on where to review the draft plan and provide input. Press releases on the planning process, public survey and planning meetings were also distributed and are included in **Appendix C: Planning Process**.

Stakeholders involved in the hazard mitigation planning process included Life Care Center of Waynesville, Phelps Health, Waynesville Fire Protection District and Region I Missouri State Emergency Management Agency area coordinator. No federal stakeholders were involved during the planning process. Lists of the people from the jurisdictions and stakeholders who were invited to participate in the planning process follows.

Jurisdictional Representatives Invited to Participate in the Planning Process

Name	Title	Department	Jurisdiction/Agency/Organization
Gene Newkirk	Presiding Commissioner	County	Pulaski County
Lynn Sharp	Associate Commissioner	County	Pulaski County
Rick Zweerink	Associate Commissioner	County	Pulaski County
David Ernst	County Clerk	County	Pulaski County
Jimmy Bench	Sherriff	Sherriff's Dept.	Pulaski County
Ryan Hicks	EMD	Emergency Management	Pulaski County
Debra Baker	Admin.	Health Dept.	Phelps/Pulaski County Health Dept.
Glenn Smith	Mayor	City Admin.	City of Crocker
Opal Gibbs	City Clerk	City Admin.	City of Crocker
Nick Pappas	Police Chief	Police Dept.	City of Crocker
Don Theberge	Chief of Public Works	Public Works	City of Crocker
Mark Fancher	Fire Chief	Crocker Fire Protection District	City of Crocker
Dr. Gary Doerhoff	Superintendent	Administration	Crocker R-II
Mike Null	Mayor	Administration	City of Dixon
Glenda Pennington	City Clerk	Administration	City of Dixon
Gary Brankel	Marshall	Police Dept.	City of Dixon
Dr. Duane Doyle	Superintendent	Administration	Dixon R-I
Dana Turner	Mayor	Administration	City of Richland
Susan Alexander	City Clerk	Administration	City of Richland
Jaime Solis	Marshal	Police Dept.	City of Richland
Steve Alexander	Public Works Director	Public Works	City of Richland
Rick Hobbs	Fire Chief	Richland Fire Protection District	City of Richland
Brian Lee	Superintendent	Administration	Richland R-IV
Dr. Doug Jacobson	Superintendent	Administration	Swedeborg R-III
Dr. George Lauritson	Mayor	Administration	City of St. Robert
Anita Ivey	City Administrator	Administration	City of St. Robert
Mike Shempert	Fire Chief	St. Robert Fire Dept.	City of St. Robert

Name	Title	Department	Jurisdiction/Agency/Organization
Jerome Gordon	Land Use Admin.		City of St. Robert
Steve Long	Public Works Director	Public Works Dept.	City of St. Robert
Curtis Curenton	Police Chief	Police Dept.	City of St. Robert
Amy Smith/Leann Nutt	City Clerk	Administration	City of St. Robert
Luge Hardman/ Jerry Brown	Mayor	Administration	City of Waynesville
Bruce Harrill/John Doyle	City Administrator	Administration	City of Waynesville
Michele Brown	City Clerk	Administration	City of Waynesville
Mitch McDonald	Public Works Director	Public Works	City of Waynesville
Daniel Sheldon	Electric Superintendent	Public Works	City of Waynesville
Doug Yurecko	Fire Chief/EMD	Emergency Mgt.	City of Waynesville
Dan Cordova	Police Chief	Police Dept.	City of Waynesville
Brian Adams	Street Superintendent	Public Works	City of Waynesville
Jack Eldredge	Water/Sewer Superintendent	Public Works	City of Waynesville
Dr. Brian Henry	Superintendent	Administration	Waynesville R-VI
Chris Berger	Asst. Superintendent	Administration	Waynesville R-VI

Stakeholder Invited to Participate in the Planning Process

Name	Title	Agency/Organization
John Wright		Life Care Center of Waynesville
-	Manager	Dixon Nursing & Rehab
-	Manager	Richland Care Center, Inc.
Darrell Todd Maurina	Owner/Editor	Pulaski County Daily News
Byron Dudley		Laclede Electric Cooperative
Doug Lane		Intercounty Electric Cooperative
Carmen Hartwell		GascOsage Electric Cooperative
Gene Williams		Pulaski County Public Water Supply District #1
Mark Tallent		Pulaski County Public Water Supply District #2
William Crawford		Pulaski County Public Water Supply District #3
Manager		Rosewood Manor Assisted Living
Preston Kramer	District Engineer	MoDOT
-		Dixon Family Practice
-		Mercy Clinic Family Medicine
-		Pulaski Medical Clinic
-		St. John's Clinic – Richland
-	Manager	Sunset Village of the Ozarks, Inc.
Brett Hendrix	Region I SEMA Area Coordinator	MO State Emergency Mgt. Agency
Randy Becht	Director	Pulaski County Growth Alliance

Jurisdictional representatives on the HMPC were asked to share and solicit information from within and outside of their jurisdictions. A broad spectrum of entities other than the jurisdictions named in the plan, were invited to participate in the planning process.

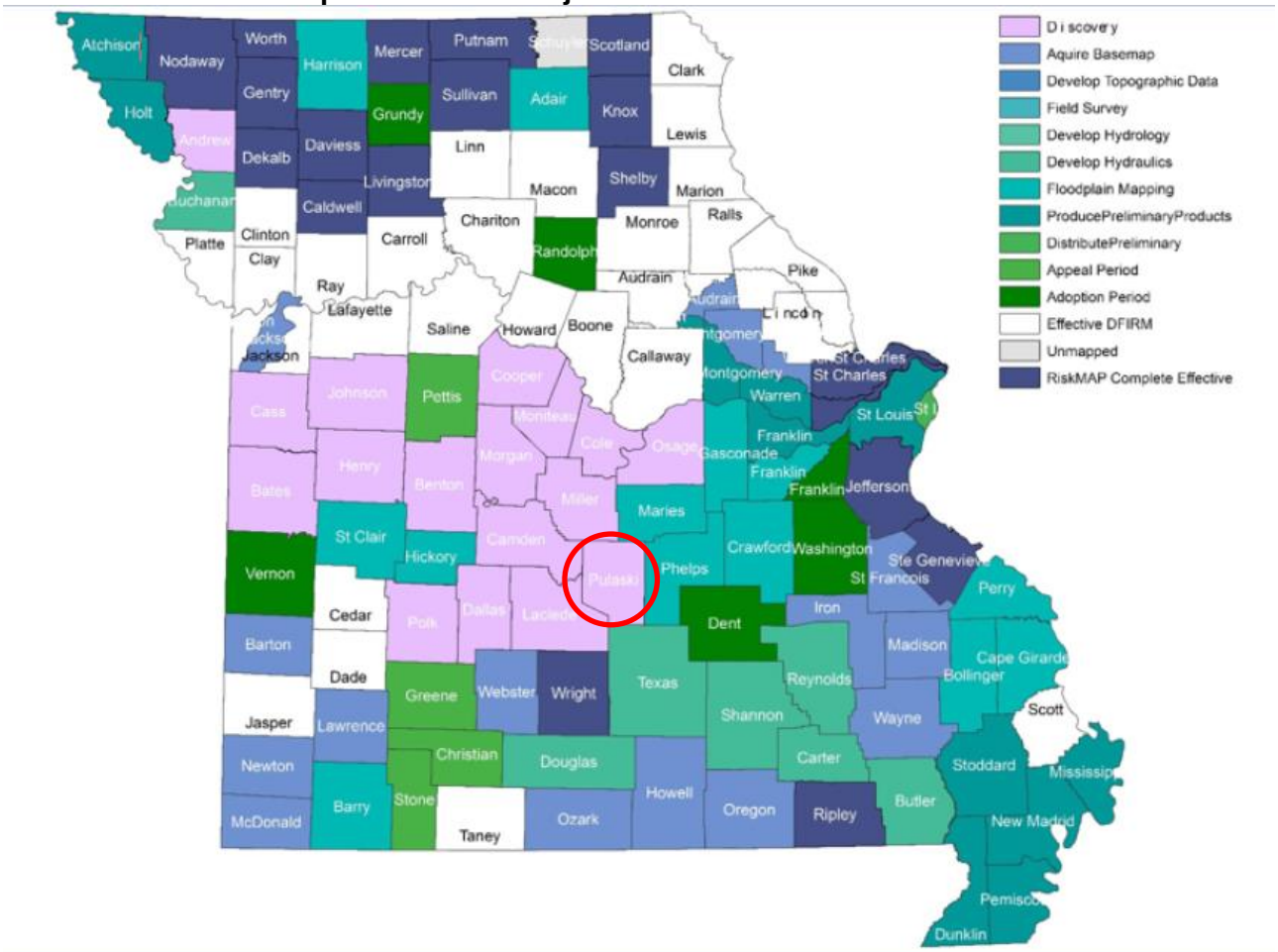
The questionnaire provided to every jurisdiction asked how mitigation actions were being incorporated into other planning documents. The county road and bridge department does a good job of incorporating mitigation projects into their regular maintenance program. Those projects have been incorporated into the plan document. Hazard mitigation goals and action items have also be incorporated, where applicable, in the Community Economic Development Strategy (CEDS).

Coordination with FEMA Risk MAP Project

Risk mapping, assessment, and planning is a FEMA program which provides communities with flood information and tools to enhance their mitigation plan and take action to better protect their citizens. The Discovery meeting for RiskMAP in Pulaski County was held in February 2020. Project Initiation is anticipated to be conducted in the fall of 2020 with hydrologic and hydraulic modeling to begin in the winter. Draft models are anticipated to be available in the summer of 2021.

Figure 1.1 illustrates the current status of Missouri counties in regards to RiskMap projects.

Figure 1.1. Map of RiskMAP Projects



Source: mosema.maps.acrgis.com/apps/MapJournal/index.html?appid=c95675c3892c4b1aa870f202158d3098

Integration of Other Data, Reports, Studies and Plans

The HMPC researched available plans, studies, reports and technical information during development of the Update. The intent was to identify existing data and information, shared objectives and past and ongoing activities that would add to the Update. The goal was to identify the existing capabilities and planning mechanisms to implement the mitigation strategy. Pulaski County is a rural area with the largest community's population at approximately 5,365. Pulaski County is home to Fort Leonard Wood, an Army installation with an estimated population of 15,061[1] Not all of the participating communities have planning or zoning, subdivision regulations or other mechanisms for controlling the development of land. Some of the jurisdictions do have ordinances and planning documents. Following is a list of the documents that were reviewed:

- Local planning and zoning ordinances
- County EOP
- Crisis Plans (school districts)
- Comprehensive plans
- Economic development plans
- Capital improvement plans
- Regional Transportation Plan
- Floodplain management ordinances and flood Insurance Risk Maps (FIRMs)

In addition to information available from local jurisdictions, a number of data sources, reports, studies and plans were used in updating the plan. Every attempt was made to gather the best available data to develop the vulnerability assessment and identify assets in the county. The Missouri State Hazard Mitigation Plan (2018) was reviewed and referenced throughout the document. Other data sources included dam information from the Missouri Department of Natural Resources and National Inventory of Dams (NID); fire reports from state agencies; Wildland/Urban Interface and Intermix data from the SILVIS Lab – Department of Forest Ecology and Management – University of Wisconsin; the Community Economic Development Strategy (CEDS); capital improvement plans from the participating jurisdictions; historic weather data and damage estimates from the National Oceanic and Atmospheric Administration; the critical facilities inventory conducted by MRPC; and road and bridge department plans/budgets.

All documents were reviewed so that the HMPC would have a broad foundation of data upon which to base the planning area's risk assessment. Information from these documents and data sources are incorporated into the plan as indicated throughout the document.

Step 4: Assess the Hazard: Identify and Profile Hazards (Handbook Task 5)

The HMPC reviewed the hazards that affected Pulaski County at the first planning meeting on February 20, 2020 including discussions of any hazard events that occurred during the last twenty years and all of the hazards included in the Missouri Hazard Mitigation plan. A variety of sources were used to identify and profile hazards. These included U.S. Census data, GIS data, HAZUS, the Missouri Spatial Data Information Service (MSDIS), statewide datasets compiled by state and federal agencies, existing plans and reports, personal interviews with HMPC members and the questionnaire completed by each jurisdiction. Every effort was made to use the most

[1] www.city-data.com/city/Fort-Leonard-Wood-Missouri.html

current and best data available. Additional information on the risk assessment and the conclusions drawn from the available data can be found in Chapter 3.

Step 5: Assess the Problem: Identify Assets and Estimate Losses

Assets for each jurisdiction were identified based on responses to the data collection questionnaire distributed to all jurisdictions, interviews with HMPC members and the critical facilities inventory conducted by MRPC. Additional sources included U.S. Census, GIS data, MSDIS and HAZUS.

Losses were calculated using HAZUS and the Missouri State Hazard Mitigation plan data and the most recent U.S. census data available. Values reflected in the plan are on structures only and do not include land values.

Jurisdictions provided information on their regulatory, personnel, fiscal and technical abilities by completing the data collection questionnaire. The vulnerability assessment was completed using estimates from the 2018 State plan. For more information on planning area profiles and capabilities, please see Chapter 2.

Step 6: Set Goals (Handbook Task 6)

The goals from the initial hazard mitigation plan were reviewed at the first planning meeting on February 20, 2020. Those goals are as follows:

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning and hazard mitigation activities.

Goal 2: Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Goal 5: Establish priorities for reducing risks to the people and their property with emphasis on long-term and maximum benefits to the public rather than short-term benefit of special interests.

Goal 6: Secure resources for investment in hazard mitigation.

Step 7: Review Possible Mitigation Actions and Activities

Mitigation strategy and specific action items were discussed at the first and second HMPC meetings. At the first HMPC meeting the group reviewed the list in the existing plan and decided which actions could be eliminated; what needed to remain on the list; and what needed to be added. It was emphasized that any mitigation actions in the plan that were not likely to be

accomplished, due to cost factors or that did not address the risks identified in the risk assessment, should be removed from the list.

Discussions also included mitigation activities that had been completed or were in process that had not been in the original plan document. Each jurisdiction and stakeholder group was asked to provide information about mitigation activities that were needed as well as those that had been accomplished over the past five years. Meeting facilitators offered to share ideas for mitigation projects from the FEMA publication *Mitigation Ideas: As Resource for Reducing Risk to Natural Hazards (January 2013)* to help stimulate ideas and discussion.

As RiskMAP has just begun the discovery process in Pulaski County, no projects have been identified through that process at this time.

In order to prioritize action items, the HMPC was asked to use the STAPLEE method as well as assign a cost benefit to each activity. This allowed the group to consider a broad range of issues in order to decide which actions should be considered high, moderate or low priority. The prioritization process used by the HMPC is explained as follows:

STAPLEE stands for the following:

- **Social:** Will the action be acceptable to the community? Could it have an unfair effect on a particular segment of the population?
- **Technical:** is the action technically feasible? Are there secondary impacts? Does it offer a long-term solution?
- **Administrative:** Are there adequate staffing, funding and maintenance capabilities to implement the project?
- **Political:** Will there be adequate political and public support for the project?
- **Legal:** Does your jurisdiction have the legal authority to implement the action?
- **Economic:** is the action cost-beneficial? Is there funding available: Will the action contribute to the local economy?
- **Environmental:** Will there be negative environmental consequences from the action? Does it comply with environmental regulations? Is it consistent with community environmental goals?

Each question was scored based on a 0 to 3 point value system:

3 = Definitely YES
2 = Maybe YES
1 = Probably NO
0 = Definitely NO

For the Benefit/Cost Review portion of the prioritization process, these two aspects were scored as follows:

Benefit – two (2) points were added for each of the following avoided damages (8 points maximum = highest benefit)

- Injuries and/or casualties
- Property damages
- Loss-of-function/displacement impacts

- Emergency management costs/community costs

Cost – points were subtracted according to the following cost scale (-5 points maximum = highest cost)

- (-1) = Minimal – little cost to the jurisdiction involved
- (-3) = Moderate – definite cost involved but could likely be worked into operating budget
- (-5) = Significant – cost above and beyond most operating budgets; would require extra appropriations to finance or to meet matching funds for a grant

Note: For the Benefit/Cost Review, the benefit and cost of actions which used the word "encourage" were evaluated as if the action or strategy being encouraged was actually to be carried out.

Total Score – The scores for the STAPLEE Review and Benefit/Cost Review were added to determine a Total Score for each action.

Priority Scale – To achieve an understanding of how a Total Score might be translated into a Priority Rating, a sample matrix was filled out for the possible range of ratings an action might receive on both the STAPLEE and Benefit/Cost Review. The possible ratings tested ranged between:

- A hypothetical action with "Half probably NO and half maybe YES" answers on STAPLEE (i.e. poor STAPLEE score) and Low Benefit/High Cost: Total Score = 7
- A hypothetical action with "All definitely YES" on STAPLEE and High Benefit/Little Cost: Total Score = 28

An inspection of the possible scores within this range led to the development of the following Priority Scale based on the Total Score in the STAPLEE- Benefit/Cost Review process:

20 – 28 points = High Priority
14-19 points = Medium Priority
13 points and below = Low Priority

The benefit portion of the prioritization process helped the HMPC focus on long-term mitigation solutions that demonstrated the future cost savings that could be realized by completing mitigation projects that safeguard lives and protect property.

Step 8: Draft an Action Plan

The HMPC reviewed the final list of action items at the June 23, 2020 meeting and completed the prioritization process. The final list was then mailed out to all jurisdictions and members of the HMPC for review and approval as everyone was not able to attend the meeting. Staff was directed by the HMPC to take the finalized list after allowing time for comments and draft an action plan for the group to review.

Step 9: Adopt the Plan (Handbook Task 8)

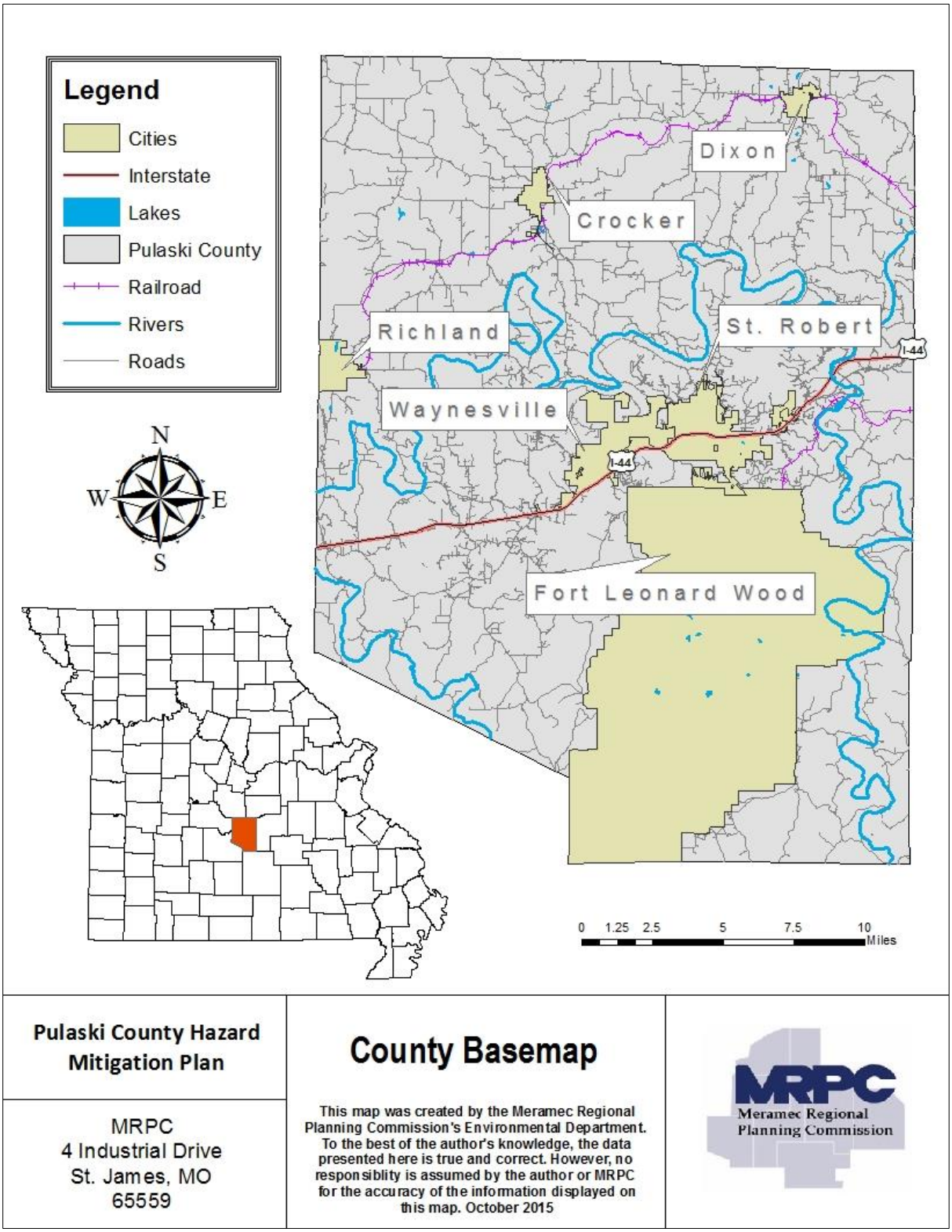
When the first draft of the plan was completed, staff posted the document on the MRPC website and provided a hard copy to the county courthouse. All HMPC members, jurisdictions and surrounding jurisdictions were notified on where to find a copy of the plan to review. If requested, additional hard copies of the plan document were provided. After allowing time for comments, a letter was mailed out to all jurisdictions asking them to formally adopt the plan and providing a sample adoption resolution. A deadline was provided in order to insure receipt of adoption resolutions prior to submitting a final draft to FEMA for approval.

Step 10: Implement, Evaluate, and Revise the Plan (Handbook Tasks 7 & 9)
At all three planning meetings (February 20, 2020, June 23, 2020 and September 29, 2020) MRPC staff advised the HMPC and participating jurisdictions of the importance of continuing to meet periodically to discuss implementation of the plan as well as monitoring and maintaining the plan into the future. Chapter 5 provides details on Pulaski County's strategy for implementation, evaluation and revising the plan.

2 PLANNING AREA PROFILE AND CAPABILITIES

2.1 Pulaski County Planning Area Profile

Figure 2.1. Map of Pulaski County



Pulaski County has a population of approximately 52,591 according to the most recent census

data[1]. **Table 2.1** illustrates the percentage population growth since 2010 as compared to the statewide and national population growth. The median household income and percentage growth since 2010, as compared to statewide and national figures can be found in **Table 2.2.** Furthermore**,** median house value percentage growth for Pulaski County, Missouri, and the United States is provided in **Table 2.3**

Table 2.1. Percent Population Growth for County, State, and Nation 2010 - 2018

	Total Population		Change Over Period	
Demographic Region	**2010**	**2018**	**Change**	**Percent**
Pulaski County	52,274	52,591	317	.6
Missouri	5,988,927	6,090,062	101,135	1.68
United States	308,758,105	322,903,030	14,144,925	4.58

Source: U.S. Census Bureau, Census 2010; U.S. Census Bureau, 2014-2018 5-Year American Community Survey

Table 2.2. Median Household Income and Percentage Growth for County, State, and Nation 2000 - 2018

	Median Household Income (USD)		Change Over Period	
Demographic Region	**2010**	**2018**	**Change**	**Percent**
United States	$49,445	$60,293	$10,848	21.93
Missouri	$44,301	$53,560	$9,259	20.90
Pulaski County	$43,155	$51,665	$8,510	19.71

Source: U.S. Census Bureau, Census 2010; U.S. Census Bureau, 2014-2018 5-Year American Community Survey

Table 2.3. Median House Value Percentage Growth for County, State, and Nation 2000 - 2018

	Median House Value (USD)		Change Over Period	
Demographic Region	**2010**	**2018**	**Change**	**Percent**
United States	$188,400	$204,900	$16,500	8.75
Missouri	$137,700	$151,600	$13,900	10.09
Pulaski County	$120,200	$151,200	$31,000	25.79

Source: U.S. Census Bureau, Census 2010; U.S. Census Bureau, 2014-2018 5-Year American Community Survey

2.1.2 Geography, Geology and Topography

Pulaski County has a total land area of 547 square miles. Approximately 29 percent of the land cover in the county is deciduous forest intermixed with 45 percent of grassland. Approximately 22 percent of the land cover within the county is cropland[2]. The area has karst terrain, which is characterized by springs, caves, losing streams, and sinkholes. Additionally the county is comprised of 4.38 square miles of total water area. Incorporated jurisdictions within the county include the cities of Crocker, Dixon, Laquey, Richland, St. Robert and Waynesville. The county seat, Waynesville, is located in south central Missouri, approximately 75 miles southwest of the state capital of Jefferson City, approximately 70 miles east and slightly north of Springfield, Mo.

[1] U.S. Census Bureau, 2013-2018 American Community Survey 5-Year Estimates

[2] USDA National Agricultural Statistics Service, 2017 Census of Agriculture County Profile

and approximately 130 miles southwest of St. Louis, Mo. The county is bordered on the north by Miller and Maries counties. On the east side the county is bordered by Phelps County. To the south the county is bordered by Laclede and Texas counties. To the west, the county is bordered by Camden County and Laclede counties.

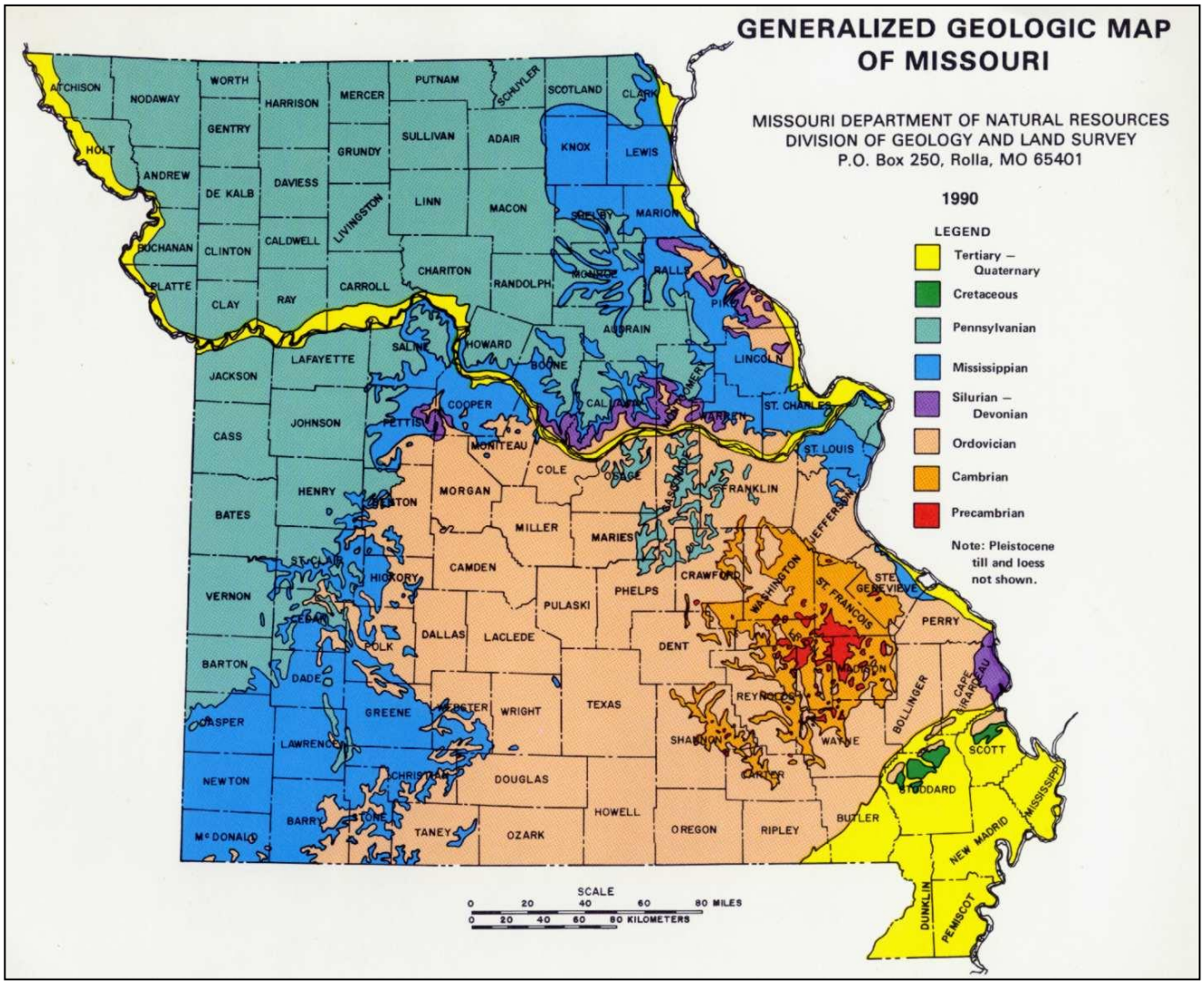
The County is located in the Ozark Plateau – the largest outcrop area of Ordovician-age rocks in the United States[3]. This rock is 505 to 441 million years old and made up primarily of carbonates and thin shales with three distinctive sandstone layers: the Gunter at the base of the column, the red and white Roubidoux which is often used as a building stone and the St. Peter glass sand. This stone is the result of a time period when Missouri was covered by a shallow sea and the stone frequently produces aquatic fossils from that time period[4]. Portions of this formation contain rock that dissolves and fractures over time from rainwater, thus resulting in the karst features found throughout the Ozarks. **Figure 2.2** depicts a generalized geologic map of Missouri and its counties.

The topography in the county is typical of the Ozarks - rugged limestone hills with rocky ridges and bluffs, and deep, narrow valleys. The area has karst terrain which is characterized by springs, caves, losing streams and sinkholes. The maximum relief in the county is approximately 767 feet, with the highest elevation at 1,407 above sea level and the lowest elevation at 640 feet above sea level.

[3] http://geology.about.com/library/bl/maps/blmissourimap.htm

[4] http://members.socket.net/~joschaper/ordo.html

Figure 2.2. Generalized Geologic Map of Missouri



Pulaski County is comprised of four HUC8 watersheds which include the Big Piney, Lake of the Ozarks, Lower Osage, Upper Gasconade and Lower Gasconade. The Lower Osage River lies on the northern side of the county and includes Tavern Creek, Sugar Creek, Little Maries River and Upper Maries River. The Big Piney watershed is located in the southeast quarter of the county. The Lower Gasconade basin runs northward through the middle of the county. The Lake of the Ozarks watershed takes in a very small area in the northwest corner of the county.

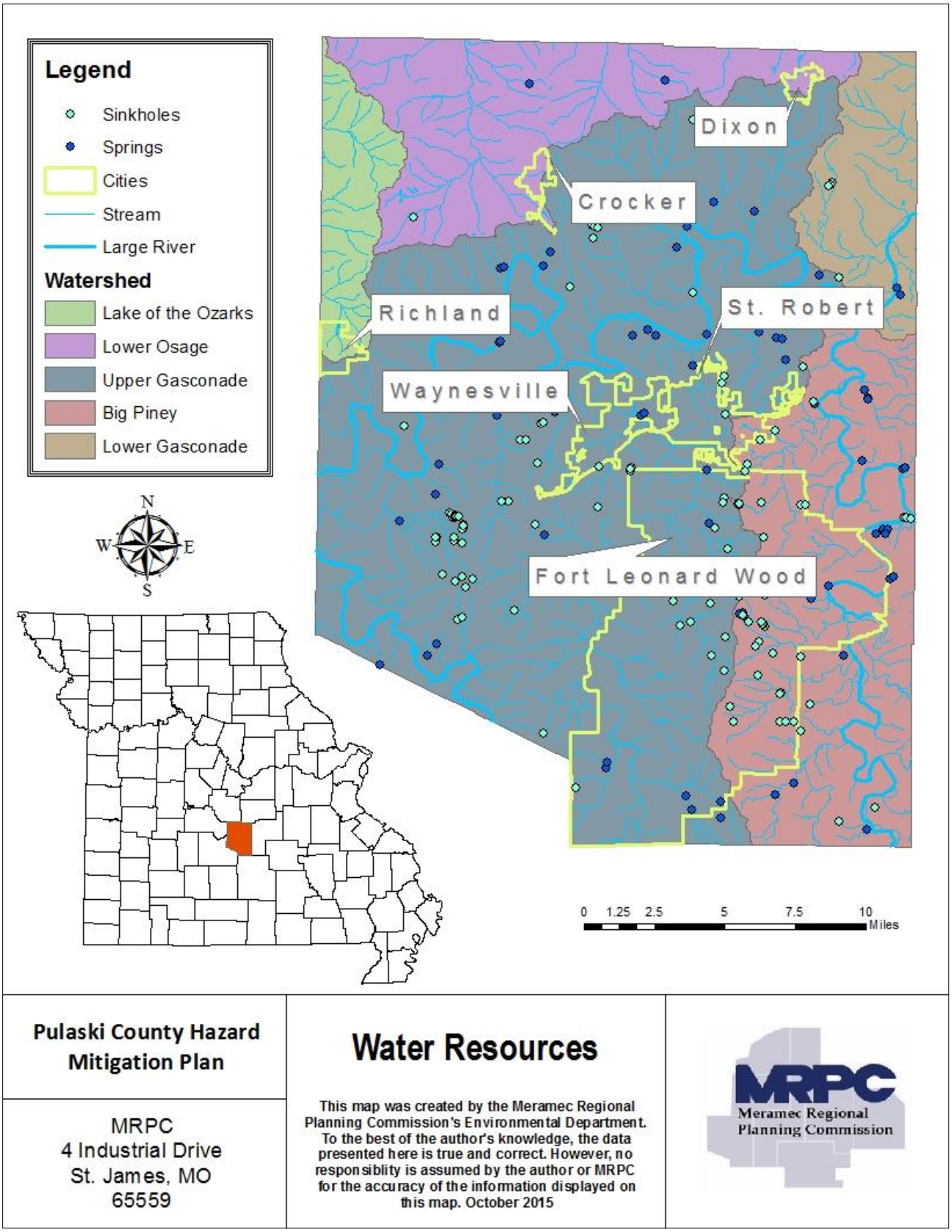
The Lower Osage River watershed is found in central Missouri in the Missouri counties of Osage, Pulaski, Cole, Pulaski, Miller, Camden, Morgan, Benton, and Hickory and encompasses 2,474 square miles. The Lake of the Ozarks was formed in 1931 in the western half of the East Osage River Basin. This basin lies within a dissected plateau known as the Salem Plateau and is represented by four of Missouri's natural divisions. Karst features are common and soils are generally acidic with moderate to low fertility. Erosion rates are generally low although new housing developments, road construction, intensive confinement of livestock and overgrazing have denuded land causing locally-increased erosion and sediment pollution. Truman Dam and Bagnell Dam on the Osage River have significantly impacted the hydrology of the region.

Bagnell Dam has significantly changed the timing of water quantity discharged down the Osage River channel. This change in discharge rates and volume may have negatively affected the fish community found in the lower Osage River and its tributaries.

The Gasconade River watershed is located within the Ozark Plateau of the Interior Ozark Highlands. The river meanders north to northeast through Webster, Texas, Laclede, Pulaski, Dent, Pulaski, Osage, Phelps, and Gasconade counties to join the Missouri River. The Gasconade River is 271 miles long from mouth to headwaters with 263 miles having permanent flow. The Upper and Lower Gasconade River watersheds drain 2,806 square miles. The Upper Gasconade River watershed has an average gradient of 27.6 feet/mile, and the Lower Gasconade River watershed has an average of 3.9 feet/mile. A number of springs within the middle Gasconade River portions are due to the karst geology of the Roubidoux and Gasconade Dolomite Formation and losing stream segments. The karst topography causes losing portions in the Osage Fork, Roubidoux, North Cobb, Little Piney, Spring, and Mill creeks, and Gasconade River. The entire Gasconade River watershed is reported to have 76 springs and the largest concentration of big springs in the state.

During the last 100 years, stream channels in the Ozarks have become wider and shallower and deep-water fish habitat has been lost. Historical data indicate that channel disturbances have resulted most directly from clearing of vegetation along stream channels, which decreases bank strength. Historical and stratigraphic data show that after 1830, Ozarks streams responded to land-use changes by depositing more gravel and less muddy sediment, compared to pre-settlement conditions. Because less muddy sediment is being deposited on flood plains, many stream banks now lack cohesive sediments, and, therefore, no longer support steep banks. Land use statistics indicate that the present trend in the rural Ozarks is toward increased populations of cattle and increased grazing density; this trend has the potential to continue the historical stream-channel disturbance by increasing storm-water runoff and sediment supply.

Figure 2.3. Pulaski County Watershed/Water Resources



Physiographic features, such as river basins and watersheds, play an important role in the development of any given area. Practical planning and engineering methods take advantage of the topography in planning and designing sewer and water facilities. The individual watersheds should form the basis for sewer and water districts, while several contiguous watersheds within the same drainage basin may be combined to form a sewer or water district.

2.1.3 Climate

Snow occurs between November and April, both inclusive, but most of the snow falls in December, January and February. An average of about 14 inches of snow occurs annually in the Meramec Region. It is unusual for snow to stay on the ground for more than a week or two before it melts. Winter precipitation usually is in the form of rain, snow or both. Conditions sometimes borderline between rain and snow, and in these situations freezing drizzle or freezing rain occurs. Spring, summer and early fall precipitation comes largely in the form of showers or thunderstorms. Thunderstorms are most frequent from April to July. The average annual precipitation is 45.82 inches, which occurs on the average of less than 100 days per year. About half of these will be days with thunderstorms.

Because of its inland location, Missouri and Pulaski County are subject to frequent changes in temperature. The average annual temperature is 53.9°F. The average annual high temperature is 65.8°F with the average annual low at 42°F. The average high and low in January is 44°F and 19°F, respectively. In July the average high and low are 89°F and 65°F, respectively. A high temperature of 115 degrees has been observed in the county.

While winters are cold and summers are hot, prolonged periods of very hot weather are unusual. Occasional periods of mild, above freezing temperatures are noted almost every winter. Conversely, during the peak of the summer season occasional periods of dry, cool weather break up stretches of hot, humid weather. About half of the days in July and August will have temperatures of 90°F or above, but it is not unusual for the temperature to drop into the 50s by the evening. In winter, there is an average of about 100 days with temperatures below 32°F. Temperatures below 0°F are infrequent with only about three days per year reaching this low temperature. The first frost occurs in mid-October, and the last frost occurs about mid-April.

2.1.4 Population/Demographics

Table 2.4 provides population/demographic data for Pulaski County between 2010 and 2018 by jurisdiction. The unincorporated area of Pulaski County was determined by subtracting the populations of the incorporated areas from the overall county population.

Table 2.4. Pulaski County Population 2010-2018 by Jurisdiction

Jurisdiction	2010 Population	2018 Population	2010-2018 # Change	2010-2018 % Change
Unincorporated Pulaski County	38,586	37,259	-1,327	-3.44
Crocker	1,110	1,152	42	3.78
Dixon	1,549	1,256	-293	-18.92

Jurisdiction	2010 Population	2018 Population	2010-2018 # Change	2010-2018 % Change
Richland	1,863	1,895	32	1.72
St. Robert	4,340	5,767	1,427	32.8
Waynesville	4,826	5,262	436	9.03

Source: U.S. Census Bureau, Census 2010; U.S. Bureau of the Census, 2014-2018 5-Year American Community Survey;

Table 2.5 provides information in regards to the percent of individuals under the age of 5, and over 65 for the county, State, and Nation. In addition, average household size is illustrated in **Table 2.6** including figures for Pulaski County, Missouri, and the U.S. In 2018 there were an estimated 15,026 households within the county[5].

Table 2.5. Percent of Individuals Under the Age of 5, and Over 65 for County, State, and Nation (2018)

Location	% Under Age of 5	% Over Age of 65
Pulaski County	6.8	8.3
Missouri	6.1	16.1
United States	6.1	15.2

Source: U.S. Census Bureau, 2013-2018 American Community Survey 5-Year Estimates

Table 2.6. 2018 Average Household Size for County, State, and Nation

Location	Average Household Size
Pulaski County	2.885
Missouri	2.42
United States	2.6

Source: U.S. Census Bureau, 2013-2018 American Community Survey 5-Year Estimates

Social Vulnerability Index (SoVI ®)

The University of South Carolina developed the Social Vulnerability Index to evaluate and rank the ability to respond to, cope with, recover from, and adapt to natural disasters. The index synthesizes 30 socioeconomic variables which are primarily derived from the United States Census Bureau. **Table 2.7** depicts the Social Vulnerability Index for Pulaski County along with its national percentile.

Table 2.7. Social Vulnerability Index (SoVI ®)

State	County	SoVI Score (10 - 14)	National Percentile (10 - 14)
Missouri	Pulaski County	(-)5.28000021	2.9%

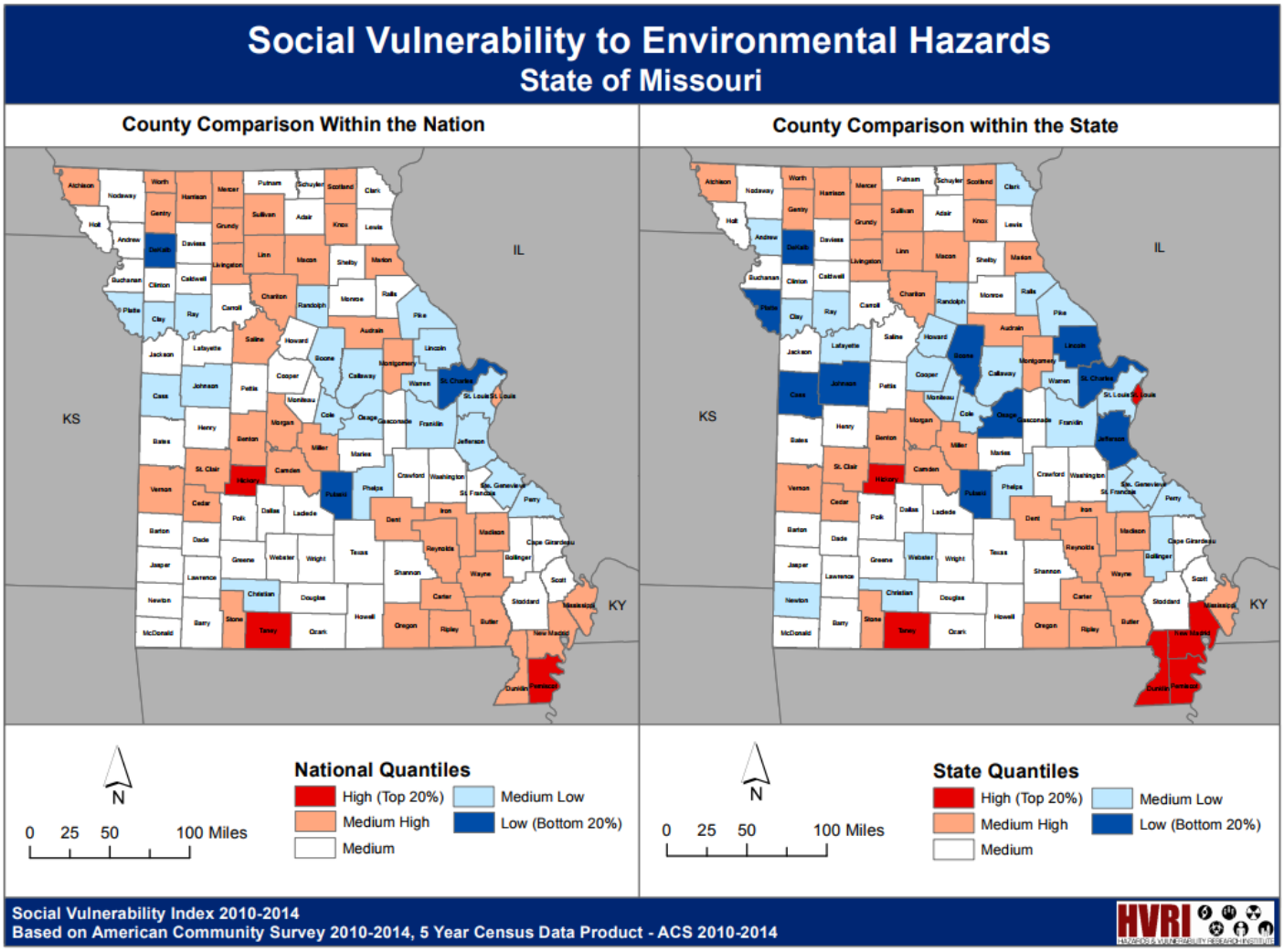
Source: http://artsandsciences.sc.edu/geog/hvri/sovi-data

The analysis of 30 socioeconomic variables includes the standardization of data, and reduction of variables into a condensed set of statistically optimized components; positive component loadings (+) are linked with amplified vulnerability, and negative component loadings (-) are linked with

[5] U.S. Census Bureau, 2013-2018 5-Year American Community Survey

diminished vulnerability. Scores are represented as a numeric value, but have no inherent mathematical properties. To simplify the metrics of the SoVI ® Score, a negative number illustrates a county's resiliency to hazard events, and a positive number illustrates a decrease in resiliency[6]. Pulaski County's SoVI ® Score illustrates a diminished vulnerability to cope with natural disasters. Additionally, Pulaski County is ranked 2.9 percent nationally, for counties most vulnerable to environmental hazards. **Figure 2.4** depicts Missouri's SoVI ® to environmental hazards between 2010 and 2014. Furthermore, **0** depicts the Nation's SoVI ® to environmental hazards between 2010 and 2014.

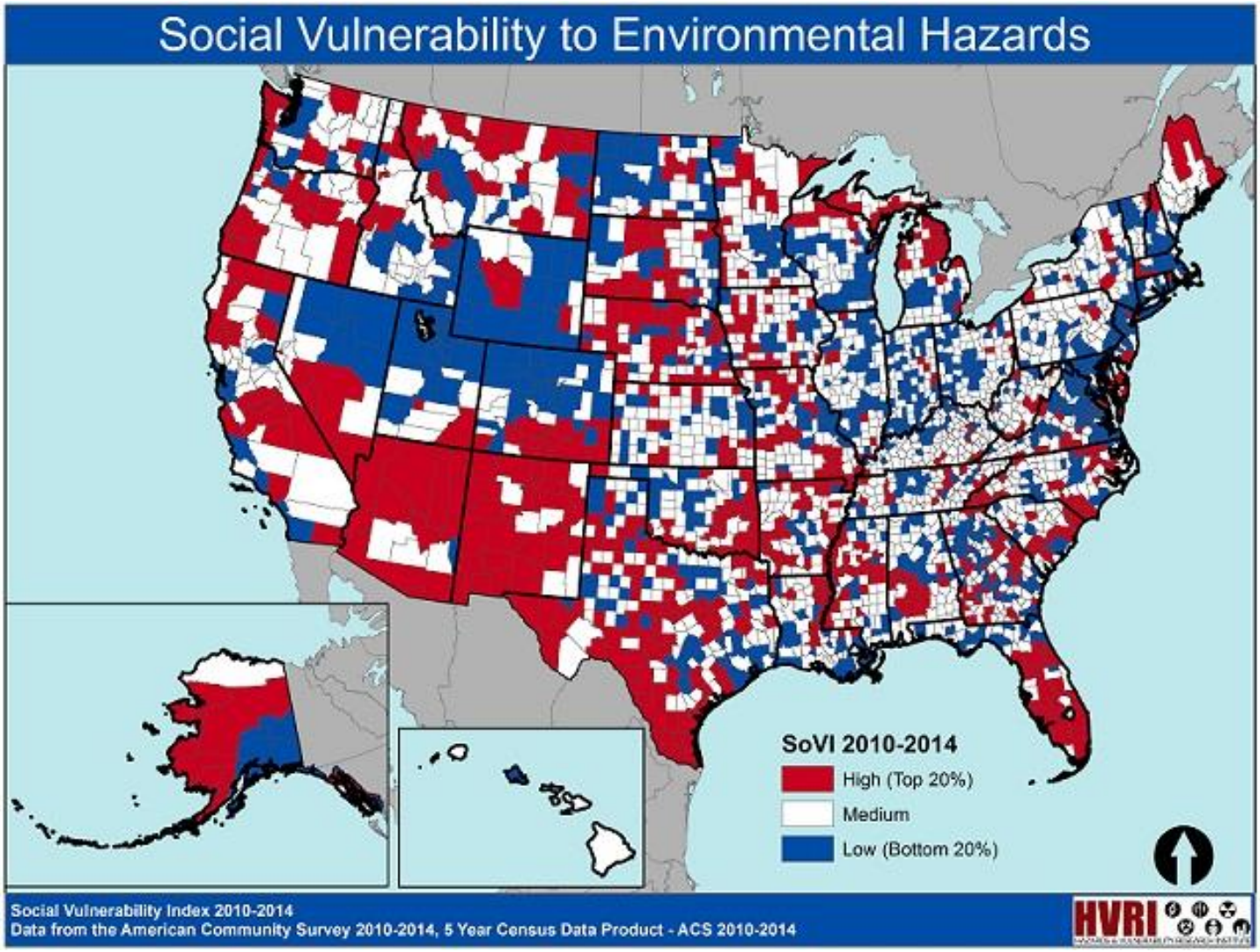
Figure 2.4. 2010 – 2014 Missouri Social Vulnerability to Environmental Hazards (SoVI ®)



Source: http://artsandsciences.sc.edu/geog/hvri/sites/sc.edu.geog.hvri/files/attachments/MO_1014.pdf

[6] http://webra.cas.sc.edu/hvri/products/sovifaq.aspx

Figure 2.5. 2010 – 2014 U.S. Social Vulnerability to Environmental Hazards (SoVI ®)



Source: http://artsandsciences.sc.edu/geog/hvri/sovi%C2%AE-0

Table 2.8 provides additional demographic and economic indicators for Pulaski County.

Table 2.8. 2018 Unemployment, Poverty, Education, and Language Percentage Demographics, Pulaski County, Missouri

Jurisdiction	% in Labor Force	% of Population Unemployed	% of Families Below the Poverty Level	High School Diploma ONLY, ages 25+ (%)	Bachelor's degree or higher, ages 25+ (%)	% of population (language spoken at home other than English
Pulaski County	70.2	3.7	11.2	27.6	25.9	10.3
Crocker	51.1	2.7	18.8	38.6	18.6	5.7
Dixon	45.6	4.0	8.9	36.5	7.0	1.3

Jurisdiction	% in Labor Force	% of Population Unemployed	% of Families Below the Poverty Level	High School Diploma ONLY, ages 25+ (%)	Bachelor's degree or higher, ages 25+ (%)	% of population (language spoken at home other than English
Richland	51.9	5.3	22.4	45.3	5.4	1.9
St. Robert	61.2	1.2	17.1	17.7	33	9.1
Waynesville	58.5	6.3	26.1	35.1	30.4	5.5

Source: U.S. Census Bureau, 2014-2018 American Community Survey, 5-Year American Community Survey

2.1.5 History

Pulaski County is named after the American Revolutionary hero, Polish General Casimir Pulaski and is part of a portion of land ceded by the Osage Indians in 1808. The area was first settled by southern pioneers, drawn by the springs, woodlands, caves and Gasconade and Big Piney Rivers. The founders of the first settlement are now known only as Johnson, Cullen and Duffe, immigrants from Mississippi. They located near the Gasconade River at the "Nitre Cave," about five miles west of Waynesville. These early settlers found a superior quality of saltpeter and began manufacturing gunpowder, supplying local hunters and trappers. After the death of Mr. Cullen, Johnson and Duffe moved upriver to a large spring running into the Gasconade River. They built a large mill, later known as Bartlett Springs Mill.

Pulaski County was organized in Missouri by the Territorial Legislature on December 15, 1818. The boundaries of the county were not specified at that time and were not fully defined until 1859. The original boundaries included no part of present-day Pulaski County. Instead the original boundaries encompassed much of what is currently Gasconade County. The county went through a number of boundary changes between 1818 and 1859 when its current boundaries were finally established. The county was formally recognized and established by the state legislature in 1832[7]. In 1843, the Legislature passed an act locating the county seat in Waynesville[8]. The first courts met in local private homes. In 1837, William Moore donated an acre of land and a two-story log cabin was erected to serve as the courthouse. Three years later it was replaced by a two-story brick courthouse[9].

The Waynesville area was the site of some action during the civil war. Many local residents immigrated from Kentucky, Tennessee and North Carolina and had strong sympathies for the Southern Cause.

Colonel Sigel was the brother of General Franz Sigel, who occupied the nearby city of Rolla during the war. Although the Pulaski County courthouse was badly damaged during the Civil War by shot and shells, the courthouse continued to be used until 1872 when it was deemed beyond repair and unsafe for the storage of public records. In 1872-73 another two-story, brick building was constructed on part of the original courthouse foundation. Fire destroyed this building along with most of the county's records on June 13, 1903. The courthouse was rebuilt in March 1904 and this building was designated as a state historic site in 1979[10].

[7] Meramec Regional Planning Commission Comprehensive Economic Development Strategy, 2007

[8] Pulaski County History, Pulaski County Tourism Bureau.

[9] Genealogy/Historical Society of Pulaski County.

[10] Pulaski County History, Pulaski County Tourism Bureau.

Waynesville, named after another Revolutionary War hero, “Mad Anthony” Wayne, was established in 1843 when William Moore deeded 25 acres of land for the establishment of the county seat. The town was located on the St. Louis-Springfield Road and a regular stop on the stagecoach route. The Old Stagecoach Stop is listed on the National Register of Historical Places and is located on the city square, adjacent to the courthouse. When the railroads were constructed further north, other communities sprang up along the new transportation route and challenged Waynesville as the county’s center of commerce. But Waynesville’s fortunes improved again with the construction of Route 66, the development of Fort Leonard Wood and eventually the building of Interstate 44[11].

Several communities in the region were developed in conjunction with the building of the railroad across northern Pulaski County. The City of Crocker formed around a railroad depot built by the St. Louis-San Francisco Railway Company in the late 1860’s. The cities of Richland and Dixon were both laid out by a railroad surveyor by the name of Milton Santee on property owned by the railroad. A railroad depot was constructed in Richland and in 1870; a private academy called the Richland Institute was established in that community[12].

The youngest community in Pulaski County is St. Robert, which was established after the development of Fort Leonard Wood. The area now occupied by St. Robert was long known as Gospel Ridge until the city was incorporated in 1953 and named after the local Catholic Church – Saint Robert Bellarmine. St. Robert started out as a business community that provided entertainment and services for troops stationed at Fort Leonard Wood. It has since grown into a progressive, thriving community[13].

Fort Leonard Wood is not only a military installation, but a driving economic force in Pulaski and surrounding counties. The base was established in December 1940 as a training camp. The construction of the base brought 32,000 construction workers into the area. More than 600 buildings, 300 miles of road and a 14-mile railroad spur were built in six months. More than 300,000 soldiers were trained at the base between 1941 and 1946. The fort was deactivated at the close of the war in 1946 and lay dormant for four years until the Korean conflict revived the need for military training bases. The fort was reactivated in August 1950. Over the years the training focus of the base has shifted from time to time. Currently the fort provides basic training as well as advanced engineer training, specialist training, leadership school, chemical warfare training and military police training. A good portion of the commerce in the area is directed to supporting the military base and the soldiers who are stationed there. There is also a sizeable population of military retirees in the area[14].

2.1.6 Occupations

Table 2.9 provides occupation statistics for the incorporated jurisdictions and incorporated county.

[11] Ibid
[12] Ibid
[13] Ibid
[14] http://nasas-home.org/lake/lw_history.html

Table 2.9. Occupation Statistics, Pulaski County, Missouri

Place	Management, Business, Science, and Arts Occupations	Service Occupations	Sales and Office Occupations	Natural Resources, Construction, and Maintenance Occupations	Production, Transportation, and Material Moving Occupations
Pulaski County	5,397	3,621	3,412	1,326	2,601
Crocker	117	85	88	31	78
Dixon	120	79	56	29	107
Richland	125	204	94	156	148
St. Robert	836	530	634	138	93
Waynesville	734	388	43	135	420

Source: U.S. Census, 2014-2017 American Community Survey, 5-year Estimates.

2.1.7 Agriculture

Due to the rural nature of the area, agriculture and timber are significant factors in the local economy. According to the 2012 Census of Agriculture, the number of farms in the County was 520 encompassing 112,495 total acres[15]. In addition, the average farm was 216 acres. According to the 2017 Census of Agriculture, Pulaski County had fallen to 502 farms encompassing 111,469 acres, with an average farm size of 222 acres[16]. Furthermore, there are only approximately 6 farms with 1,000 or more acres in the County. Due to the rugged nature of the region, row crop farming is for the most part limited to the river valleys. In 2017, 20,377 acres of cropland were harvested, with forage (hay, haylage, grass silage, and greenchop) being the top crop in the County. Moreover, 21,273 cattle and calves were raised[17]. The average sale per farm was $54,128. Lastly, the total number of hired workers in the County was 174[18] individuals comprising 0.96%[19] of the total workforce.

The Ozarks region of Missouri is the focal point of several converging ranges of plant associations. Eastern hardwoods, southern pines and western prairies and the wildlife each supports, all reach the outward limits of their range in this area. As a result, various types of forest lands and animal habitats co-exist within a limited area. Several sawmills operate in the area and the large amount of National Forest Lands in the region also contribute to the importance of timber production and logging to the local economy.

2.1.8 FEMA Hazard Mitigation Assistance Grants in Planning Area

FEMA's Hazard Mitigation Assistance (HMA) grant program provides funding for mitigation activities which have the potential to reduce disaster losses and protect life and property from future disaster damages[20]. Previous FEMA HMA Grants issued in the planning area can be found in **Table 2.10**.

[15] 2002 Census of Agriculture, USDA, National Agriculture Statistics Service
[16] Source: 2017 Census of Agriculture – County Data, USDA, National Agriculture Statistics Service
[17] 2017 Census of Agriculture, Missouri Farm Commodity Sales, USDA, National Agriculture Statistics Service
[18] http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Missouri/st29_2_007_007.pdf
[19] U.S. Census Bureau, 2013-2018 American Community Survey
[20] https://www.fema.gov/media-library/assets/documents/103279

Table 2.10. FEMA HMA Grants in County from 1993-2019

Project Type	Sub applicant	Award Date	Project Total ($)
200.1: Acquisition of Property	Waynesville	12/01/1993	505,225
600.1: Warning System	SHO-ME Power Corp.	02/06/2002	57,576
91.1: Local Multi-Hazard Mitigation Plan	Pulaski County	04/20/2009	93,546
206.2: Safe room	Crocker R-II School District	05/09/2011	951,807
206.2: Safe room	Waynesville R-VI School District	05/09/2011	2,051,608
402.1: Infrastructure Protective Measures	Waynesville	09/06/2013	279,740
206.2: Safe Room	Waynesville R-VI School District	09/06/2013	1,525,000
400.1: Utility Protective Measures	Gascosage Electric Cooperative/Pulaski County	09/18/2018	349,056
Total			5,813,558

Source: Missouri State Emergency Management Agency, https:/www.fema.gov/openfema-dataset-hazard-mitigation-grants-v1

2.1.9 FEMA Public Assistance (PA) Grants in Planning Area

The purpose of the Public Assistance (PA) Grant Program is to support communities' recovery from major disasters by providing them with grant assistance for debris removal, life-saving emergency protective measures, and restoring public infrastructure. Local governments, states, tribes, territories and certain private nonprofit organizations are eligible to apply. Public Assistance is FEMA's largest grant program. **Table 2.11** below gives information about all Public Assistance Grant for the Planning area. It gives the Declaration number, project type and size, the applicant, and the project total. Total PA grants is $34,457,825.61.

Table 2.11. FEMA PA Grants in Pulaski County from 1999-2019

Disaster Declaration	Project Type	Project Size	Applicant	Project Total
1412	FLOOD GENERATED DEBRIS REMOVAL	Small	Pulaski County	$4,540.80
1412	FLOOD GENERATED ROAD/CULVERT DAMAGES	Small	Pulaski County	$28,999.13
1412	WALKING BRIDGE DAMAGES	Small	City of Crocker	$3,580.00
1412	LIFT STATION DAMAGES	Small	City of Crocker	$7,986.00

1412	FLOOD GENERATED ROAD/DITCH WASHOUTS	Small	Pulaski County	$23,913.74
1412	FLOOD GENERATED ROAD/CULVERT WASHOUTS	Small	Pulaski County	$17,166.37
1412	ROAD/CULVERT WASHOUTS	Small	Pulaski County	$51,897.56
1412	Not Provided	Small	City of St. Robert	$3,694.24
1412	ROAD/CULVERT DAMAGE	Small	City of Dixon	$17,392.72
1412	ROADWAY REPAIR	Small	Pulaski County	$38,400.80
1412	ROAD REPAIR	Large	Pulaski County	$195,360.66
1412	ROAD AND BRIDGE SURFACING	Small	City of Crocker	$19,629.01
1412	ROAD REPAIR	Small	Pulaski County	$41,515.25
1412	PARK REPAIR	Small	City of Waynesville	$3,575.25
1412	ROAD REPAIR	Small	City of Waynesville	$12,960.88
1412	ROAD WASHOUT	Small	Pulaski County	$49,096.65
1412	ROAD DAMAGE	Small	Pulaski County	$47,508.74
1412	FLOODED ROAD REPAIR	Small	Pulaski County	$32,540.40
1412	ROAD DAMAGE	Small	Pulaski County	$22,121.88
1412	ROAD DAMAGE	Small	Pulaski County	$22,586.52
1412	ROAD REPAIR	Small	Pulaski County	$13,230.93
1412	ROAD REPAIR	Small	Pulaski County	$31,412.62
1412	ROAD DAMAGE	Small	Pulaski County	$40,640.87
1412	ROAD DAMAGE	Small	Pulaski County	$6,926.89
1412	ROAD DAMAGE	Small	Pulaski County	$11,219.88
1412	ROAD DAMAGE	Small	Pulaski County	$32,482.61
1463	DONATED RESOURCES	Small	Pulaski County	$4,129.00
1463	DEBRIS REMOVAL	Small	Pulaski County	$45,653.78
1676	DEBRIS REMOVAL	Small	City of Crocker	$29,210.00
1676	EMERGENCY PROTECTIVE MEASURES	Small	City of Crocker	$19,458.13
1676	PUBLIC UTILITIES	Small	Pulaski County Sewer District #1	$1,380.44
1676	DEBRIS REMOVAL	Large	City of Richland	$196,027.31
1676	DEBRIS REMOVAL	Large	Pulaski County	$298,607.65
1676	PUBLIC UTILITIES	Large	City of Waynesville	$176,279.96
1676	PUBLIC UTILITIES	Large	City of St. Robert	$239,018.77
1676	ROADS AND BRIDGES	Small	Pulaski County	$1,457.96
1676	DEBRIS REMOVAL	Small	City of St. Robert	$16,740.00
1676	EMERGENCY PROTECTIVE MEASURES	Small	Crocker Rural Fire District	$3,114.80
1676	EMERGENCY PROTECTIVE MEASURES	Small	City of Dixon	$12,540.85
1676	EMERGENCY PROTECTIVE MEASURES	Small	City of Waynesville	$24,792.01
1676	EMERGENCY PROTECTIVE MEASURES	Small	Waynesville Rural Fire District	$3,049.78
1676	PUBLIC UTILITIES	Small	Public Water Supply District #3	$1,000.00

1676	PUBLIC UTILITIES	Small	City of Crocker	$1,000.00
1676	EMERGENCY PROTECTIVE MEASURES	Small	Tri County Fire & Rescue Association	$2,626.70
1676	PUBLIC UTILITIES	Small	City of Richland	$6,181.46
1676	PUBLIC BUILDINGS AND FACILITIES	Small	Pulaski County	$821.37
1676	DEBRIS REMOVAL	Small	City of Waynesville	$39,574.15
1676	EMERGENCY PROTECTIVE MEASURES	Large	Pulaski County	$67,987.14
1676	EMERGENCY PROTECTIVE MEASURES	Small	City of Richland	$20,969.79
1676	EMERGENCY PROTECTIVE MEASURES	Small	Waynesville R-VI School District	$8,731.82
1676	EMERGENCY PROTECTIVE MEASURES	Small	City of Richland	$2,058.96
1676	DONATED RESOURCES	Small	City of Richland	$29,167.72
1676	DONATED RESOURCES	Small	Tri County Fire & Rescue Association	$875.57
1676	EMERGENCY PROTECTIVE MEASURES	Small	City of St. Robert	$14,303.03
1676	DEBRIS REMOVAL	Small	City of Dixon	$59,111.63
1676	PUBLIC UTILITIES	Large	City of Richland	$350,344.02
1676	DONATED RESOURCES	Small	Waynesville Rural Fire District	$1,016.59
1676	DEBRIS REMOVAL	Small	City of Richland	$7,000.00
1676	DONATED RESOURCES	Small	City of Dixon	$4,710.64
1676	DONATED RESOURCES	Small	Waynesville R-VI School District	$1,379.45
1676	DONATED RESOURCES	Small	Crocker Rural Fire District	$1,038.27
1749	PA PILOT-DEBRIS REMOVAL	Small	City of Crocker	$1,800.00
1749	PA-PILOT DEBRIS REMOVAL	Small	City of Dixon	$3,516.00
1749	ROAD/CULVERT WASHOUT-DAMAGES	Small	Pulaski County	$22,098.70
1749	ROAD/LOW WATER CROSSING WASHOUT	Small	Pulaski County	$29,210.91
1749	ROAD/CULVERT WASHOUT	Small	Pulaski County	$12,045.33
1749	ROAD WASHOUT	Small	Pulaski County	$17,428.20
1749	ROAD / CULVERT WASHOUT - REVISED 6/4/08	Small	City of Richland	$29,582.25
1749	PARK ROAD / CULVERTS	Small	City of Richland	$8,733.97
1749	PA PILOT-DEBRIS REMOVAL	Small	City of Dixon	$9,186.90
1749	ROADS AND BRIDGES- REVISED 6/11/08	Small	City of Dixon	$13,019.76
1749	ROAD WASHOUT / CHAIN LINK WASHOUT	Small	City of Waynesville	$27,309.53
1749	ROAD / CULVERT WASHOUTS	Small	City of Dixon	$9,313.60
1749	ROAD WASHOUT	Small	City of Dixon	$345.73
1749	ROAD / CULVERT WASHOUT	Small	City of Dixon	$2,565.57
1749	ROADS WASHOUT	Small	City of Dixon	$3,320.48
1749	ROAD / DITCH WASHOUT	Small	City of Dixon	$2,117.03
1749	ROAD WASHOUT / CULVERT DAMAGE	Small	City of Crocker	$3,992.00
1749	ROAD WASHOUTS	Small	City of Crocker	$3,602.05

1749	ROAD WASHOUT	Small	City of Crocker	$1,254.25
1749	PARK ROAD WASHOUT	Small	City of Crocker	$1,190.92
1749	ROAD / CULVERT / DITCH WASHOUT	Small	City of Crocker	$10,413.36
1749	ROAD & DITCH WASHOUT	Small	City of Crocker	$12,947.57
1749	ROAD, DITCH & CULVERT WASHOUT	Small	City of Crocker	$2,767.47
1749	ROAD & DITCH WASHOUT	Small	City of Crocker	$6,208.62
1749	ROAD WASHOUT	Small	Pulaski County	$53,934.14
1749	ROAD / CULVERT WASHOUT	Small	City of Crocker	$5,271.62
1749	ROAD WASHOUT	Small	Pulaski County	$16,772.10
1749	ROAD WASHOUT	Small	Pulaski County	$29,121.83
1749	ROAD / CULVERT WASHOUT	Small	Pulaski County	$36,375.94
1749	ROAD EROSION	Small	Pulaski County	$17,995.35
1749	ROAD WASHOUT	Small	Pulaski County	$59,431.08
1749	ROAD / CULVERT WASHOUTS	Small	Pulaski County	$19,213.23
1749	ROAD & CULVERT WASHOUT	Small	Pulaski County	$33,904.97
1749	ROADS & CULVERTS WASHOUTS	Small	Pulaski County	$32,005.21
1749	ROAD WASHOUT	Small	Pulaski County	$37,816.86
1749	ROADS & CULVERT WASHOUTS	Small	Pulaski County	$10,176.00
1749	ROAD WASHOUT	Small	Pulaski County	$46,868.69
1749	ROADS & CULVERT WASHOUTS	Small	City of Waynesville	$42,267.23
1749	LOW WATER CROSSING & CULVERT WASHOUT	Small	Pulaski County	$39,190.00
1749	LOW WATER CROSSING & CULVERT WASHOUT	Small	Pulaski County	$14,672.00
1749	PARK BUILDING REPAIR	Small	City of Waynesville	$24,573.54
1749	WASTE WATER TREATMENT PLANT DAMAGES	Small	City of Waynesville	$50,779.63
1749	PUBLIC BUILDINGS REPAIR	Small	City of Waynesville	$7,559.32
1749	PA PILOT - DEBRIS REMOVAL	Small	City of Waynesville	$7,769.02
1749	INTERIOR BUILDING DAMAGES - REVISED 9/15/08	Small	City of Waynesville	$23,153.69
1847	LMPC-03 / Walnut Road and Westgate Road	Small	Pulaski County	$56,783.69
1847	LMPC-02 / County Roads	Small	Pulaski County	$13,785.73
1847	DWCP001 - County Roads	Small	Pulaski County	$2,528.43
1847	DWCP002-County Roads	Small	Pulaski County	$8,594.04
1847	LMPC-04 / Pulaski County Gravel Roads	Small	Pulaski County	$4,959.92
1847	DWCP004 / Gravel Roads	Small	Pulaski County	$9,792.51
1847	DWCP005 / Gravel Roads	Small	Pulaski County	$8,630.62
1847	DWCP003 / Bridge	Small	Pulaski County	$4,188.01
1847	DWCP009 / Gravel Roads	Small	Pulaski County	$38,472.70
1847	DWCP007 / Gravel Roads	Small	Pulaski County	$5,545.12
1847	DWCP010 / Gravel Roads	Small	Pulaski County	$28,371.09
1847	DWCP008-Gravel Roads	Small	Pulaski County	$8,951.24
1847	DWCP006 - Gravel Roads	Small	Pulaski County	$12,625.89

1847	DWAP011 / Debris	Small	Pulaski County	$2,586.18
1847	DWCP012-Gravel Roads & Bridges	Small	Pulaski County	$36,002.13
1847	DWCP014/ Box Culvert	Small	Pulaski County	$21,991.15
1847	DWCP015 / County Roads	Small	Pulaski County	$39,425.53
1847	DWCP013 / County Roads	Small	Pulaski County	$15,133.53
1961	PUDW02-Emergency Protective Messures'Snow Removal	Small	City of St. Robert	$19,069.22
1961	PUCRB07 - 48 hour Snow Removal	Small	Crocker R-II School District	$1,116.35
1961	PUDWB02 - Emergency Protective Measures	Small	City of Waynesville	$2,211.61
1961	PUDWB01 - Emergency Protective Measures'Snow Removal	Small	City of Waynesville	$13,520.38
1961	PUCRB08 - 48 Hour Emergency Snow Removal	Small	City of Dixon	$7,340.88
1961	PUMB-03 - Emergency Snow Removal	Small	Waynesville R-VI School District	$14,533.27
1961	PUDWB05 - 48hr Snow Removal	Small	City of Richland	$5,407.44
1961	PUMB-04 - Emergency Snow Removal	Small	Pulaski County	$18,352.68
1961	PUMB-05 - Emergency Snow Removal	Small	Pulaski County	$25,823.57
4144	PCWF02B - Donated Resources EPM	Small	Waynesville Rural Fire District	$23,908.58
4144	PCCC01B -Protect Emergency Measures	Small	City of Crocker	$3,031.64
4144	PCWF01B - Emergency Protective Measures	Small	Waynesville Rural Fire District	$25,358.70
4144	WCWC01B-Waynesville Catagory B	Small	City of Waynesville	$5,867.49
4144	PCPC02C - Roads and Bridges	Small	Pulaski County	$0.00
4144	PCPC01C - ROADS & BRIDGES	Small	Pulaski County	$39,466.34
4144	PCPC01B Emergency Protective Measures	Small	Pulaski County Sewer District #1	$6,975.50
4144	PCWC03B Donated Resources	Small	City of Waynesville	$7,988.70
4144	PCPC06C Roads and Bridges	Large	Pulaski County	$448,004.77
4144	PCSR03F - Saint Robert Sewer Treatment Facility	Small	City of St. Robert	$9,052.90
4144	PCWC02A Debris Removal	Small	City of Waynesville	$42,715.67
4144	SRAS02E - Public Animal Shelter Contents	Small	City of St. Robert	$2,427.48
4144	SRAS01B- Donated Resources	Small	City of St. Robert	$2,462.95
4144	PCPC01A - Debris Removal	Small	Pulaski County	$19,380.10
4144	PCPC05C - Pulaski Culverts	Small	Pulaski County	$35,539.58
4144	PCPC07C Roads and Bridges	Large	Pulaski County	$210,797.86
4144	PCCW01E Waynesville Vehicle and Equipment	Small	City of Waynesville	$2,011.67
4144	PCCW02E Waynesville Street Department Building Contents	Small	City of Waynesville	$1,539.72
4144	PCPC10C - Pulaski County - West Side	Large	Pulaski County	$166,775.42

4144	PCPC11C - Pulaski - East Side - Work Completed	Small	Pulaski County	$60,318.08
4144	SRPC05G - Bosa Park	Small	City of St. Robert	$6,294.80
4144	Pulaski County East Roads PCPC13C	Large	Pulaski County	$449,682.61
4144	PCCW05E - Shower House	Large	City of Waynesville	$43,152.03
4144	PCWC02G Waynesville Baseball field	Small	City of Waynesville	$9,940.00
4144	PCPC02F Pulaski County Sewer District NO. 1	Small	Pulaski County Sewer District #1	$50,423.85
4144	Pulaski County East 4 PCPC09C	Large	Pulaski County	$199,219.74
4144	PCPC15C-Pulaski Road and Bridges East 6	Large	Pulaski County	$64,989.08
4144	PCCW06F RV Park 25 Electrical Pedistal Hookup Units	Small	City of Waynesville	$12,384.00
4144	PCPC12C - Pulaski County Culverts	Small	Pulaski County	$35,981.06
4144	PCPC16C - Pulaski County East Side Culverts	Small	Pulaski County	$34,995.38
4144	PCPC08C - Roads and Bridges	Small	Pulaski County	$33,747.38
4144	PCCO04C - Whittleburg Heights	Small	City of Crocker	$30,000.00
4144	SRAS05B SHELTER	Small	City of St. Robert	$4,400.00
4144	PCPC22C Pulaski County East Side Culverts	Small	Pulaski County	$32,536.42
4144	PCPC26C Pulaski Culverts	Small	Pulaski County	$19,715.50
4144	PCPC14C - Roads and Bridges	Small	Pulaski County	$39,141.93
4144	PCPC01E Pulaski County Patrol Car	Small	Pulaski County	$3,276.07
4144	PCCW03E Public Works Building	Large	City of Waynesville	$153,560.59
4144	CWCG05 Waynesville Parks	Small	City of Waynesville	$21,641.50
4144	PCPC24C West Side Culverts	Small	Pulaski County	$28,873.94
4144	PCPC20C - Pulaski County West Side Culverts	Small	Pulaski County	$33,305.42
4144	Pulaski County East Road and Bridge PCPC17C	Large	Pulaski County	$72,596.04
4144	PCPC30C Pulaski Roads and Bridges	Large	Pulaski County	$842,002.50
4144	PCPC23C Roads and Bridges West #2	Large	Pulaski County	$334,354.79
4144	SRAS06E-RADIO	Small	City of St. Robert	$1,000.00
4144	PCPC01B Pulaski County Sheriff's Department	Small	Pulaski County	$2,239.13
4144	PCCW02C Asphalt intersection repairs	Large	City of Waynesville	$96,377.48
4144	PCWC03A - 75% Debris Removal (Rocks & Timber)	Small	City of Waynesville	$5,272.00
4144	PCPC32C - Pulaski Roads & Bridges	Small	Pulaski County	$66,478.32
4144	PCCW07F - Lift station repair & relocate	Large	City of Waynesville	$102,784.00
4144	PCPC19C - Pulaski County road and bridge east	Large	Pulaski County	$241,874.66
4144	PCCW01F Waynesville Electric Department	Small	City of Waynesville	$39,057.49
4144	PCPC18C - Pulaski County - West Side Culverts	Small	Pulaski County	$35,380.83
4144	PCPC27C - Pulaski Roads + Bridges West 4	Large	Pulaski County	$138,912.08
4144	Pulaski Roads & Bridges West 3 (PCPC25C)	Large	Pulaski County	$246,183.84

4144	Pulaski Roads & Bridges West 5 - PCPC29C	Large	Pulaski County	$454,808.20
4144	PCCC02C- City of Crocker Road Damages	Small	City of Crocker	$66,805.39
4144	PCCW03C - Gravel Roads	Small	City of Waynesville	$29,115.97
4144	PCPC31C - Pulaski Bridges West	Large	Pulaski County	$0.00
4144	PCPC02B - Sheriff Department Donated Resources	Small	Pulaski County	$3,201.84
4144	PCPC28C - Pulaski East Side Roads and Culverts	Large	Pulaski County	$183,620.59
4144	PCPC33C CULVERTS	Large	Pulaski County	$372,899.09
4144	PCPC51C White RD and River Crossings	Large	Pulaski County	$97,196.64
4144	PCPC50C Lafayette RD and River Crossings	Small	Pulaski County	$50,655.10
4144	PCPC53C Low Water Crossing	Small	Pulaski County	$28,660.50
4144	PCPC54C CULVERTS	Small	Pulaski County	$57,495.66
4144	PCPC35C - Pulaski County - West Side	Small	Pulaski County	$46,041.67
4144	PCPC36C ROADS	Small	Pulaski County	$63,408.81
4144	PCPC37C ROADS	Small	Pulaski County	$21,435.24
4144	PCCW07B - Emergency Protective Measures	Small	City of Waynesville	$2,580.43
4144	PCPC55C Smokey Road Bridge Wing Walls	Small	Pulaski County	$57,853.75
4144	PCPC56C - Rose Finch Road wing wall repair	Small	Pulaski County	$60,516.53
4144	PCPC57C - Riddle Road Box Culvert	Small	Pulaski County	$52,754.63
4144	PCPC58C - Brownville Road Box Culvert	Small	Pulaski County	$55,422.68
4144	PCPC59C - Broadway Road Box Culvert	Small	Pulaski County	$58,847.25
4144	PCPC60C - Blue Jay Road South Box Culvert	Small	Pulaski County	$61,808.67
4144	PCPC61C - Blue Jay Road North Barrel Pipe Culvert	Large	Pulaski County	$104,877.30
4144	PCCW30E - Wastewater Treatment Facility	Large	City of Waynesville	$51,341.97
4250	169SB03 - Culvert Red Oak Road	Small	Pulaski County	$8,859.64
4250	169SB06A - Debris Slide Hartford Road	Small	Pulaski County	$9,951.30
4250	169SB10A - PAAP Debris Removal	Small	City of Waynesville	$52,387.41
4250	169SB12G - Waynesville Parks	Small	City of Waynesville	$22,777.74
4250	169SB19G - Parks and Recreational	Small	City of St. Robert	$20,823.45
4250	169SB07 - Comet Rd. Box Culvert Wing Wall	Small	Pulaski County	$0.00
4250	169SB08C - Rail Rd Box Culvert	Small	Pulaski County	$52,316.38
4250	169SB15B-EPM for Waste Water Treatment Plant	Large	City of St. Robert	$417,652.23
4250	169SB13F-Wastewater Treatment Plant	Small	City of Waynesville	$1,000.00
4250	169SB05C - County Roads	Large	Pulaski County	$123,321.61
4250	169SB16F - Waste Water Treatment - Contents	Small	City of St. Robert	$9,001.90
4250	Rail Road Emergency/Temporary Repairs	Small	Pulaski County	$4,123.09
4317	CP01344 - Donated Resources	Small	Waynesville Rural Fire District	$14,967.10
4317	CP01757 - Debris - Citywide (0 - 30 days)	Small	City of Waynesville	$15,598.58
4317	CP01738 - Debris - Citywide (31 - 90 days)	Small	City of Waynesville	$9,648.88

4317	ST01340 - Road Repairs	Small	City of Waynesville	$47,285.35
4317	CP01323 - Roads East District	Large	Pulaski County	$156,173.84
4317	CP02160 - Donated Resources	Small	City of Waynesville	$1,712.70
4317	CP01327 - Roads West District	Small	Pulaski County	$104,850.02
4317	CP01337 - Debris - Citywide (91-180 Days)	Small	City of Waynesville	$13,296.15
4317	CP01343 - Emergency Protective Measures	Small	Waynesville Rural Fire District	$23,107.82
4317	ST01342 - Parks & Recreation	Small	City of Waynesville	$43,197.30
4317	CP01321 - Pulaski County	Small	Pulaski County	$7,832.43
4317	ST02140 - Devil's Elbow Bridge Repairs	Large	Pulaski County	$438,730.26
4317	0001366 - Creek Road Low Water Crossings	Large	Pulaski County	$156,420.00
4317	CP01759 - Debris - Countywide (31 - 90 days)	Small	Pulaski County	$1,922.61
4317	CP03502 - Debris Removal PAAP 91 -180 days	Small	Pulaski County	$6,513.28
4317	0001883 - Comet Road Box Culvert	Small	Pulaski County	$105,935.49
4317	0001557 - WWTP - Make Operational	Small	City of St. Robert	$100,376.54
4317	0001341 - Electric Distribution Repairs	Small	City of Waynesville	$93,593.68
4317	0001348 - WWTP - Work To Be Completed	Large	City of St. Robert	$21,987,043.93
4451	120305 - County-Wide Debris Removal	Small	Pulaski County	$8,365.88
4451	120364 - Sunnyside Road Resurfacing	Small	Pulaski County	$5,279.15
4451	120583 - City-wide Debris Removal	Small	City of Waynesville	$5,917.68
4451	120590 - City-Wide Gravel Roads	Small	City of Waynesville	$8,997.14
4451	120592 - Electric Utility Restoration	Small	City of Waynesville	$11,057.70
4451	133429 - Management Costs	Small	City of Waynesville	$738.12
			Total	**$34,457,825.61**

Source: Federal Emergency Management Agency, 11/30/2020

2.2 Jurisdictional Profiles and Mitigation Capabilities

This section will include individual profiles for each participating jurisdiction. It will also include a discussion of previous mitigation initiatives in the planning area. There will be a summary table indicating specific capabilities of each jurisdiction that relate to their ability to implement mitigation opportunities. The unincorporated county is profiled first, followed by the incorporated communities, the special districts, and the public school districts.

2.2.1 Unincorporated Pulaski County

Overview

The jurisdiction of Pulaski County includes all unincorporated areas within the county boundaries. Pulaski County is governed by a three-member County Commission. The Commission is composed of a presiding commissioner, representing all of the county's population who is elected for a four-year term. Two associate commissioners representing roughly half the county's population each, are elected for four-year terms. The commission meets on Mondays and Thursdays of each week. Other elected county officials include the County Clerk, Prosecuting Attorney, Sheriff, Circuit Court Clerk, Recorder of Deeds, Collector of Revenue, Assessor, Treasurer, County Surveyor, Coroner, and Public Administrator.

Pulaski County operates as a third-class county. The county government has the authority to administer county structures, infrastructures, and finances as well as floodplain regulations. Other county officials include a full-time Emergency Management Director, 911 Director, County Health Department Director, Floodplain Administrator, and Road and Bridge Supervisors. The Assessor's office has GIS capabilities.

Technical and Fiscal Resources

The county government has the authority to administer county structures, infrastructure, and finances. Third class counties do not have the authority to enforce building regulations. Pulaski County has staff resources emergency management and transportation. The county has a 9-1-1 central dispatch center with enhanced 9-1-1 capabilities. Additionally, there are no outdoor warning sirens in the county.

There are seven fire departments located in Pulaski County. Those departments include Crocker Rural Fire Protection District, Dixon Rural Fire Protection District, Fort Leonard Wood Fire Department, Hazelgreen Fire Protection District, St. Robert City Fire & Rescue, Tri-County Fire Protection District and Waynesville Rural Fire Protection District. Dixon, Crocker, Hazelgreen, Tri-County and Waynesville fire districts are all tax supported. St. Robert City Fire & Rescue is city operated. The Fort Leonard Wood Fire Department is a Federally supported organization. The county is served by the Pulaski County Sheriff's Department. The county has a 9-1-1 Central Dispatch Center located at 1500 Ousley Road, Waynesville, Mo. The county is served by two ambulance districts – Pulaski County Ambulance District and Dixon Ambulance District. The county is also served by an air ambulance service stationed at the St. Johns Clinic in St. Robert which also serves Phelps, Miller, Maries, Texas and Laclede counties. The county does not currently have a text messaging program to provide alerts to residents. Both water districts in the county own backup generators. All the fire departments in the county have some generator capacity for emergencies.

The county courthouse and jail have generators for backup power.

Fiscal tools or resources that the county could potentially use to help fund mitigation activities include Community Development Block Grants, capital improvements project funding, levy taxes for specific purposes, incur debt through general obligation bonds, and incur debt through special tax bonds.

Existing Plans and Policies

The county has a County Emergency Operations Plan, a Hazard Mitigation Plan, Regional Transportation Plan (MRPC), and a Regional Comprehensive Economic Development Strategy (MRPC). Pulaski County participates in the National Flood Insurance Program.

Other Mitigation Activities

The Office of Emergency Management, local fire departments, Sheriff's Department and the Pulaski County Health Department have conducted public education campaigns to raise awareness and increase preparedness among the county's population. Those programs have included Ready-in-3 emergency preparedness, fire safety, storm preparedness, weather spotter training, heat wave preparedness, dissemination of SEMA brochures and general press releases/social media outreach regarding hazards, preparedness, and mitigation.

Table 2.12. Demographic and Structure Risk Parameters For Unincorporated Pulaski County

Jurisdiction	Total Population	No. of People With a Disability	No. of Non-English Speaking People	No. of People Below Poverty Level	Population Under 5 Yrs.	Population 65 Yrs. and Over	No. of Residences Built Prior to 1939	No. of Mobile Homes
Unincorporated Pulaski County	37,259	8,109	5,049	6,236	2,647	2,507	750	1,241

Source: Source: U.S. Census Bureau, 2014-2018 5-Year American Community Survey, mcdc.missouri.edu/applications/acs/profiles/report.php?period=5&year=2018&g=05000US29169|04000US29|01000US

Table 2.13. Unincorporated Pulaski County Mitigation Capabilities

Capabilities	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
City Emergency Operations Plan	n/a
County Emergency Operations Plan	Yes – 2008
Local Recovery Plan	No
County Recovery Plan	No
City Mitigation Plan	n/a
County Mitigation Plan	Yes - 2015
Debris Management Plan	No
Economic Development Plan	Yes - CEDS - 2018

Capabilities	Status Including Date of Document or Policy
Transportation Plan	Yes – Regional - 2019
Land-use Plan	Yes – in conjunction with Fort Leonard Wood - 2013
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	Yes - 4/19/2010
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	No
Storm Water Ordinance	No
Drainage Ordinance	No
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
Hazard Awareness Program	No
National Flood Insurance Program	Yes – 4/17/85
NFIP Community Rating System (CRS) Participating Community	No
National Weather Service (NWS) Storm Ready	No
FireWise Community Certification	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	n/a
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	Yes - on county roads as necessary.
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (City)	n/a
Hazard Analysis/Risk Assessment (County)	Yes – part of the Hazard Mitigation Plan
Evacuation Route Map	No
Critical Facilities Inventory	Yes - 2016
Vulnerable Population Inventory	No
Land Use Map	Yes - 2013
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	Yes
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Director	Yes

Capabilities	Status Including Date of Document or Policy
NFIP Floodplain Administrator	Yes
Bomb and/or Arson Squad	No
Emergency Response Team	Yes – Regional team in Rolla
Hazardous Materials Expert	Yes – Regional team in Rolla
Local Emergency Planning Committee	No
County Emergency Management Commission	No
Sanitation Department	n/a
Transportation Department	Yes – Road and Bridge
Economic Development Department	No
Housing Department	Yes – Pulaski County PHA
Regional Planning Agencies	Yes - MRPC
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	Yes – Fort Leonard Wood and Lebanon offices
Salvation Army	Yes
Veterans Groups	Yes
Environmental Organization	No
Homeowner Associations	Yes
Neighborhood Associations	Yes
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.)	Yes
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	No
Impact fees for new development	No
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	Yes
Ability to withhold spending in hazard prone areas	Yes

Source: Data Collection Questionnaire, 2020

2.2.2 City of Crocker

Overview

Crocker is located in the north central portion of Pulaski County. The area was established as a community in 1869, named in 1875 and was incorporated as a village on March 18, 1911. Crocker was incorporated as a fourth class city in November of 1912[21]. The community has a strong railroad history and has a museum - the Frisco Depot Museum - dedicated to that history. State highways 17 and 133 intersect in Crocker. According to the 2018 U.S. Census, the community has a population of 1,152. Crocker is incorporated as a fourth class city with a four member board of aldermen and a mayor. City personnel include a city clerk, city court/utility clerk, city attorney, fire chief, city superintendent (utilities/infrastructure), municipal judge and emergency management director. Other staff employed by the city includes engineer, public works official, and emergency

[21] http://www.crockermo.com/

management coordinator. Note, some staff are responsible for multiple roles.

Technical and Fiscal Resources

Crocker does not currently participate in the National Flood Insurance Program. The City of Crocker has a police chief with a staff of one full-time officer, three part-time officers and one reserve officer. Ambulance service is provided by the Pulaski County Ambulance District. There is an ambulance base located in Crocker. There is also a volunteer fire department within the community. The community has enhanced 9-1-1 through the Pulaski County 9-1-1 system. The city has three warning sirens which are activated by the Police Department.

Fiscal tools or resources that the City could potentially use to help fund mitigation activities include Community Development Block Grants, Capital Improvements Project funding, levied taxes for specific purposes, fees for water, sewer, gas or electric services, impact fees for new development, and ability to incur debt through general obligation bonds.

Existing Plans and Policies

Crocker does not have building codes. The fire department's ISO rating is three. The city is included in the county LEOP. The city has a Regional Transportation Plan (MRPC), and Regional Comprehensive Economic Development Strategy (MRPC).

Table 2.14. Demographic and Structure Risk Parameters For Crocker

Jurisdiction	Total Population	With a Disability	Non-English Speaking Populations	People Below Poverty Level	Population Under 5 Yrs.	Population 65 Yrs. and Over	# of Residences Built Prior to 1939	# of Mobile Homes
Crocker	1,152	339	60	310	104	229	44	53

Source: Source: U.S. Census Bureau, 2018 5-Years American Community Survey

Table 2.15. City of Crocker Mitigation Capabilities

Capabilities	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	Yes - 1990
Builder's Plan	No
Capital Improvement Plan	No
City Emergency Operations Plan	Yes - 2008
County Emergency Operations Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
City Mitigation Plan	Part of county plan - 2015
County Mitigation Plan	Yes - 2015
Debris Management Plan	No
Economic Development Plan	Yes – regional CEDS 2018
Transportation Plan	Yes – regional - 2019
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No

Capabilities	Status Including Date of Document or Policy
FireWise or other fire mitigation plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes – date unknown
Storm Water Ordinance	No
Drainage Ordinance	No
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
Hazard Awareness Program	No
National Flood Insurance Program	No
NFIP Community Rating System (CRS) Participating Community	No
National Weather Service (NWS) Storm Ready	Yes - 2002
Firewise Community Certification	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	3
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (City)	Yes – in County Hazard Mitigation Plan
Hazard Analysis/Risk Assessment (County)	Yes – in County Hazard Mitigation Plan
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	Yes
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	Yes
Development Planner	No
Public Works Official	Yes
Emergency Management Director	Yes
NFIP Floodplain Administrator	N/A
Bomb and/or Arson Squad	No
Emergency Response Team	Yes – Regional Team in Rolla
Hazardous Materials Expert	Yes – Regional Team in Rolla

Capabilities	Status Including Date of Document or Policy
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	Yes
Transportation Department	No
Economic Development Department	No
Housing Department	Yes- Pulaski Co. PHA
Regional Planning Agencies	MRPC
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	Yes – offices on Fort Leonard Wood and in Lebanon
Salvation Army	Yes
Veterans Groups	Yes
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.)	Yes
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, 2020

2.2.3 City of Dixon

Overview

Dixon is located in the north east portion of Pulaski County. Like Crocker, the City of Dixon was laid out by a railroad surveyor on property owned by the railroad in the late 1860's. State highways 133 and 28 converge near Dixon. According to the 2018 U.S. Census, the community has a population of 1,256. Dixon is incorporated as a fourth class city with six aldermen and the mayor who make decisions regarding city issues. Other city personnel include a city clerk, city attorney, city marshal, fire chief/ emergency management director, municipal judge, water/sewer supervisor, and building inspector.

Technical and Fiscal Resources

Law enforcement in the community is provided by a city marshal. A volunteer fire department provides fire protection. The Dixon Ambulance District provides emergency medical services. The community has enhanced 9-1-1 through the Pulaski County 9-1-1 system. The city has one warning siren which is controlled by the 9-1-1 systems in Pulaski County.

Fiscal tools or resources that the City could potentially use to help fund mitigation activities include Community Development Block Grants, Capital Improvements Project funding, authority to levy taxes for specific purposes, fees for water, sewer, gas or electric services, impact fees for new development, ability to incur debt through general obligation bonds and debt through special tax bonds and ability to withhold spending in hazard prone areas.

Existing Plans and Policies

Dixon does not currently participate in the National Flood Insurance Program. Dixon does not have a building code. The fire department's ISO rating is six. The city is included in the county LEOP.

Table 2.16. Demographic and Structure Risk Parameters For Dixon

Jurisdiction	Total Population	With a Disability	Non-English Speaking Populations	People Below Poverty Level	Population Under 5 Yrs.	Population 65 Yrs. and Over	# of Residences Built Prior to 1939	# of Mobile Homes
Dixon	1,256	300	16	233	63	249	88	56

Source: Source: U.S. Census Bureau, 2018 5-Year American Community Survey
mcdc.missouri.edu/applications/acs/profiles/report.php?period=5&year=2018&g=05000US29169|04000US29|01000US

Table 2.17. City of Dixon Mitigation Capabilities

Capabilities	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
City Emergency Operations Plan	No
County Emergency Operations Plan	Yes - 2008
Local Recovery Plan	No
County Recovery Plan	No
City Mitigation Plan	Yes – 2015 part of county plan
County Mitigation Plan	Yes - 2015
Debris Management Plan	Yes – date unknown
Economic Development Plan	Yes – Regional CEDS - 2018
Transportation Plan	Yes – Regional - 2019
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
FireWise or other fire mitigation plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes – date unknown
Storm Water Ordinance	No
Drainage Ordinance	Yes – date unknown
Site Plan Review Requirements	No

Capabilities	Status Including Date of Document or Policy
Historic Preservation Ordinance	No
Landscape Ordinance	Yes – date unknown
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	Yes
Hazard Awareness Program	No
National Flood Insurance Program	No
NFIP Community Rating System (CRS) Participating Community	No
National Weather Service (NWS) Storm Ready	Yes
Firewise Community Certification	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	6
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (City)	Yes – Hazard Mitigation Plan 2015
Hazard Analysis/Risk Assessment (County)	Yes – Hazard Mitigation Plan 2015
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	
Building Code Official	Yes
Building Inspector	Yes
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	Yes
Emergency Management Director	Yes
NFIP Floodplain Administrator	No
Bomb and/or Arson Squad	No
Emergency Response Team	Yes – covered by Rolla HSRT in Phelps County
Hazardous Materials Expert	Yes – covered by Rolla HSRT in Phelps County
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	No
Economic Development Department	No
Housing Department	Yes, Pulaski Co. PHA
Regional Planning Agencies	MRPC
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	Yes – Offices on Fort Leonard Wood and Lebanon
Salvation Army	Yes

Capabilities	Status Including Date of Document or Policy
Veterans Groups	Yes
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.)	Yes
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes with voter approval
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	Yes

Source: Data Collection Questionnaire, 2020

2.2.4 City of Richland

Overview

Richland is located in the west central portion of Pulaski County on the border with Laclede and Camden counties. Like Crocker and Dixon, it is a community that was developed by the railroad in the 1860's. Richland's historic City Hall building was built in the 1940's as part of the WPA projects. State highways 7 and 133 converge in Richland. According to the 2018 U.S. Census, the community has a population of 1,895. Richland is incorporated as a fourth class city and has a six member board of aldermen and a mayor. The city also has a four member utility board, and a nine member park board. The city employs a full-time city administrator. Other city personnel include a city clerk, chief of police, utility board, planning and zoning commission, city attorney, municipal judge, building inspector, development planner, public works official, emergency management coordinator, and NFIP floodplain administrator. Granted some personal may be tasked with more than one position/job. The city provides municipal services for water, sewage treatment, natural gas and electricity. The city is served by Pulaski County's Enhanced 9-1-1 system. The community has a municipal airport with a hard surface runway 3,000 feet in length. The City contracts Tri-County Fire and Rescue for fire protection. Central Ozarks Medical Center and St. Johns Medical System both have medical facilities in Richland[22].

Technical and Fiscal Resources

Richland participates in the National Flood Insurance Program. Law enforcement in the community is provided by a police department. The city contracts with Tri-County Fire Protection District, a volunteer fire department, to provide fire protection services for the community. The fire department's ISO rating is seven. The Pulaski County Ambulance District provides emergency medical services and has a base in Richland. The community has enhanced 9-1-1 through the Pulaski County 9-1-1 system. The city has four warning sirens which are controlled by Pulaski County 9-1-1 dispatch, National Weather Service and

[22] www.richlandmo.net

the Missouri Highway Patrol MULES system.

Fiscal tools or resources that the City could potentially use to help fund mitigation activities include Community Development Block Grants, Capital Improvements Project funding, taxes for specific purposes, fees for water, sewer, gas or electric services, ability to incur debt through general obligation bonds, incur debt through special tax bonds, Incur debt through private activities and withhold spending in hazard prone areas.

Richland has building codes (BOCA) which the city enforces by requiring inspections for new builds as well as renovations. Richland contracts with the city of Waynesville for building code inspector services.

Existing Plans and Policies

Richland has building codes, a floodplain ordinance, land use plan, zoning ordinance and critical facilities plan. The fire department's ISO rating is five. The city is included in the county LEOP. The city has a Regional Transportation Plan (MRPC), and Regional Comprehensive Economic Development Strategy (MRPC).

Table 2.18. Demographic and Structure Risk Parameters For Richland

Jurisdiction	Total Population	With a Disability	Non-English Speaking Populations	People Below Poverty Level	Population Under 5 Yrs.	Population 65 Yrs. and Over	# of Residences Built Prior to 1939	# of Mobile Homes
Richland	1,895	590	35	460	63	327	63	126

Source: Source: U.S. Census Bureau, 2018 5-Year American Community Survey
mcdc.missouri.edu/applications/acs/profiles/report.php?period=5&year=2018&g=05000US29169|04000US29|01000US

Table 2.19. City of Richland Mitigation Capabilities

Capabilities	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
City Emergency Operations Plan	Yes
County Emergency Operations Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
City Mitigation Plan	Yes -2015 Part of county plan
County Mitigation Plan	Yes - 2015
Debris Management Plan	Yes
Economic Development Plan	Yes – regional CEDS 2018
Transportation Plan	Yes – regional 2019
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
FireWise or other fire mitigation plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	Yes – date unknown
Policies/Ordinance	

Capabilities	Status Including Date of Document or Policy
Zoning Ordinance	Yes – date unknown
Building Code	Yes - BOCA
Floodplain Ordinance	Yes – 9/10/84
Subdivision Ordinance	Yes – date unknown
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes – date unknown
Storm Water Ordinance	No
Drainage Ordinance	No
Site Plan Review Requirements	Yes
Historic Preservation Ordinance	Yes – date unknown
Landscape Ordinance	No
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes
Hazard Awareness Program	No
National Flood Insurance Program	Yes
NFIP Community Rating System (CRS) Participating Community	No
National Weather Service (NWS) Storm Ready	No
Firewise Community Certification	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	5
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	Yes
Stream Maintenance Program	Yes
Tree Trimming Program	Yes
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (City)	Yes – in County Hazard Mitigation Plan
Hazard Analysis/Risk Assessment (County)	Yes – in County Hazard Mitigation Plan
Evacuation Route Map	No
Critical Facilities Inventory	Yes
Vulnerable Population Inventory	Yes
Land Use Map	Yes
Staff/Department	
Building Code Official	Yes – contracted with city of Waynesville
Building Inspector	Yes – contracted with city of Waynesville
Mapping Specialist (GIS)	No
Engineer	Yes
Development Planner	No
Public Works Official	Yes
Emergency Management Director	Yes
NFIP Floodplain Administrator	Yes
Bomb and/or Arson Squad	No
Emergency Response Team	Yes – through regional HSRT (Rolla)
Hazardous Materials Expert	Yes – through regional HSRT (Rolla)
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	Yes
Transportation Department	No

Capabilities	Status Including Date of Document or Policy
Economic Development Department	No
Housing Department	Yes, Pulaski Co. PHA
Regional Planning Agencies	MRPC
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	Yes – offices on Fort Leonard Wood and Lebanon
Salvation Army	Yes
Veterans Groups	Yes
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.)	Yes
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes with voter approval
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	Yes
Ability to withhold spending in hazard prone areas	Yes

Source: Data Collection Questionnaire, 2020

2.2.5 City of St. Robert

Overview

St. Robert is located on the Interstate 44 corridor, adjacent to Fort Leonard Wood in the center of the county. St. Robert is incorporated as a fourth class city. St. Robert is the youngest incorporated community in Pulaski County, and developed when Fort Leonard Wood was established in the mid-twentieth century. According to the 2018 US Census, the city has a population of 5,767. There is an eight member board of aldermen and a mayor. The city employs a full-time city administrator, city clerk, city attorney, finance officer, city collector, municipal judge, police chief, fire chief, public works director and a public works foreman. In addition, a mapping specialist, engineer, emergency management coordinator, and NFIP floodplain administrator are also employed by the city. The city provides municipal services for water, sewage treatment, natural gas and electricity. The city is served by Pulaski County 9-1-1 and has its own police department and fire department.

Technical and Fiscal Resources

St. Robert participates in the National Flood Insurance Program. The city zoning inspector also serves as the city floodplain manager. The city has a floodplain ordinance #1308, adopted on September 23, 2002. St. Robert has a fully staffed Building Department that administers and enforces all 2006 ICC codes and the 2005 National Electric Code. The city has three ICC certified inspectors on staff, including the city building official, city zoning inspector and the city administrator. All residential and non-residential

construction – both new and renovations – require a building permit and inspections by the city.

The city has four severe weather sirens that are activated by the city police dispatch center with coordination from the city fire chief. In addition to being served by Pulaski County 9-1-1, the city has dispatch capability through the city police dispatch. Additional warning is provided through the local radio station, KJPW-KFBD-KIIK Radio and the local Channel 12 cable television station.

The City EOC is located at the St. Robert Municipal Center, with the St. Robert Community Center serving as a backup location. The community and city government has high speed broadband internet capabilities at all city facilities.

The city is served by the St. Robert Fire Department which has an ISO rating of five, as well as an ambulance district and an air evacuation service through St. Johns Clinic.

Fiscal tools or resources that the City could potentially use to help fund mitigation activities include Community Development Block Grants, Capital Improvements Project funding, ability to levy taxes for specific purposes, fees for water, sewer, gas or electric services, incur debt through general obligation bonds, and ability to incur debt through special tax bonds.

Existing Plans and Policies

St. Robert has floodplain ordinances in place, as well as building, electric, property maintenance, fire, plumbing, mechanical and fuel gas codes(IPMC, IBC, IRC, IFC, IPC, IMC, IFGC, NEC). All codes which are enforced by city Building Department staff. The city also has a Snow and Ice Route Priority Plan, Infrastructure Development Regulations, City Comprehensive Plan, Economic Growth Strategy, land Development Regulations, Stormwater Management Regulations and Floodplain Management Regulations. The city is also part of the county LEOP. The city has a Regional Transportation Plan (MRPC), and Regional Comprehensive Economic Development Strategy (MRPC).

Other Mitigation Activities

The fire department provides a number of education/outreach programs in the community and school district, including flood awareness and safety, hazardous weather awareness and preparedness, Fire Safety Week, H1N1 Flu Mitigation, outdoor burning and home smoke detectors. Other public education programs include Household Hazardous Waste, tornado and fire 811 notifications, car seat program, and smoke and carbon monoxide detection.

The community has a designated public tornado shelters that are constructed in accordance with FEMA standards. This shelter is located at East Elementary School and the St. Robert City Hall.

Table 2.19 provides data in regard to demographic and structure risk parameters for St. Robert.

Table 2.20 provides information from the Data Questionnaire distributed to each jurisdiction.

Table 2.20. Demographic and Structure Risk Parameters For St. Robert

Jurisdiction	Total Population	With a Disability	Non-English Speaking Populations	People Below Poverty Level	Population Under 5 Yrs.	Population 65 Yrs. and Over	# of Residences Built Prior to 1939	# of Mobile Homes
St. Robert	5,767	1,362	504	1,211	235	459	74	325

Source: Source: U.S. Census Bureau, 2018 5-Years American Community Survey
mcdc.missouri.edu/applications/acs/profiles/report.php?period=5&year=2018&g=05000US29169|04000US29|01000US

Table 2.21. City of St. Robert Mitigation Capabilities

Capabilities	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	Yes - 2003
Builder's Plan	Yes – 2008 ICC
Capital Improvement Plan	Yes – updated annually
City Emergency Operations Plan	Yes -2018
County Emergency Operations Plan	Yes -2010
Local Recovery Plan	Yes - 2010
County Recovery Plan	No
City Mitigation Plan	Yes - 2015 - Part of county plan
County Mitigation Plan	Yes - 2015
Debris Management Plan	Yes - 2010
Economic Development Plan	Yes – regional CEDS 2018
Transportation Plan	Yes – regional 2019
Land-use Plan	Yes - 2008
Flood Mitigation Assistance (FMA) Plan	Yes - 2015
Watershed Plan	Yes - 2018
FireWise or other fire mitigation plan	Yes - 2010
Critical Facilities Plan (Mitigation/Response/Recovery)	Yes - 2010
Policies/Ordinance	
Zoning Ordinance	Yes – date unknown
Building Code	Yes, IBC/IRC 2006
Floodplain Ordinance	Yes - 2010
Subdivision Ordinance	Yes – date unknown
Tree Trimming Ordinance	Yes- date unknown
Nuisance Ordinance	Yes – date unknown
Storm Water Ordinance	Yes – date unknown
Drainage Ordinance	Yes – date unknown
Site Plan Review Requirements	Yes – date unknown
Historic Preservation Ordinance	Yes – date unknown
Landscape Ordinance	Yes – date unknown
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes
Hazard Awareness Program	Yes
National Flood Insurance Program	Yes
NFIP Community Rating System (CRS) Participating Community	No
National Weather Service (NWS) Storm Ready	Yes
Firewise Community Certification	Yes

Capabilities	Status Including Date of Document or Policy
Building Code Effectiveness Grading (BCEGs)	Yes – Class 9 per 2016
ISO Fire Rating	4
Economic Development Program	Yes
Land Use Program	Yes
Public Education/Awareness	Yes
Property Acquisition	Yes
Planning/Zoning Boards	Yes
Stream Maintenance Program	No
Tree Trimming Program	Yes
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (City)	Yes – in County Hazard Mitigation Plan
Hazard Analysis/Risk Assessment (County)	Yes – in County Hazard Mitigation Plan
Evacuation Route Map	No
Critical Facilities Inventory	Yes
Vulnerable Population Inventory	No
Land Use Map	Yes
Staff/Department	
Building Code Official	Yes
Building Inspector	Yes
Mapping Specialist (GIS)	No
Engineer	Yes
Development Planner	No
Public Works Official	Yes
Emergency Management Director	Yes
NFIP Floodplain Administrator	Yes
Bomb and/or Arson Squad	Yes – through mutual aid
Emergency Response Team	Yes – Region I HSRT in Rolla and Fort Leonard Wood
Hazardous Materials Expert	Yes – Region I HSRT in Rolla and Fort Leonard Wood
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	Yes
Transportation Department	Yes
Economic Development Department	Yes
Housing Department	Yes, Pulaski Co. PHA
Regional Planning Agencies	MRPC
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	Yes – Fort Leonard Wood and Lebanon
Salvation Army	Yes
Veterans Groups	Yes
Environmental Organization	No
Homeowner Associations	Yes
Neighborhood Associations	Yes
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.)	Yes
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	Yes

Capabilities	Status Including Date of Document or Policy
Impact fees for new development	Yes
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, 2020

2.2.6 City of Waynesville

Overview

The City of Waynesville was declared the county seat in 1843 and was named after a Revolutionary War hero, "Mad Anthony" Wayne. The town was located on the St. Louis-Springfield Road and a regular stop on the stagecoach route. The Old Stagecoach Stop is listed on the National Register of Historical Places and is located on the city square, adjacent to the courthouse. Other communities, built along the railroads which crossed Pulaski County further north than the Waynesville area, challenged the community for a time in the late 1800's as the county's center of commerce. But Waynesville's fortunes improved again with the construction of Route 66, the development of Fort Leonard Wood and eventually the building of Interstate 44.

Waynesville is a fourth class city with an eight member city council and a mayor. The city also employs a full-time city administrator as well as a city clerk, city attorney, city court judge, city court clerk, city collector, police chief, water superintendent, electric superintendent, gas superintendent, street superintendent, and parks superintendent. Additional City personnel include building code official, building inspector, engineer, public works official, and NFIP floodplain administrator. The city provides municipal services for water, sewage treatment, electric and natural gas. The city is served by Pulaski County's enhanced 9-1-1 system and has its own police department.

Technical and Fiscal Resources

Waynesville participates in the National Flood Insurance Program. The Building Inspector serves as the city's floodplain administrator. The city has a floodplain ordinance and also issues building permits. The city has building codes and uses the International Residential Code (IRC and IBC 2006). Waynesville has a Building Department that administers and enforces codes and permits. All residential and non-residential construction, both new and renovations require a building permit and inspections by the city.

The city has no outdoor severe weather sirens. In addition to being served by Pulaski County 9-1-1, CodeRED, a phone/text/email system, is utilized to keep residents informed. Additional warning is provided through the local radio station, KJPW-KFBD-KIIK Radio and the local Channel 12 cable television station.

The City EOC is located at the Pulaski County 9-1-1 Communications Center located at 1500 Ousley Rd, Waynesville, Missouri, with the Waynesville City Hall serving as a backup location. The community and city government has high speed broadband internet capabilities at all critical city facilities.

The city is served by the Waynesville Rural Fire Protection District and the Pulaski County Ambulance District. The fire department has an ISO rating of 5. In addition, the community is served by an air evacuation service at St. Johns Clinic.

Fiscal tools or resources that the City could potentially use to help fund mitigation activities include Community Development Block Grants, Capital Improvements Project funding, levied taxes for specific purposes, fees for water, sewer, gas or electric services, impact fees for new development, ability to incur debt through general obligation bonds, incur debt though special tax bonds and withhold spending in hazard prone areas.

Existing Plans and Policies

Waynesville has floodplain ordinances in place as well as building and electric codes which are enforced by the Building Department. The city has a comprehensive plan, capital improvement plan, city and county emergency operations plan, city mitigation plan, economic development plan, transportation plan, and land-use plan.

Table 2.22. Demographic and Structure Risk Parameters For Waynesville

Jurisdiction	Total Population	With a Disability	Non-English Speaking Populations	People Below Poverty Level	Population Under 5 Yrs.	Population 65 Yrs. and Over	# of Residences Built Prior to 1939	# of Mobile Homes
Waynesville	5,262	1,080	264	1,216	446	602	62	12

Source: Source: U.S. Census Bureau, 2018 5-Year American Community Survey

Table 2.23. City of Waynesville Mitigation Capabilities

Capabilities	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	Yes - 2015
Builder's Plan	No
Capital Improvement Plan	Yes - 2015
City Emergency Operations Plan	Yes - 2015
County Emergency Operations Plan	Yes - 2008
Local Recovery Plan	No
County Recovery Plan	No
City Mitigation Plan	Part of county plan
County Mitigation Plan	Yes - 2015
Debris Management Plan	No
Economic Development Plan	Yes – 2015 plus a regional CEDS 2018
Transportation Plan	Yes – regional 2019
Land-use Plan	Yes - 2015
Flood Mitigation Assistance (FMA) Plan	Yes - 2015
Watershed Plan	Yes - 2015
FireWise or other fire mitigation plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	Yes – date unknown
Building Code	Yes, ICC 2006
Floodplain Ordinance	Yes – 1/21/2010
Subdivision Ordinance	Yes – date unknown
Tree Trimming Ordinance	Yes – date unknown
Nuisance Ordinance	Yes – date unknown

Capabilities	Status Including Date of Document or Policy
Storm Water Ordinance	Yes – date unknown
Drainage Ordinance	Yes – date unknown
Site Plan Review Requirements	Yes – date unknown
Historic Preservation Ordinance	No
Landscape Ordinance	Yes – date unknown
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes
Hazard Awareness Program	No
National Flood Insurance Program	Yes
NFIP Community Rating System (CRS) Participating Community	No
National Weather Service (NWS) Storm Ready	No
Firewise Community Certification	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	5
Economic Development Program	Yes
Land Use Program	Yes
Public Education/Awareness	No
Property Acquisition	Yes
Planning/Zoning Boards	Yes
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	Yes
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (City)	Yes – in County Hazard Mitigation Plan
Hazard Analysis/Risk Assessment (County)	Yes – in County Hazard Mitigation Plan
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	Yes
Staff/Department	
Building Code Official	Yes
Building Inspector	Yes
Mapping Specialist (GIS)	No
Engineer	Yes
Development Planner	No
Public Works Official	Yes
Emergency Management Director	No
NFIP Floodplain Administrator	Yes
Bomb and/or Arson Squad	No
Emergency Response Team	Yes – Region I HSRT – Rolla and Fort Leonard Wood
Hazardous Materials Expert	Yes – Region I HSRT – Rolla and Fort Leonard Wood
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	Yes
Economic Development Department	No
Housing Department	Yes, Pulaski Co. PHA
Regional Planning Agencies	MRPC
Historic Preservation	No

Capabilities	Status Including Date of Document or Policy
Non-Governmental Organizations (NGOs)	
American Red Cross	Yes – Fort Leonard Wood and Lebanon
Salvation Army	Yes
Veterans Groups	Yes
Environmental Organization	Yes
Homeowner Associations	Yes
Neighborhood Associations	Yes
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.)	Yes
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	Yes

Source: Data Collection Questionnaire, 2020

Table 2.24 summarizes the mitigation capabilities of Pulaski County and its jurisdictions.

Table 2.24. Mitigation Capabilities Summary Table

CAPABILITIES	Unincorporated Pulaski County	Crocker	Dixon	Richland	St. Robert	Waynesville
Planning Capabilities						
Comprehensive Plan	No	Yes - 1990	No	No	Yes-2003	Yes - 2015
Builder's Plan	No	No	No	No	Yes – 2008 ICC	No
Capital Improvement Plan	No	No	No	No	Yes	Yes - 2015
City Emergency Operations Plan	n/a	Yes - 2008	No	Yes	Yes-2018	Yes – 2015
County Emergency Operations Plan	Yes - 2008	Yes -2008	Yes-2008	Yes-2008	Yes-2008	Yes-2008
Local Recovery Plan	No	No	No	No	Yes - 2010	No
County Recovery Plan	No	No	No	No	No	No
City Mitigation Plan	n/a	Yes-part of county plan 2015	Yes-part of county plan 2015	Yes-part of county plan 2015	Yes-part of county plan 2015	Yes-part of county plan 2015

CAPABILITIES	Unincorporated Pulaski County	Crocker	Dixon	Richland	St. Robert	Waynesville
County Mitigation Plan	Yes - 2015	Yes - 2015	Yes - 2015	Yes - 2015	Yes - 2015	Yes - 2015
Debris Management Plan	No	No	Yes	Yes	Yes-2010	No
Economic Development Plan	Yes – CEDS 2018	Yes – CEDS 2018	Yes – CEDS 2018	Yes – CEDS 2018	Yes – CEDS 2018	Yes-2015 plus a regional CEDS 2018
Transportation Plan	Yes – Regional	Yes – Regional	Yes - Regional	Yes - Regional	Yes - Regional	Yes - Regional
Land-use Plan	No (FLW study 2012)	No	No	No	Yes-2008	Yes - 2015
Flood Mitigation Assistance (FMA) Plan	No	No	No	No	Yes-2015	Yes- 2015
Watershed Plan	No	No	No	No	Yes-2018	Yes - 2015
Firewise or other fire mitigation plan	No	No	No	No	Yes-2010	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No	No	No	Yes	Yes-2010	No
Policies/Ordinances						
Zoning Ordinance	No	No	No	Yes	Yes	Yes
Building Code	No	No	No	Yes - BOCA	Yes- IBC/IRC 2006	Yes – ICC 2006
Floodplain Ordinance	Yes	No	No	Yes	Yes-2010	Yes – 1/21/2010
Subdivision Ordinance	n/a	No	No	Yes	Yes	Yes
Tree Trimming Ordinance	No	No	No	No	Yes	Yes
Nuisance Ordinance	No	Yes	Yes	Yes	Yes	Yes
Storm Water Ordinance	No	No	No	No	Yes	Yes
Drainage Ordinance	No	No	Yes	No	Yes	Yes
Site Plan Review Requirements	No	No	No	Yes	Yes	Yes

CAPABILITIES	Unincorporated Pulaski County	Crocker	Dixon	Richland	St. Robert	Waynesville
Historic Preservation Ordinance	No	No	No	Yes	Yes	No
Landscape Ordinance	No	No	Yes	No	Yes	Yes
Program						
Zoning/Land Use Restrictions	No	No	No	Yes	Yes	Yes
Codes Building Site/Design	No	No	Yes	Yes	Yes	Yes
Hazard Awareness Program	No	No	No	No	Yes	No
National Flood Insurance Program	Yes	No	No	Yes	Yes	Yes
NFIP Community Rating System (CRS) Participating Community	No	No	No	No	No	No
National Weather Service (NWS) Storm Ready	No	Yes-2002	Yes	No	Yes	No
Firewise Community Certification	No	No	No	No	Yes	No
Building Code Effectiveness Grading (BCEGs)	No	No	No	No	Yes – Class 9 - 2016	No
ISO Fire Rating	n/a	3	6	5	4	5
Economic Development Program	No	No	No	No	Yes	Yes
Land Use Program	No	No	No	No	Yes	Yes
Public Education/Awareness	No	No	No	No	Yes	No
Property Acquisition	No	No	No	No	Yes	Yes
Planning/Zoning Boards	No	Yes	No	Yes	Yes	Yes

CAPABILITIES	Unincorporated Pulaski County	Crocker	Dixon	Richland	St. Robert	Waynesville
Stream Maintenance Program	No	No	No	Yes	No	No
Tree Trimming Program	No	Yes	No	Yes	Yes	No
Engineering Studies for Streams (Local/County/Regional)	No	No	No	No	No	Yes
Mutual Aid Agreements	Yes	Yes, Police and Utilities	Yes	Yes	Yes, Police and Fire	Yes
Studies/Reports/Maps						
Hazard Analysis/Risk Assessment (City)	Yes-in County Hazard Mitigation Plan	Yes-in County Hazard Mitigation Plan	Yes-in County Hazard Mitigation Plan	Yes-in County Hazard Mitigation Plan	Yes-in County Hazard Mitigation Plan	Yes-in County Hazard Mitigation Plan
Hazard Analysis/Risk Assessment (County)	Yes-in County Hazard Mitigation Plan	Yes-in County Hazard Mitigation Plan	Yes-in County Hazard Mitigation Plan	Yes-in County Hazard Mitigation Plan	Yes-in County Hazard Mitigation Plan	Yes-in County Hazard Mitigation Plan
Evacuation Route Map	No	No	No	No	No	No
Critical Facilities Inventory	Yes	No	No	Yes	Yes	No
Vulnerable Population Inventory	No	No	No	Yes	No	No
Land Use Map	Yes (2012 FLW study)	Yes	No	Yes	Yes	Yes
Staff/Department						
Building Code Official	No	No	Yes	Yes	Yes	Yes
Building Inspector	No	No	Yes	Yes	Yes	Yes
Mapping Specialist (GIS)	Yes	No	No	No	No	No
Engineer	No	Yes	No	Yes	Yes	Yes
Development Planner	No	No	No	No	No	No
Public Works Official	No	Yes	Yes	Yes	Yes	Yes
Emergency Management Director	Yes	Yes	Yes	Yes	Yes	No

CAPABILITIES	Unincorporated Pulaski County	Crocker	Dixon	Richland	St. Robert	Waynesville
NFIP Floodplain Administrator	Yes	No	No	Yes	Yes	Yes
Bomb and/or Arson Squad	No	No	No	No	Yes – through mutual aid	No
Emergency Response Team	Yes – Regional team (Rolla) and FLW	Yes – Regional team (Rolla) and FLW	Yes – Regional team (Rolla) and FLW	Yes – Regional team (Rolla) and FLW	Yes – Regional team (Rolla) and FLW	Yes – Regional team (Rolla) and FLW
Hazardous Materials Expert	Yes – Regional team (Rolla) and FLW	Yes – Regional team (Rolla) and FLW	Yes – Regional team (Rolla) and FLW	Yes – Regional team (Rolla) and FLW	Yes – Regional team (Rolla) and FLW	Yes – Regional team (Rolla) and FLW
Local Emergency Planning Committee	Yes	Yes	Yes	Yes	Yes	Yes
County Emergency Management Commission	No	No	No	No	No	No
Sanitation Department	No	Yes	No	Yes	Yes	No
Transportation Department	Yes – Road and Bridge	No	No	No	Yes	Yes
Economic Development Department	No	No	No	No	Yes	No
Housing Department	Yes - Pulaski Co. PHA	Yes, Pulaski Co. PHA	Yes, Pulaski Co. PHA	Yes, Pulaski Co. PHA	Yes – Phelps Co. PHA	Yes, Pulaski Co. PHA
Regional Planning Agencies	Yes - MRPC	Yes - MRPC	Yes - MRPC	Yes - MRPC	Yes - MRPC	Yes - MRPC
Historic Preservation	No	No	No	No	No	No
Non-Governmental Organizations (NGOs)						
American Red Cross	Yes – offices in FLW & Lebanon	Yes – offices in FLW & Lebanon	Yes – offices in FLW & Lebanon	Yes – offices in FLW & Lebanon	Yes – offices in FLW & Lebanon	Yes – offices in FLW & Lebanon
Salvation Army	Yes	Yes	Yes	Yes	Yes	Yes
Veterans Groups	Yes	Yes	Yes	Yes	Yes	Yes
Environmental Organization	No	No	No	No	No	Yes

CAPABILITIES	Unincorporated Pulaski County	Crocker	Dixon	Richland	St. Robert	Waynesville
Homeowner Associations	Yes	No	No	No	Yes	Yes
Neighborhood Associations	Yes	No	No	No	Yes	Yes
Chamber of Commerce	Yes	Yes	Yes	Yes	Yes	Yes
Community Organizations (Lions, Kiwanis, etc.)	Yes	Yes	Yes	Yes	Yes	Yes
Financial Resources						
Ability to apply for Community Development Block Grants	Yes	Yes	Yes	Yes	Yes	Yes
Ability to fund projects through Capital Improvements funding	Yes	Yes	Yes	Yes	Yes	Yes
Authority to levy taxes for a specific purpose	Yes	Yes	Yes	Yes	Yes	Yes
Fees for water, sewer, gas, or electric services	No	Yes	Yes	Yes	Yes	Yes
Impact fees for new development	No	No	Yes	No	Yes	Yes
Ability to incur debt through general obligation bonds	Yes	Yes	Yes	Yes	Yes	Yes
Ability to incur debt through special tax bonds	Yes	Yes	Yes	Yes	Yes	Yes
Ability to incur debt through private activities	Yes	No	No	Yes	No	No
Ability to withhold spending in hazard prone areas	Yes	No	Yes	Yes	No	Yes

Source: Data Collection Questionnaires, 2020

2.2.7 Public School District Profiles and Mitigation Capabilities

The following school districts are participating jurisdictions in this plan: Dixon R-I School District, Crocker R-II School District, Swedeborg R-III School District, Richland R-IV School District, Laquey R-V School District and Waynesville R-VI School District. As public institutions responsible for the care and education of the county's children, these school districts share an interest with Pulaski County in public safety and hazard mitigation planning. **Figure 2.6** provides the boundaries of the school districts participating in this planning process.

Technical and Fiscal Resources

Five of the school districts have NOAA all hazard radios on site to provide early warning of hazard events. Swedeborg R-II does not have NOAA radios. In addition, each school district has fire alarms and intercom systems capable of providing specific instructions in the event of an emergency. All school districts have intercom systems. Dixon R-I and Waynesville R-VI both have automated text and voice messaging systems.

Existing Plans and Policies

All six school districts have an emergency management plan and weapons policy, with the exception of Crocker R-II, which does not have a formal weapons policy.

Other Mitigation Activities

All school districts participating in the plan conduct regular fire, earthquake and tornado drills at least once per year. All districts practice lock-down security training at least once a year. Crocker R-II and Waynesville R-VI each have one certified tornado safe room that meets FEMA standards. Crocker R-II has a Community Safe Room Operations plan.

New Construction

None of the school districts anticipate a new building or major renovation project in the near future.

Table 2.25. School District Buildings and Enrollment Data, 2020

District Name	Building Name	Enrolment
Dixon R-I		
	Dixon Elem.	456
	Dixon Middle School	220
	Dixon High	274
Crocker R-II		
	Crocker Elem.	329
	Crocker High	259
Swedeborg R-III		
	Swedeborg Elem.	50
Richland R-IV		
	Richland Elem.	306
	Richland High	247
Laquey R-V		

District Name	Building Name	Enrolment
	Laquey Elem.	328
	Laquey Middle	157
	Laquey High	174
Waynesville R-VI		
	Waynesville East Elem.	3,688
	Freedom Elem.	
	Partridge Elem.	
	Thayer Elem.	
	Wood Elem.	
	6th Grade Center	1,345
	Waynesville Middle	
	Waynesville Sr. High	1,652
	Waynesville Career Center	

Source: https://ogi.oa.mo.gov/DESE/schoolSearch/index.html

Figure 2.6. Pulaski County School Districts

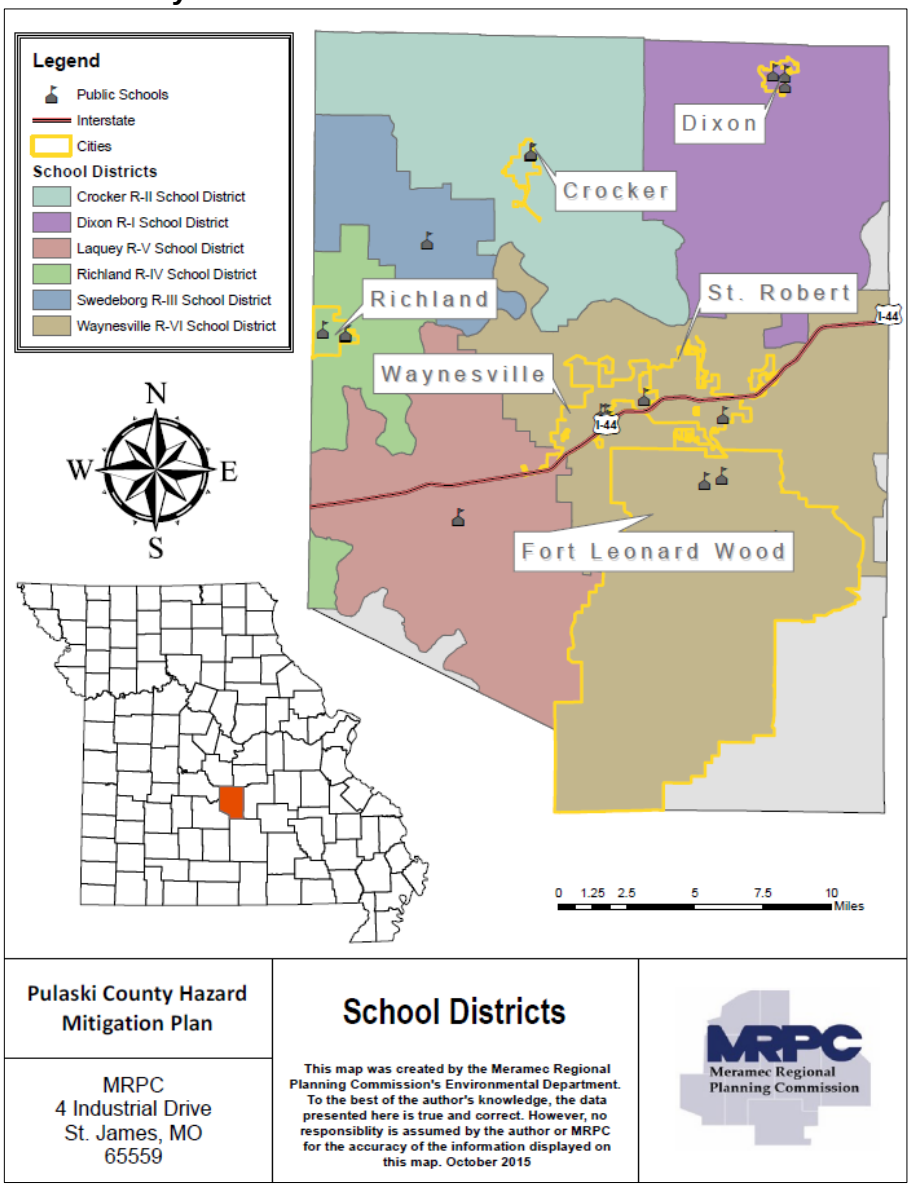


Table 2.26. Summary of Mitigation Capabilities for School Districts

Capability	Dixon R-I	Crocker R-II	Swedeborg R-III	Richland R-IV	Laquey R-V	Waynesville R-VI
Planning Elements						
Master Plan/Date	No	Yes-2015	No	No	Yes-Annually	Yes - 2019
Capital Improvement	Yes - Annually	Yes - 2015	No	No	No	Yes - 2019
School Emergency Plan/Date	Yes - Annually	Yes - 2019	Yes - Annually	Yes	Yes-Annually	Yes - 2019
Weapons Policy/Date	Yes -2013	No	Yes	Yes	Yes - 2013	Yes - 2019
Personnel Resources						
Full-Time Building Official (Principal)	Yes	Yes	Yes-Supt.	Yes	Yes	Yes
Emergency Manager	Yes	Yes	No	Yes	Yes	Yes
Grant Writer	No	No	Yes	No	No	Yes
Public Information Officer	Yes	No	Yes	Yes	Yes	Yes
Financial Resources						
Capital Improvements Project Funding	Yes	Yes	Yes	No	Yes	Yes
Local Funds	Yes	No	Yes	Yes	Yes	Yes
General Obligation	Yes	No	No	No	Yes	No
Special Tax Bonds	No	No	No	No	No	No
Private Activities/Donations	Yes	Yes	No	Yes	No	Yes
State and Federal Funds/Grants	Yes	No	No	Yes	Yes	Yes
Other						
Privately or Self-Insured?	Self-Insured	No	No	Privately	Privately - MUSIC	Privately
Fire Evacuation Training	Yes	Yes	Yes	Yes	Yes – twice per year	Yes – annually
Tornado Sheltering Exercises	Yes	Yes	Yes	No	Yes – twice per year	Yes – annually
Public Address/Emergency Alert System	Automated text and voice messaging	Intercom and alarms	Yes	Intercom system in rooms	Intercom system	School Messenger system, Digital Message marquee signs, local/cable TV, building intercoms, AM/FM radio, building walkie talkies
NOAA Weather Radios	Yes	Yes	No	Yes	Yes	Yes
Lock-Down Security Training	Yes	Yes	Yes	Yes	Yes - annually	Yes - annually

Mitigation Programs	Construction to secure main entrances and moved main offices from center of buildings to the exterior.	Have a FEMA certified tornado shelter	Fire, Tornado, Earthquake, Active Intruder Training	No	Upgraded alarms, fire alarm system and security cameras	East Elem. FEMA shelter, Secure vestibules for entry, Middle School Phase II project with hardened shelter walls
Tornado Shelter/Safe-room	Yes have designated areas - but not FEMA certified	Yes – FEMA certified	Yes have designated areas – not FEMA certified	No	Yes – have designated area – not FEMA certified	Yes – designated areas, East Elem. Has a FEMA certified shelter
Campus Police	No-have a director of safety who works with local police	Yes	No	No	1 FT SRO and 1 FT security guard	Yes – we have an SRO officer on site at each school building and rely on police departments in Waynesville, St. Robert and Ft. Leonard Wood

Source: Data Collection Questionnaires, 2020

2.2.8 Critical Facilities

The table below (**Table 2.27**) provides information for critical facilities in the planning area. Specific information includes a Hazus ID if applicable, jurisdiction, building name/owner, and address. Facilities addressed include emergency, fire department, law enforcement, medical, and schools. Furthermore, **(Table 2.28)** provides information in regards to colleges/universities located in the planning area.

Table 2.27. Pulaski County Critical Facilities by Type and Jurisdiction

HazusID	Jurisdiction	Building Name	Address	City	State	Zip
Fire Department Facilities						
MO000551	Crocker	Crocker Fire Protection Dist. Bldg. 1	201 Keeth Rd	Crocker	MO	65452
	Crocker	Crocker Fire Protection Dist. Bldg. 2	111 10th St	Crocker	MO	65452
	Crocker	Crocker Fire Protection Dist. Bldg. 3	17180 Hwy T	Swedeborg	MO	65572
	Crocker	Crocker Fire Protection Dist. Bldg. 4	13572 Hwy BB	Crocker	MO	65452
MO000552	Dixon	Dixon Rural Fire Protection Dist.	203 S Walnut St	Dixon	MO	65459
	Richland	Hazelgreen Fire Protection District (Station #2)	33991 U.S. Route 66	Richland	MO	65556
MO000557	Richland	Tri-County Fire & Rescue Association	111 W Washington Ave	Richland	MO	65556
MO000553	St. Robert	Waynesville Rural Fire Prot. Dist. #3	20965 Hwy 28	St. Robert	MO	65584
MO000554	St. Robert	St. Robert City Fire & Rescue Bldg. 1	117 Plattner Ave	St. Robert	MO	65584
	St. Robert	St. Robert City Fire & Rescue Bldg. 2	116 Foxworth St	St. Robert	MO	65584
MO000556	Waynesville	Waynesville Rural Fire Prot. Dist. #1	1501 Ousley Rd	Waynesville	MO	65583
MO000558	Waynesville	Waynesville Rural Fire Prot. Dist. #2	25730 Red Oak Rd	Waynesville	MO	65583
	Waynesville	Waynesville Rural Fire Prot. Bldg. 4	20854 Hwy T	Waynesville	MO	65583
Law Enforcement Facilities						
MO000088	Crocker	Crocker Police Dept.	108 S Commercial St	Crocker	MO	65452
MO000385	Dixon	Dixon Police Dept.	303 S Elm St.	Dixon	MO	65459
MO000254	Richland	Richland Police Dept.	201 S Chestnut	Richland	MO	65556
MO000140	St. Robert	St. Robert Police Dept.	194 Eastlawn Ave	St. Robert	MO	65584
MO000225	Waynesville	Waynesville Police Dept.	201 North St	Waynesville	MO	65583
MO000368	Pulaski County	Pulaski County Sheriff	301 Historic 66 E	Waynesville	MO	65583
School Facilities						
MO002225	Crocker	Crocker Elem	601 N Commercial	Crocker	MO	65452

HazusID	Jurisdiction	Building Name	Address	City	State	Zip
MO002226	Crocker	Crocker High	601 N Commercial	Crocker	MO	65452
MO002227	Dixon	Dixon Elem	N Pine & W Sixth	Dixon	MO	65459
MO002228	Dixon	Dixon Middle	Hwy 28 East	Dixon	MO	65459
MO002229	Dixon	Dixon High	High School Dr	Dixon	MO	65459
MO002230	Laquey	Laquey R-V Elem.	27600 Hwy AA	Laquey	MO	65534
MO002231	Laquey	Laquey R-V High	27601 Hwy AA	Laquey	MO	65534
MO002232	Laquey	Laquey R-V Middle	27602 Hwy AA	Laquey	MO	65534
MO000913	Richland	Richland Elem.	714 E Jefferson	Richland	MO	65556
MO000914	Richland	Richland High/Jr. High	715 E Jefferson	Richland	MO	65556
MO000916	Richland	Swedeborg Elem.	17507 Hwy T	Richland	MO	65556
	St. Robert	Freedom Elem.	286 Eastlawn Ave.	St. Robert	MO	65584
	Fort Leonard Wood	Partridge Elementary	2225 Young Street	FLW	MO	65473
	Fort Leonard Wood	Thayer Elementary	15392 Thayer Road	FLW	MO	65473
MO001142	Waynesville	Waynesville East Elem.	1501 State Rd F	Waynesville	MO	65583
MO001143	Waynesville	Waynesville Sr. High	200 GW Lane	Waynesville	MO	65583
MO001144	Waynesville	Waynesville Sixth Grade Center	810 Roosevelt St	Waynesville	MO	65583
MO001145	Waynesville	Waynesville Middle	1001 Historic 66 W	Waynesville	MO	65583
	Waynesville	Waynesville Career Center	400 GW Lane	Waynesville	MO	65583
Medical Facilities						
	Crocker	Pulaski County Health Dept.	101 12th St	Crocker	MO	65452
	Dixon	Rural Health Clinic	206 West Second	Dixon	MO	65459
	Richland	Central Ozarks Medical Center	304 W Washington St	Richland	MO	65556
	Richland	St. John's Clinic Richland	904 S Pine St	Richland	MO	65556
	St. Robert	St. John's Clinic St. Robert	608 City Route 66	St. Robert	MO	65584
	Waynesville	Pulaski Medical Clinic	107 Ichord Ave	Waynesville	MO	65583
	Waynesville	Phelps Health Waynesville Medical Plaza	1000 GW Lane Street	Waynesville	MO	65583
Childcare Facilities						
	Crocker	Crocker Academy Inc.	324 S Commercial St.	Crocker	MO	65452
	Crocker	Gina’s Daycare Learning Academy LLC	91B Ichord Ave	Crocker	MO	65452
	Dixon	Dixon Head Start Center	306 N Lang	Dixon	MO	65459

HazusID	Jurisdiction	Building Name	Address	City	State	Zip
	Richland	Richland Head Start Center	306 S Pine	Richland	MO	65556
	St. Robert	Candyland	106 Bosa	St. Robert	MO	65584
	St. Robert	STM Christian Daycare/Preschool Academy	577 Old Route 66	St. Robert	MO	65584
	St. Robert	Young Minds Learning Academy LLC	121 Superior Road	St. Robert	MO	65584
	Waynesville	Gina's Daycare Learning Academy LLC	91B Ichord Ave	Waynesville	MO	65583
	Waynesville	New Beginnings Childcare Center	24665 Rocklin Dr	Waynesville	MO	65583
	Waynesville	Precious Jewels Christian Childcare LLC	704 W Historic Rte. 66	Waynesville	MO	65583
	Waynesville	Stonebrooke Kidz Academy	500 GW Lane Street	Waynesville	MO	65583
	Waynesville	Westside Christian Academy	801 Historic Rte. 66 W	Waynesville	MO	65583
	Waynesville	Wee Wonders Child Devel. Center of Waynesville	1702 Long Dr	Waynesville	MO	65583
	Waynesville	Munchkinland	1809-A Historic Rte. 66 W	Waynesville	MO	65583
	Waynesville	Waynesville Head Start – MO Ozarks Community Action, Inc.	19778 Sackett Ln	Waynesville	MO	65583
	Waynesville	Waynesville United Methodist Parents Day Out	301 Highway T	Waynesville	MO	65583
Nursing Homes						
	Dixon	Dixon Nursing & Rehab	403 E 10th St	Dixon	MO	65459
	Richland	Richland Care Center, Inc.	400 Tri-County Lane	Richland	MO	65556
	Richland	Rosewood Manor	101 East Pulaski Street	Richland	MO	65556
	Waynesville	Pulaski County Adult Daycare	704 Historic Route 66, Suite 102	Waynesville	MO	65583
	Waynesville	Life Care Center of Waynesville	700 Birch Lane	Waynesville	MO	65583

Source: Meramec Region Community Data Mining for Hazard Mitigation Planning (2014); Missouri Department of Health and Senior Services website-health.mo.gov

Table 2.28. Pulaski County Colleges/Universities

College/University	Location	Description
Columbia College	Truman Education Center 4904 Constitution St, Fort Leonard Wood, MO 65473	Main campus: Columba, MO Associates and Bachelor degrees
Central Texas College	6002 Colorado Ave. Bldg. 733 E, Fort Leonard Wood, MO 65473	Main campus: Fort Hood, TX Associate degrees
Drury University	194 Eastlawn Ave, Suite C, St. Robert, MO 65584	Main campus: Springfield, MO Bachelor degrees
Ozarks Technical Community College	600 GW Ln, Waynesville, MO 65583	Main Campus in Springfield, MO Associate degrees
Webster University	6002 Constitution Ave, Fort Leonard Wood, MO 65473	Main campus: St. Louis Bachelor and Masters degrees
Park University	Bldg. 733, Unite B, Suite 113, 6002 Colorado Ave, Fort Leonard Wood, MO 65473	Main Campus: Parkville, MO Bachelor and Master's degree
Lincoln University	Truman Education Center, 268 Constitution St. Suite 5, Fort Leonard Wood, MO 65473	Main Campus: Jefferson City, MO Bachelor and Master's degree

3 RISK ASSESSMENT

44 CFR Requirement §201.6(c)(2): [The plan shall include] A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

The goal of the risk assessment is to estimate the potential loss in the planning area, including loss of life, personal injury, property damage, and economic loss, from a hazard event. The risk assessment process allows communities and school/special districts in the planning area to better understand their potential risk to the identified hazards. It will provide a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

This chapter is divided into four main parts:

- **Section 3.1 Hazard Identification** identifies the hazards that threaten the planning area and provides a factual basis for elimination of hazards from further consideration;
- **Section 3.2 Assets at Risk** provides the planning area's total exposure to natural hazards, considering critical facilities and other community assets at risk;
- **Section 3.3 Future Land Use and Development** discusses areas of planned future development
- **Section 3.4 Hazard Profiles and Vulnerability Analysis** provides more detailed information about the hazards impacting the planning area. For each hazard, there are three sections: 1) Hazard Profile provides a general description and discusses the threat to the planning area, the geographic location at risk, potential severity/magnitude/extent, previous occurrences of hazard events, probability of future occurrence, risk summary by jurisdiction, impact of future development on the risk; 2) Vulnerability Assessment further defines and quantifies populations, buildings, critical facilities, and other community/school or special district assets at risk to natural hazards; and 3) Problem Statement briefly summarizes the problem and develops possible solutions.

3.1 Hazard Identification

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the type…of all natural hazards that can affect the jurisdiction.

The primary phase in the development of a hazard mitigation plan is to identify specific hazards which may impact the planning area. To initiate this process, the Hazard Mitigation Planning Committee (HMPC) reviewed a list of natural hazards provided by the Federal Emergency Management Agency (FEMA). From that list, the HMPC selected pertinent natural hazards of concern that have the potential to impact Pulaski County. These selected natural hazards are further profiled and analyzed in this plan.

3.1.1 Review of Existing Mitigation Plans

Within the State of Missouri, local hazard mitigation plans customarily include only natural hazards, as only natural hazards are required by federal regulations. Nevertheless, there is an opportunity to include man made or technical hazards within the plan. However, it was decided that only natural hazards were appropriate for the purpose of this plan. Based on past history and future probability, the Hazard Mitigation Planning Committee (HMPC) determined that the following potential hazards would be included in the Pulaski County Hazard Mitigation Plan:

- Dam Failure
- Drought
- Earthquake
- Extreme Temperatures
- Fires (Urban/Structural and Wild)
- Flooding
- Land Subsidence/Sinkholes
- Thunderstorm/High Winds/Lightning/Hail
- Tornado
- Severe Winter Weather

Hazards not occurring in the planning area or considered insignificant were eliminated from this plan. **Table 3.1** outlines the hazards eliminated from the plan and the reasons for doing so. Additionally, some hazards were combined in the Pulaski County Plan to match the hazards listed in the Missouri State Hazard Mitigation Plan.

Table 3.1. Table 3.1 Hazards Not Profiled in the Plan

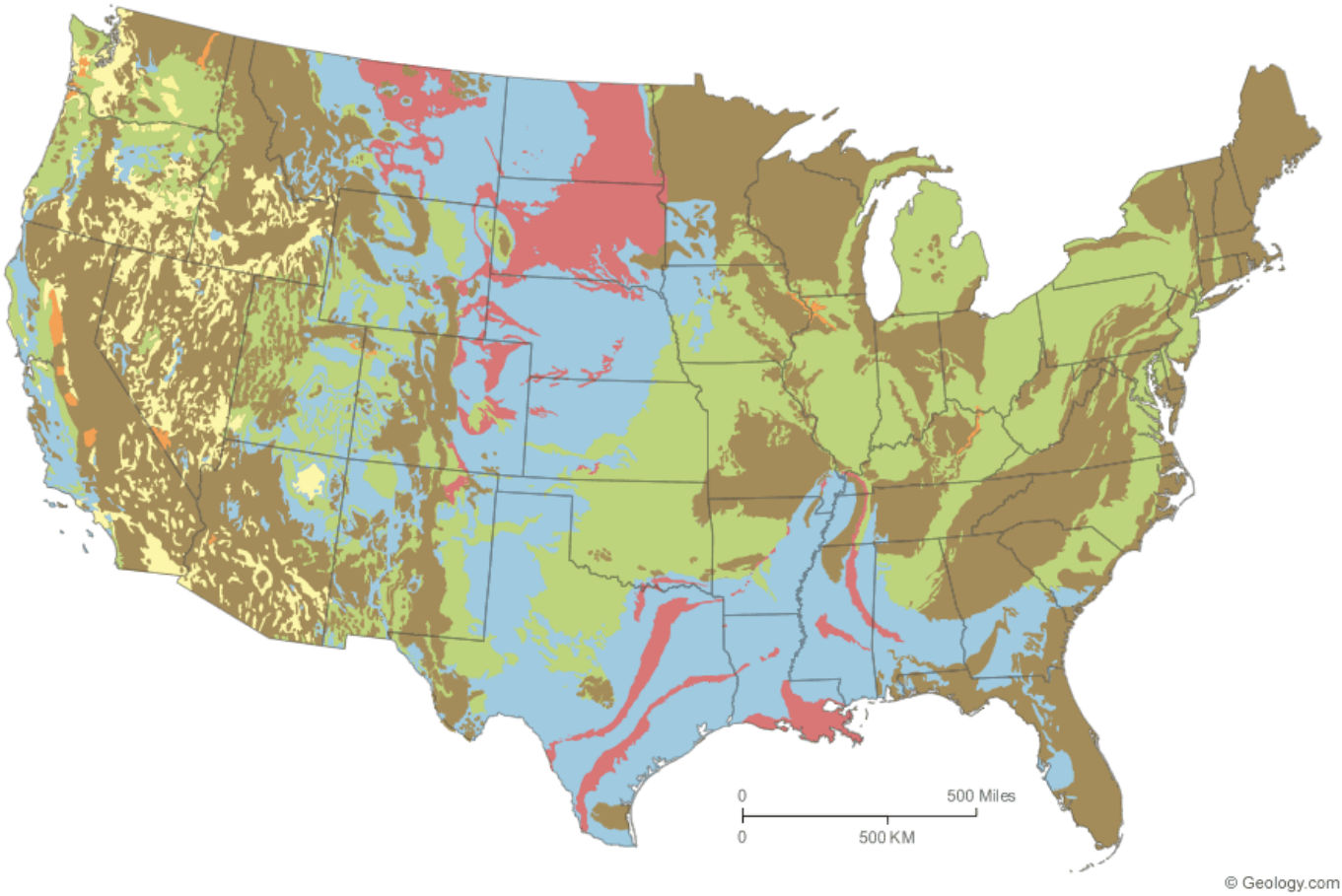
Hazard	Reason for Omission
Avalanche	No mountains in the planning area.
Coastal Erosion	Planning area is located in the Midwest, not on any coast.
Coastal Storm	Planning area is located in the Midwest, not on any coast.

Hazard	Reason for Omission
Debris Flow	There are no mountainous areas in the planning area where this type of event occurs.
Expansive Soils	No expansive soils exist within the planning area. According to the USGS National Geologic Map Database[1], the planning area is underlain by soils with little to no clays with swelling potential (**Figure 3.1**).
Hurricane	Planning area is located in the Midwest, not on any coast.
Levee Failure	According to the US Army Corps of Engineers' National Levee Database [2], and local officials, there are no levees located in the planning area. However, low-head agricultural levees could be present. Unfortunately, no data could be found indicating damages in the event of failure.
Volcano	There are no volcanic areas in the county.

[1] http://ngmdb.usgs.gov/Prodesc/proddesc_10014.htm

[2] https://levees.sec.usace.army.mil/#/

Figure 3.1. Swelling clays map of the conterminous United States



Source: http://ngmdb.usgs.gov/Prodesc/proddesc_10014.htm

3.1.2 Review Disaster Declaration History

In order to assess risk, it was logical to review the disaster declaration history for the State of Missouri and specifically for Pulaski County. Federal and State disaster declarations are granted when the severity and magnitude of a hazard event surpasses the ability of local government to respond and recover. Disaster assistance is supplemental and sequential. When the local government's capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. If the disaster is so severe that both the local and state governments' capacities are exceeded; a federal emergency or disaster declaration may be issued allowing for the provision of federal assistance.

FEMA also issues emergency declarations, which are more limited in scope and do not include the long-term federal recovery programs of major disaster declarations. Determinations for declaration type are based on scale and type of damages and institutions or industrial sectors affected.

There are three agencies through which a federal disaster declaration can be issued – FEMA, the U.S. Department of Agriculture (USDA) and/or the Small Business Administration. A federally declared disaster generally includes long-term federal recovery programs. The type of declaration is determined by the type of damage sustained during a disaster and what types of institutions or industries are affected.

A declaration issued by USDA indicates that the affected area has suffered at least a 30 percent loss in one or more crops or livestock industries. This type of declaration provides those farmers affected with access to low-interest loans and other programs to assist with disaster recovery and mitigation.

Missouri has been especially hard hit by natural disasters in the recent past. The state has had 73 federally declared disasters since 1953. Of those, 45 have occurred between 2000 and 2019. All but two of these disasters have been weather related – severe wind and rain storms, tornadoes, flooding, hail, ice storms and winter storms. **Table 3.2** lists the federal disaster declarations for Pulaski County from 1990 through 2019.

Table 3.2. FEMA Disaster Declarations that included Pulaski County, Missouri, 1990-2019

Disaster Number	Description	Declaration Date Incident Period	Individual Assistance (IA) Public Assistance (PA)
DR-995	Flooding, Severe Storm	Declaration Date: July 9, 1993 Incident Period: June 10, 1993 to October 25, 1993	IA, PA
DR-1006	Flooding, Severe Storm, Tornadoes	Declaration Date: December 1, 1993 Incident Period: November 13, 1993 to November 19, 1993	IA
DR-1023	Severe Storm, Flooding, Tornadoes	Declaration Date: April 21, 1994 Incident Period: April 9, 1994 to May 5, 1994	IA

Disaster Number	Description	Declaration Date Incident Period	Individual Assistance (IA) Public Assistance (PA)
DR-1412	Severe Storms, Tornadoes	Declaration Date: May 6, 2002 Incident Period: April 24, 2002 to June 10, 2002	PA
DR-1463	Severe Storms, Tornadoes, Flooding	Declaration Date: May 6, 2003 Incident Period: May 4, 2003 to May 30, 2003	IA, PA
EM-3232	Hurricane Katrina Evacuation	Declaration Date: September 10, 2005 Incident Period: August 29, 2005 to October 1, 2005	PA
DR-1676	Severe Winter Storms, Flooding	Declaration Date: January 15, 2007 Incident Period: January 12, 2007 to January 22, 2007	PA
EM-3281	Severe Winter Storms	Declaration Date: December 15, 2007 Incident Period: December 8, 2007 to December 15, 2007	PA
DR-1749	Severe Storms, Flooding	Declaration Date: March 19, 2008 Incident Period: March 17, 2008 to May 9, 2008	IA, PA
EM-3303	Severe Winter Storm	Declaration Date: January 30, 2009 Incident Period: January 26, 2009 to January 28, 2009	PA
DR-1847	Severe Storms, Tornadoes, Flooding	Declaration Date: June 19, 2009 Incident Period: May 8, 2009 to May 16, 2009	PA
EM-3317	Severe Winter Storm	Declaration Date: February 3, 2011 Incident Period: January 31, 2011 to February 5, 2011	PA
DR-1961	Severe Winter Storm, Snowstorm	Declaration Date: March 23, 2011 Incident Period: January 31, 2011 to February 5, 2011	PA
DR-1980	Severe Storms, Tornadoes, Flooding	Declaration Date: May 9, 2011 Incident Period: April 19, 2011 to June 6, 2011	IA

Disaster Number	Description	Declaration Date Incident Period	Individual Assistance (IA) Public Assistance (PA)
DR-4144	Severe Storms, Straight-line Winds, Flooding	Declaration Date: September 6, 2013 Incident Period: August 2, 2013 to August 14, 2013	PA
DR-4317	Severe Storms, Tornadoes, Straight-line Winds, and Flooding	Declaration Date:June 2, 2017 Incident Period: April 28, 2017 to May 11, 2017	IA, PA
DR-4451	Severe Storms, Tornadoes, And Flooding	Declaration Date: July 9, 2019 Incident Date: April 29, 2019 to July 5, 2019	IA, PA

Source: Federal Emergency Management Agency: http://www.fema.gov/disasters

3.1.3 Research Additional Sources

List of the additional sources of data on locations and past impacts of hazards in the planning area:

- Missouri Hazard Mitigation Plans (2013, 2018)
- Federal Emergency Management Agency (FEMA)
- Missouri Department of Natural Resources (MDNR)
- National Drought Mitigation Center Drought Reporter
- US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics
- National Agricultural Statistics Service (Agriculture production/losses)
- Data Collection Questionnaires completed by each jurisdiction
- State of Missouri GIS data
- Environmental Protection Agency
- Flood Insurance Administration
- Hazards US (HAZUS)
- Missouri Department of Transportation
- Missouri Division of Fire Marshal Safety
- Missouri Public Service Commission
- National Fire Incident Reporting System (NFIRS)
- National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI);
- Pipeline and Hazardous Materials Safety Administration
- County and local Comprehensive Plans to the extent available
- County Emergency Management
- County Flood Insurance Rate Map, FEMA

- Flood Insurance Study, FEMA
- SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin
- U.S. Army Corps of Engineers
- U.S. Department of Transportation
- United States Geological Survey (USGS)
- Various articles and publications available on the internet (sources are cited in the body of the Plan)

Remarkably, the only centralized source of data for many of the weather-related hazards is the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI). Although it is usually the best and most current source, there are limitations to the data which should be noted. The NCEI documents the occurrence of storms and other significant weather phenomena having sufficient intensity to cause loss of life, injuries, significant property damage, and/or disruption to commerce. In addition, it is a partial record of other significant meteorological events, such as record maximum or minimum temperatures or precipitation that occurs in connection with another event. Some information appearing in the NCEI may be provided by or gathered from sources outside the National Weather Service (NWS), such as the media, law enforcement and/or other government agencies, private companies, individuals, etc. An effort is made to use the best available information but because of time and resource constraints, information from these sources may be unverified by the NWS. Those using information from NCEI should be cautious as the NWS does not guarantee the accuracy or validity of the information.

The NCEI damage amounts are estimates received from a variety of sources, including those listed above in the Data Sources section. For damage amounts, the NWS makes a best guess using all available data at the time of the publication. Property and crop damage figures should be considered as a broad estimate. Damages reported are in dollar values as they existed at the time of the storm event. They do not represent current dollar values.

The database currently contains data from January 1950 to March 2014, as entered by the NWS. Due to changes in the data collection and processing procedures over time, there are unique periods of record available depending on the event type. The following timelines show the different time spans for each period of unique data collection and processing procedures.

1. Tornado: From 1950 through 1954, only tornado events were recorded.
2. Tornado, Thunderstorm Wind and Hail: From 1955 through 1992, only tornado, thunderstorm wind and hail events were keyed from the paper publications into digital data. From 1993 to 1995, only tornado, thunderstorm wind and hail events have been extracted from the Unformatted Text Files.
3. All Event Types (48 from Directive 10-1605): From 1996 to present, 48 event types are recorded as defined in NWS Directive 10-1605.

Injuries and deaths caused by a storm event are reported on an area-wide basis. When reviewing a table resulting from an NCEI search by county, the death or injury listed in connection with that county search did not necessarily occur in that county.

3.1.4 Hazards Identified

Table 3.3 lists the hazards that significantly impact each jurisdiction within the planning area and were chosen for further analysis in alphabetical order. However, not all hazards impact every jurisdiction such as dam failure. “X” indicates the jurisdiction is impacted by the hazard, and a "-" indicates the hazard is not applicable to that jurisdiction. As Pulaski County is predominately rural, limited variations occur across the county. However, jurisdictions with a high percentage of housing comprised of mobile homes, for example, could be more at risk to damages from a tornado.

Table 3.3. Hazards Identified for Each Jurisdiction

Jurisdiction	Dam Failure	Drought	Earthquake	Extreme Temperatures	Wildfires	Flooding (River and Flash)	Land Subsidence/Sinkholes	Thunderstorms/High Winds/ Lightning/Hail	Tornado	Severe Winter Weather
Pulaski County	-	x	x	x	x	x	x	x	x	x
City of Crocker	-	x	x	x	x	x	x	x	x	x
City of Dixon	-	x	x	x	x	x	x	x	x	x
City of Richland	-	x	x	x	x	x	x	x	x	x
City of St. Robert	-	x	x	x	x	x	x	x	x	x
City of Waynesville	-	x	x	x	x	x	x	x	x	x
School Districts										
Dixon. R-I	-	x	x	x	x	x	x	x	x	x
Crocker Co. R-II	-	x	x	x	x	x	x	x	x	x
Swedeborg R-III	-	x	x	x	x	x	x	x	x	x
Richland R-IV	-	x	x	x	x	x	x	x	x	x
Laquey R-V	-	x	x	x	x	x	x	x	x	x
Waynesville R-VI	-	x	x	x	x	x	x	x	x	x

3.1.5 Multi-Jurisdictional Risk Assessment

For this multi-jurisdictional hazard mitigation plan, each hazard is profiled in which the risks are assessed on a planning area wide basis. Some hazards, such as dam failure, vary in risk across the county. If variations exist within the planning area, discussion is included in each profile. Pulaski County is uniform across the county in terms of climate, topography, and building construction characteristics. Weather-related hazards will impact the entire county in much the same fashion, as do topographical/geological related hazards such as earthquake. Sinkholes are widespread in the county, but more localized in their effects. Areas of urbanization include Crocker, Dixon, Richland, St. Robert, and Waynesville. These urbanized areas have more assets at a greater density, and therefore have greater vulnerability to weather-related hazards. Rural areas include agricultural assets (livestock/crops) that are also vulnerable to damages. Differences among jurisdictions for each hazard will be discussed in greater detail in the vulnerability section of each hazard.

3.2 Assets at Risk

This section assesses the planning area's population, structures, critical facilities, infrastructure, and other important assets that may be at risk to hazards.

3.2.1 Total Exposure of Population and Structures

Unincorporated County and Incorporated Cities

In the following three tables, population data is based on 2018 Census Bureau data. Building counts values are based on parcel data provided by the 2018 Missouri State Hazard Mitigation Plan, which can be found at the following website, https://sema.dps.mo.gov/docs/programs/LRMF/mitigation/MO_Hazard_Mitigation_Plan2018.pdf .

Table 3.4. Maximum Population and Building Exposure by Jurisdiction

Jurisdiction	2018 Population	Building Count	Building Exposure ($)	Contents Exposure ($)	Total Exposure ($)
Unincorporated Pulaski County	37,259	-	-	-	-
Crocker	1,027	-	-	-	-
Dixon	1,436	-	-	-	-
Richland	1,770	-	-	-	-
St. Robert	5,822	-	-	-	-
Waynesville	5,226	-	-	-	-
Total	52,591	19,605	$5,334,660,000	$79,599,000	$5,334,660,000

Sources: U.S. Census Bureau, 2014-2018 5-Year American Community Survey; 2018 Missouri State Hazard Mitigation Plan

Table 3.5. Building Counts by Usage Type

Jurisdiction	Residential Counts	Commercial Counts	Industrial Counts	Agricultural Counts	Other (Govt./ Education)	Total
Pulaski County	11,913	538	36	2,017	5,101	19,605

Source: 2018 MO State Hazard Mitigation Plan

Table 3.6 below, provides additional information for school districts, including the number of buildings, building values (building exposure) and contents value (contents exposure). These numbers will represent the total enrollment and building count for the public school districts regardless of the county in which they are located.

Table 3.6. Population and Building Exposure by Jurisdiction-Public School Districts

Public School District	Enrollment	Building Count	Building Exposure ($)	Contents Exposure ($)	Total Exposure ($)
Dixon R-I	950	3	$20,564,080	-	$20,564,080
Crocker R-II	588	6	$13,062,738	$3,817,963	$16,880,701
Swedeborg R-III	50	1	$2,949,530	-	$2,949,530
Richland R-IV	553	11	$15,220,044	$3,274,763	$18,494,807
Laquey R-V	659	4	$20,106,565	$5,019,280	$25,125,845
Waynesville R-VI	6,685	22	$214,273,370	$32,431,741	$246,705,111

Source: https://ogi.oa.mo.gov/DESE/schoolSearch/index.html; 2018 Data Collection Questionnaire

3.2.2 Critical and Essential Facilities and Infrastructure

This section will include information from the Data Collection Questionnaire and other sources concerning the vulnerability of participating jurisdictions' critical, essential, high potential loss, and transportation/lifeline facilities to identified hazards. Definitions of each of these types of facilities are provided below.

- Critical Facility: Those facilities essential in providing utility or direction either during the response to an emergency or during the recovery operation.
- Essential Facility: Those facilities that if damaged, would have devastating impacts on disaster response and/or recovery.
- High Potential Loss Facilities: Those facilities that would have a high loss or impact on the community.
- Transportation and lifeline facilities: Those facilities and infrastructure critical to transportation, communications, and necessary utilities.

Table 3.7 includes a summary of the inventory of critical and essential facilities and infrastructure in the planning area. The list was compiled from the 2020 Data Collection Questionnaire, the Missouri Department of Health and Senior Services, and the National Bridge Inventory.

Table 3.7. Inventory of Critical/Essential Facilities and Infrastructure by Jurisdiction

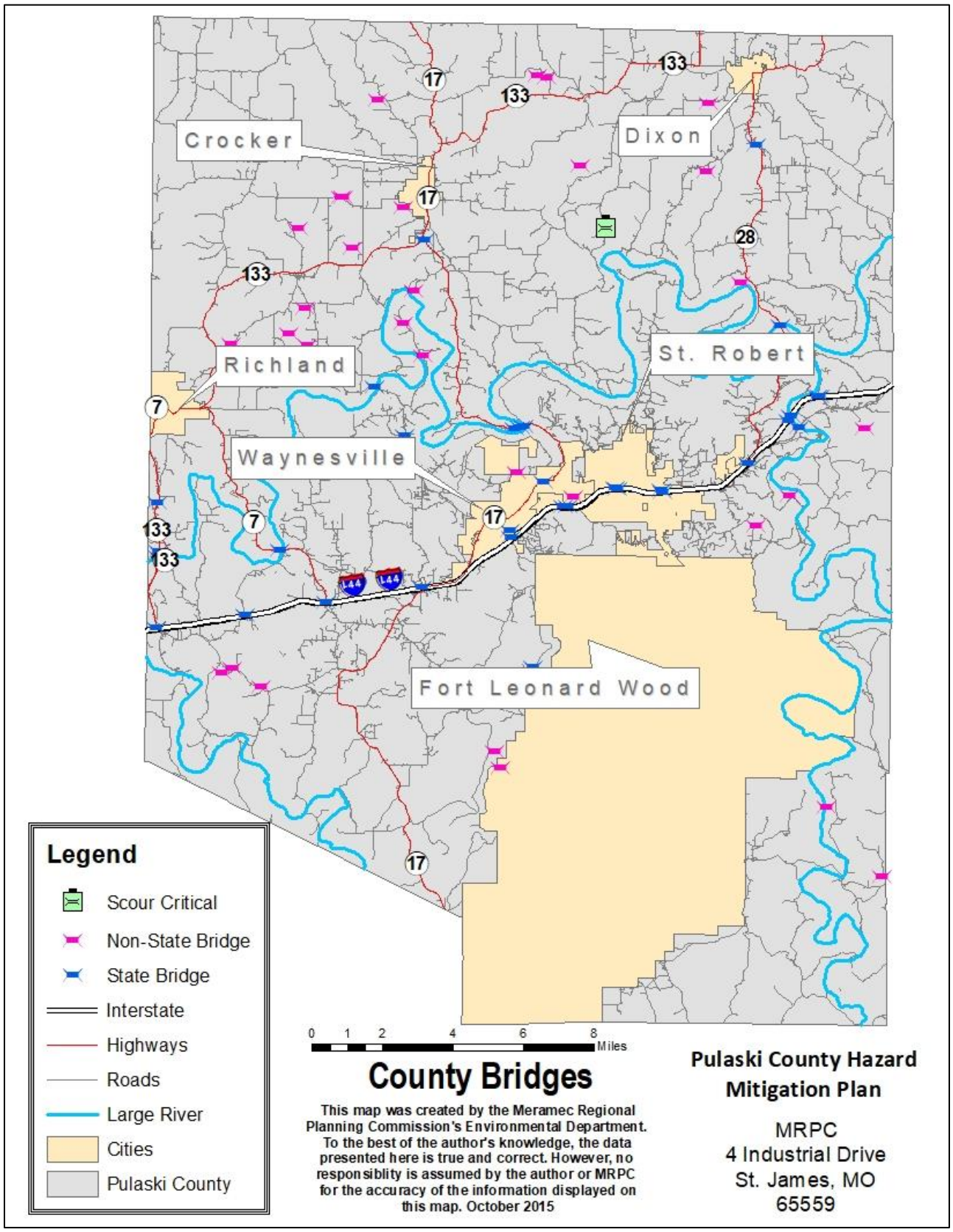
	Airport Facility	Bus Facility	Childcare Facility	Communications Tower	Electric Power Facility	Emergency Operations	Fire Service	Government	Housing	Shelters	State & Non-State Structures (Bridge)	Hospital/Health Care	Military	Natural Gas Facility	Pipeline/Pump Station	Nursing Homes	Police Station	Potable Water Facility	Rail	Sanitary Pump Stations	School Facilities	Stormwater Pump Stations	Tier II Chemical Facility	Wastewater Facility	Total
Unincorporated Pulaski County	3*	-	-	1	-	1	2	3	10,301	-	39	-	1		-	-	1	3	2	-	4	-	9	5	10,375
City of Crocker	-	-	2	3	-	1	1	1	586	1	1	-	-	-	-	-	1	1	1	7	2	-	6	1	615
City of Dixon	-	-	1	-	-	-	1	2	995	3	-	2	-		-	1	1	2	1	-	3	-	10	1	1,023
City of Richland	2	-	1	1	-	1	1	3	834	5	-	2	-		-	2	1	3	-	-	3		3	1	863
City of St. Robert	-	1	3	2	-	1	1	3	1,468	3	2	1	-		-	-	1	5	-	27	-	-	14	3	1,535
City of Waynesville	1	-	9	2	-	4	1	1	1,661	1	4	1	-	1	-	2	1	7	-	7	5	1	9	1	1,719
Totals	6	1	16	9	-	8	7	13	15,845	13	46	6	1	1	-	5	6	21	4	41	17	1	51	12	16,130

Source: 2020 Data Collection Questionnaires, National Bridge Inventory, Missouri Department of Health and Senior Services, Meramec Regional Emergency Response Commission, 2010 US Census (Housing units) * Airports are located on Fort Leonard Wood.

According to the National Bridge Inventory there are a total of 106 bridges in Pulaski County[3]. **Figure 3.2** shows the locations of State regulated bridges and non-State bridges in the planning area. Scour critical bridges were also examined. Scour critical refers to one of the database elements in the National Bridge Inventory. This element is quantified using a "scour index", which is a number indicating the vulnerability of a bridge to scour during a flood. Bridges with a scour index between 1 and 3 are considered "scour critical", or a bridge with a foundation determined to be unstable for the observed or evaluated scour condition. There is one scour critical bridge within Pulaski County. The Bunker Road bridge spanning the Middle Creek has a scour index of 3. The most recent housing data available was from the 2010 census. However, the Missouri Hazard Mitigation plan estimates that housing units have increased between 2010 and 2015 in Pulaski County by .04 to .1 percent.

[3] http://www.fhwa.dot.gov/bridge/nbi/no10/county.cfm

Figure 3.2. Pulaski County Bridges



Source: MSDIS, MoDOT, MRPC

3.2.3 Other Assets

Assessing the vulnerability of the planning area to disaster also requires data on the natural, historic, cultural, and economic assets of the area. This information is important for many reasons.

- These types of resources warrant a greater degree of protection due to their unique and irreplaceable nature and contribution to the overall economy.
- Knowing about these resources in advance allows for consideration immediately following a hazard event, which is when the potential for damages is higher.
- The rules for reconstruction, restoration, rehabilitation, and/or replacement are often different for these types of designated resources.
- The presence of natural resources can reduce the impacts of future natural hazards, such as wetlands and riparian habitats which help absorb floodwaters.
- Losses to economic assets like these (e.g., major employers or primary economic sectors) could have severe impacts on a community and its ability to recover from disaster.

Threatened and Endangered Species: **Table 3.8** depicts Federally Threatened, Endangered, Proposed and Candidate Species in the county.

Table 3.8. Threatened and Endangered Species in Pulaski County

Common Name	Scientific Name	Status
Amphibians		
Eastern Hellbender	*Cryptobranchus alleganiensis alleganiensis*	Endangered (S)
Clams		
Pink Mucket	*Lampsilis abrupta*	Endangered (F) (S)
Scaleshell Mussel	*Leptodea leptodon*	Endangered (F) (S)
Snuffbox Mussel	*Epioblasma triquetra*	Endangered (S)
Spectaclecase	*Cumberlandia monodonta*	Endangered (F) (S)
Elephantear	*Elliptio crassidens*	Endangered (S)
Ebonyshell	*Reginaia ebenus*	Endangered (S)
Sheepnose (Bullhead)	*Plethobasus cyphyus*	Endangered (S)
Fishes		
Niangua Darter	*Etheostoma nianguae*	Threatened (F) Endangered (S)
Topeka Shiner	*Notropis topeka*	Endangered (S)
Birds		
Northern Harrier	*Circus cyaneus*	Endangered (S)
Peregrine Falcon	*Falco peregrinus*	Endangered (S)
Flowering Plants		
Western Prairie Fringed Orchid	*Platanthera praeclara*	Endangered (S)
Mammal		
Gray bat	*Myotis grisescens*	Endangered (F) (S)
Indiana bat	*Myotis sodalis*	Endangered (F) (S)
Northern long-eared bat	*Myotis septentrionalis*	Threatened (F)
Eastern Spotted Skunk	*Spilogale putorius*	Endangered (S)

Note: S = State, F = Federal
Source: U.S. Fish and Wildlife Service, http://www.fws.gov/midwest/Endangered/lists/missouri-cty.html; MDC Endangered Field Guide, https://nature.mdc.mo.gov/status/endangered

Natural Resources: The Missouri Department of Conservation (MDC) provides a database of lands owned, leased, or managed for public use. **Table 3.9** provides the names and locations of parks and conservation areas in Pulaski County.

Table 3.9. Conservation Areas in Pulaski County

Area Name	Address	City
Dixon Townsite	From Dixon, take Hwy 133 W. 3 miles	Near Dixon
Fort Leonard Wood (Bloodland Lake)	From St. Robert, take I-44 E. 1 mile. Exit 161.	Fort Leonard Wood
Fort Leonard Wood Towersite	From St. Robert, take the S. outer road of I-44 E. 1 mile.	Fort Leonard Wood
Gasconade Hills CA	From Dixon, take Hwy 28 S. 10 miles, then Co. rd. 28-462 W.	Near Dixon
Mitschele Access	From Richland, take Hwy 7 S. about 5 miles	Near Richland
Riddle Bridge Access	From St. Robert, take Route Y N. 6 miles	Near St. Robert
Ross Access	From Duke, take Route K W. to Western Rd. then Windsor Lane N. 0.5 miles	Near Duke
Roubidoux Creek CA	From Waynesville, take Hwy 17 N. 1 mile	Near Waynesville
Ryden Cave CA	From Duke, take Route K W. 1.5 miles	Near Duke
Schlicht Springs Access	From Crocker, take Hwy 133 S.W. for 5 miles, then Resort Road S. (left) 1.35 miles, then Riverside Road E. (left) 1 mile to access	Near Crocker
Waynesville (Laughlin/Roubidoux Parks)	The park is downstream from the Roubidoux Spring near the Hwy 17 bridge over Roubidoux Creek	Waynesville

Source: https://nature.mdc.mo.gov/discover-nature/find/places?area_name=&counties=5743&location%5Bdistance%5D=50&location%5Borigin%5D=

Table 3.10 provides information pertaining to community owned/operated parks within Pulaski County.

Table 3.10. Community Owned Parks in Pulaski County

Park Name	Address	City
Dixon City Park	Hwy 133	Dixon
Crocker Community Park	Off Hwy 17	Crocker
Shady Dell Park	Myers Drive	Richland
George M Reed Roadside Park	Old Route 66	St. Robert
St. Robert City Park	Williamson Drive	St. Robert
Roy Laughlin Park	Spring Road	Waynesville
Trail of Tears Memorial Park	Laughlin Park	Waynesville
Waynesville City Park	North Street	Waynesville

Source: http://visitpulaskicounty.org

Historic Resources: The National Register of Historic Places is the official list of registered cultural resources worthy of preservation. It was authorized under the National Historic Preservation Act of 1966 as part of a national program. The purpose of the program is to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources. The National Register is administered by the National Park Service under the Secretary of the Interior. Properties listed in the National Register include districts, sites, buildings, structures and objects that are significant in American history, architecture, archeology, engineering, and culture. **Table 3.11** provides information in regards to properties on the National Register of Historic Places in Pulaski County.

Table 3.11. Pulaski County Properties on the National Register of Historic Places

Property	Address	City	Date Listed
Decker Cave Archeological Site	Restricted	Buckhorn	2/12/1971
Devil's Elbow Historic District	Timber and Teardrop roads	Devil's Elbow	4/17/2017
Calloway Manes Homestead	NW of Richland	Richland	6/6/1980
Old Stagecoach Stop	Linn St., Courthouse Sq.	Waynesville	11/24/1980
Onyx Cave	14705 Private Drive 541	Newburg	5/21/1999
Piney Beach	Hooker vicinity	Hooker	4/17/2017
Pulaski County Courthouse	Pulaski County Courthouse	Waynesville	7/17/1979

Source: Missouri Department of Natural Resources – Missouri National Register Listings by County http://dnr.mo.gov/shpo/mnrlist.htm

Economic Resources: **Table 3.12** provides major non-government employers in the planning area. There are approximately 698 employer establishments within the county, employing on average 12 individuals each[4].

[4] https://www.census.gov/quickfacts/fact/table/pulaskicountymissouri,US/PST045219

Table 3.12. Major Non-Government Employers in Pulaski County

Employer Name	Product or Service	Employees
Army Air Force Exchange Svc	Department Stores	100-249
Battelle Science Technology	Research Service	100-249
Candlewood Suites Ihg Army	Hotels & Motels	100-249
Cracker Barrel Old Country Store	Full-Service Restaurant	100-249
Lowe's Home Improvement	Home Center	100-249
Piney Ridge Center	Mental Health Services	100-249
Tiger Typhoon Center	Water Park	100-249
Walmart Supercenter	Department Store	250-499
EDP Enterprises Inc	Food Service	500-999

Source: https://meric.mo.gov/industry/business-locator, 2020 Data Collection Questionnaires

Agriculture plays an important role in Pulaski County. However, the Agribusiness Employment Location Quotient for the county is 0.04; meaning that there is a relatively low share of agribusiness employment to its share of total national employment[5]. In addition, there were 78 individuals working in the agriculture industry, comprising 0.88% of the total workforce in 2018[6]. Furthermore, the market value of products sold in 2017 was $12.2 million; 95% from livestock sales and 5% from crop sales.

3.3 Future Land Use and Development

Table 3.13 provides population growth statistics for Pulaski County.

Table 3.13. Pulaski County Population Growth, 2010-2018

Jurisdiction	2010 Population	2018 Population	2010-2018 # Change	2010-2018 % Change
Unincorporated Pulaski County	38,586	37,259	-1,327	-3.44
Crocker	1,110	1,152	42	3.78
Dixon	1,549	1,256	-293	-18.92
Richland	1,863	1,895	32	1.72
St. Robert	4,340	5,767	1,427	32.8
Waynesville	4,826	5,262	436	9.03

Source: U.S. Bureau of the Census, 2014-2018 5 Year American Community Survey; Census 2010 Summary File 1

Typically population growth or decline is generally accompanied by an increase or decrease in the

[5] https://meric.mo.gov/media/pdf/rural-missouri-asset-mapping

[6] https://data.census.gov/cedsci/table?q=United%20States&tid=ACSST5Y2018.S2401&g=0400000US29_0500000US29169,29161&t=Occupation&vintage=2018
https://www.nass.usda.gov/Quick_Stats/CDQT/chapter/2/table/1/state/MO/county/169/year/2017

number of housing units. **Table 3.14** provides the change in numbers of housing units in the planning area from 2010-2018. The city of St. Robert shows a significant increase in housing units. This is mostly attributed to the city doing extensive annexation of subdivisions.

Table 3.14. Change in Housing Units, 2010-2018

Jurisdiction	Housing Units 2010	Housing Units 2018	2010-2018 # Change	2010-2018 % change
Unincorporated Pulaski County	11,461	11,256	-205	-1.79
Crocker	604	494	-110	-18.21
Dixon	783	593	-190	-24.27
Richland	996	903	-93	-9.34
St. Robert	1,707	3,313	1,606	94.08
Waynesville	1,981	2,499	518	26.15

Source: U.S. Census Bureau, 2014-2018 5 Year American Community Survey; U.S. Bureau of the Census, Census 2010 Summary File 1

Jurisdictions reported anticipated future developments within the next five years (2020-2025). Pulaski County and cities of Crocker, Dixon, Richland, and Waynesville did not anticipate any major future developments within the next five years. The city of St. Robert is in the process of moving its wastewater treatment facility out of the floodplain. Although the city of St. Robert does not expect substantial development in the next five years, St. Robert may continue to annex subdivisions on its borders.

Crocker R-II indicated that they would be building a new bus barn in the next five years. All other school districts indicated that they did not have any major development or construction planned for the next five years.

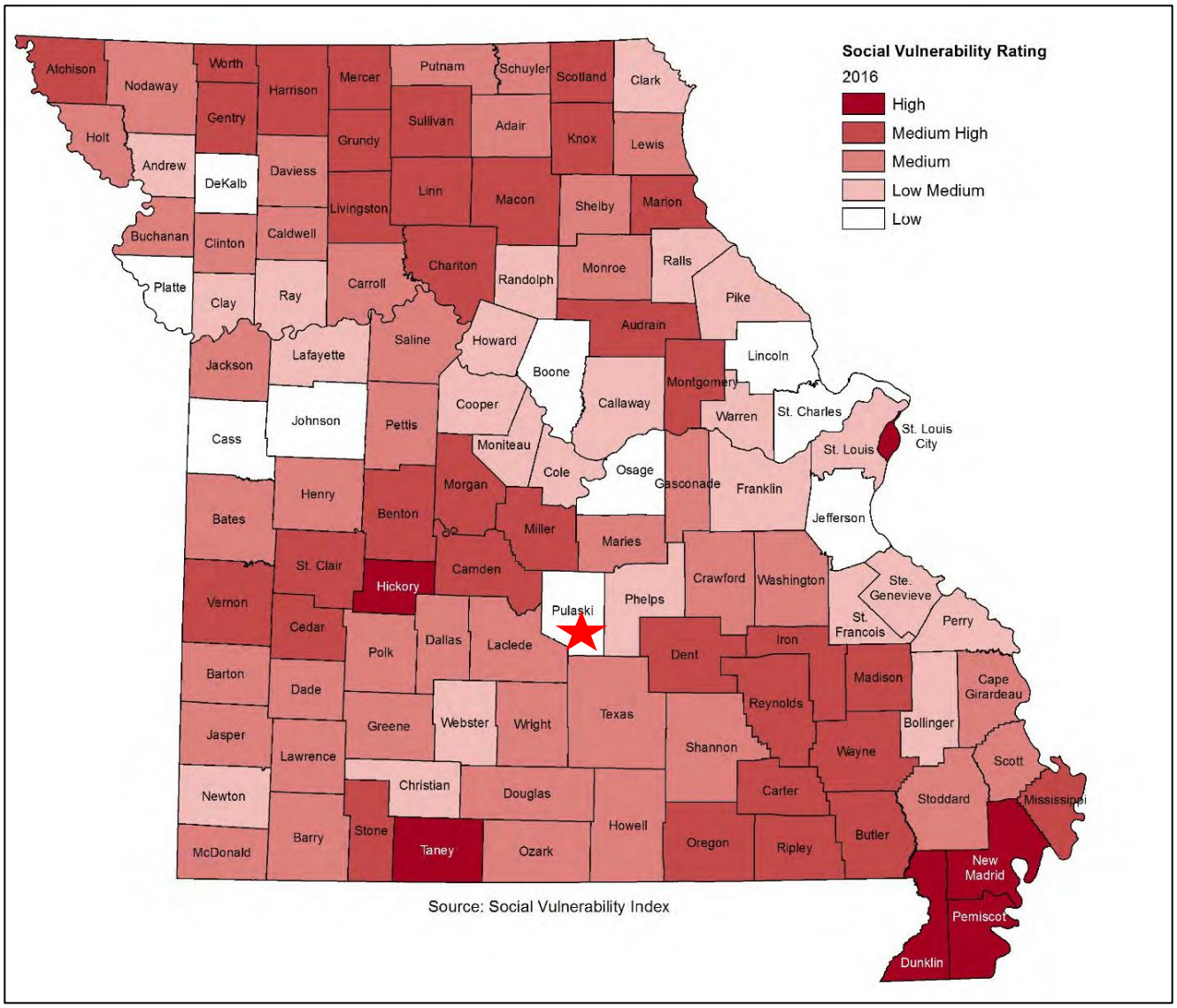
New development can impact a jurisdiction's vulnerability to natural hazards. As the number of buildings, critical facilities, and assets increase, vulnerability increases as well. For example, real estate development can increase storm water runoff, which often increases localized flooding. However, some development such as infrastructure improvements can help reduce vulnerability risks. Unfortunately, quantitative data is not available to further examine each jurisdictions new development and its correlation to natural hazard vulnerabilities.

Socioeconomic Profile

The Missouri State Hazard Mitigation Plan provides ratings for social vulnerability for each of the counties in the state based on 42 socioeconomic and built environment variables that research suggests contribute to a community's ability to prepare for, respond to and recover from hazards. Based on that data, Pulaski County has a "low" social vulnerability rating (Figure 3.3). Furthermore, business incentives are available in the County including Missouri Works, a program for qualified job creators which enables the retention of withholding tax or tax credits that can be transferrable, refundable and/or saleable; BUILD, a financial incentive for the location or expansion of large business projects; sales tax exemptions exist for qualified manufacturers; and industrial infrastructure grants are available up to $2 million or $20,000 per job created[7].

[7] https://ded.mo.gov/programs/business/missouri-works

Figure 3.3. Social Vulnerability Rating for Pulaski County



3.4 Hazard Profiles, Vulnerability, and Problem Statements

Each hazard that has been determined to be a potential risk to Pulaski County is profiled individually in this section of the plan document. The profile will consist of a general hazard description, location, severity/magnitude/extent, previous events, future probability, a discussion of risk variations between jurisdictions, and how anticipated development could impact risk. At the end of each hazard profile will be a vulnerability assessment, followed by a summary problem statement.

Hazard Profiles

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the…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.

Each hazard identified in Section **3.1.4** will be profiled individually in this section in alphabetical order. The level of information presented in the profiles will vary by hazard based on the information available. With each update of this plan, new information will be incorporated to provide better evaluation and prioritization of the hazards that affect the planning area. Detailed profiles for each of the identified hazards include information categorized as follows:

Hazard Description: This section consists of a general description of the hazard and the types of impacts it may have on a community or school/special district.

Geographic Location: This section describes the geographic location of the hazard in the planning area. Where available, use maps to indicate the specific locations of the planning area that are vulnerable to the subject hazard. For some hazards, the entire planning area is at risk.

Severity/Magnitude/Extent: This includes information about the severity, magnitude, and extent of a hazard. For some hazards, this is accomplished with description of a value on an established scientific scale or measurement system, such as an EF2 tornado on the Enhanced Fujita Scale. Severity, magnitude, and extent can also include the speed of onset and the duration of hazard events. Describing the severity/magnitude/extent of a hazard is not the same as describing its potential impacts on a community. Severity/magnitude/extent defines the characteristics of the hazard regardless of the people and property it affects.

Previous Occurrences: This section includes available information on historic incidents and their impacts. Historic event records form a solid basis for probability calculations.

Probability of Future Occurrence: The frequency of recorded past events is used to estimate the likelihood of future occurrences. Probability was determined by dividing the number of recorded events by the number of years and multiplying by 100. This gives the percent chance of the event happening in any given year. For events occurring more than once annually, the probability will be reported 100% in any given year, with a statement of the average number of events annually. For hazards such as drought that may have gradual onset and extended duration, probability can be based on the number of months in drought in a given time-period and expressed as the probability for any given month to be in drought.

The discussion on the probability of future occurrence should also consider changing future conditions, including the effects of long-term changes in weather patterns and climate on the identified hazards. NOAA has a new tool that can provide useful information for this purpose.

- NOAA Climate Explorer, https://crt-climate-explorer.nemac.org/

Vulnerability Assessments

Requirement §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. This description shall include an overall summary of each hazard and its impact on the community.

Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

Requirement §201.6(c)(2)(ii)(B): [The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.

Requirement §201.6(c)(2)(ii)(C): [The plan should describe vulnerability in terms of] 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.

Requirement §201.6(c)(2)(ii): (As of October 1, 2008) [The risk assessment] must also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged in floods.

Following the hazard profile for each hazard will be the vulnerability assessment. The vulnerability assessment further defines and quantifies populations, buildings, critical facilities, and other community assets at risk to damages from natural hazards. The vulnerability assessments will be based on the best available county-level data, which is in the Missouri Hazard Mitigation Plan (2018). With the 2018 Hazard Mitigation Plan Update, SEMA is pleased to provide online access to the risk assessment data and associated mapping for the 114 counties in the State. Through the web-based Missouri hazard Mitigation Viewer, local planners or other interested parties can obtain all State Plan datasets. This effort removes from local mitigation planners a barrier to performing all the needed local risk assessments by providing the data developed during the 2018 State Plan Update. The Missouri Hazard Mitigation viewer can be found at this link: http://bit.ly/MoHazardMitigationPlanViewer2018.

The county-level assessments in the State Plan were also based on the following additional sources:

- Statewide GIS data sets compiled by state and federal agencies; and
- FEMA's HAZUS-MH loss estimation software.

The vulnerability assessments in the Pulaski County plan will also be based on:

- Written descriptions of assets and risks provided by participating jurisdictions;
- Existing plans and reports;
- Personal interviews with planning committee members and other stakeholders; and
- Other sources as cited.

Within the Vulnerability Assessment, the following sub-headings will be addressed:

Vulnerability Overview: This section will include a brief review of the vulnerability of each hazard.

Potential Losses to Existing Development: (including types and numbers, of buildings, critical facilities, etc.)

Future Development: This section will include information on anticipated future development in the county, and how that would impact hazard risk in the planning area.

Previous and Future Development: This section will include information on how changes in development have impacted the community's vulnerability to this hazard. Describe how any changes in development that occurred in known hazard prone areas since the previous plan have increased or decreased the community's vulnerability. Describe any anticipated future development in the county, and how that would impact hazard risk in the planning area.

Problem Statements

Each hazard analysis must conclude with a brief summary of the problems created by the hazard in the planning area, and possible ways to resolve those problems. Additionally, variations in risk between geographic areas will be included.

3.4.1 Dam Failure

Some specific sources for this hazard are:

- 2018 Missouri State Hazard Mitigation Plan, Chapter 3, Section 3.3.3, Page 3.148 https://sema.dps.mo.gov/docs/programs/LRMF/mitigation/MO_Hazard_Mitigation_Plan2018.pdf
- Missouri Department of Natural Resources, Dam and Reservoir Safety, http://dnr.mo.gov/env/wrc/dam-safety/statemap.htm
- Stanford University's National Performance of Dams Program; http://npdp.stanford.edu/index.html
- National Inventory of Dams, http://geo.usace.army.mil/
- MO DNR Dam & Reservoir Safety Program;
- National Resources Conservation Service http://www.nrcs.usda.gov
- Missouri Spatial Data Information Service, http://msdis.missouri.edu
- Missouri Hazard Mitigation Viewer
  http://bit.ly/MoHazardMitigationPlanViewer2018 - Website
  https://drive.google.com/file/d/1bPkc0jgF9ofwQLnTL9N0u-oPFWi9hkst/view - User Guide
    - Total number of Missouri NID dams by County
    - Total number of High, Significant, and Low Hazard dams by County
    - Total number of State Regulated dams by County
    - Total number of Class 1, Class 2, and Class 3 dams by County
    - Total number of structures impacted by USACE dams by County
    - Total number of structures impacted by State dams by County
    - Total value of structures impacted by USACE dams by County
    - Total value of structures impacted by State dams by County
    - Total population impacted by USACE dams by County
    - Total population impacted by State dams by County

Hazard Profile

Hazard Description

A dam is defined as a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. Dams are typically constructed of earth, rock, concrete, or mine tailings. Dam failure is the uncontrolled release of impounded water resulting in downstream flooding, affecting both life and property. Dam failure can be caused by any of the following:

1. Overtopping - inadequate spillway design, debris blockage of spillways or settlement of the dam crest.
2. Piping: internal erosion caused by embankment leakage, foundation leakage and deterioration of pertinent structures appended to the dam.
3. Erosion: inadequate spillway capacity causing overtopping of the dam, flow erosion, and inadequate slope protection.
4. Structural Failure: caused by an earthquake, slope instability or faulty construction.

Information regarding dam classification systems under both the Missouri Department of Natural Resources (MDNR) and the National Inventory of Dams (NID), which differ, are provided in **Table 3.15** and **Table 3.16**, respectively.

Table 3.15. MDNR Dam Hazard Classification Definitions

Hazard Class	Definition
Class I	Contains 10 or more permanent dwellings or any public building
Class II	Contains 1 to 9 permanent dwellings or 1 or more campgrounds with permanent water, sewer, and electrical services or 1 or more industrial buildings
Class III	Everything else

Source: Missouri Department of Natural Resources, http://dnr.mo.gov/env/wrc/docs/rules_reg_94.pdf

Table 3.16. NID Dam Hazard Classification Definitions

Hazard Class	Definition
Low Hazard	A dam located in an area where failure could damage only farm or other uninhabited buildings, agricultural or undeveloped land including hiking trails, or traffic on low volume roads that meet the requirements for low hazard dams.
Significant Hazard	A dam located in an area where failure could endanger a few lives, damage an isolated home, damage traffic on moderate volume roads that meet certain requirements, damage low-volume railroad tracks, interrupt the use or service of a utility serving a small number of customers, or inundate recreation facilities, including campground areas intermittently used for sleeping and serving a relatively small number of persons.
High Hazard	A dam located in an area where failure could result in any of the following: extensive loss of life, damage to more than one home, damage to industrial or commercial facilities, interruption of a public utility serving a large number of customers, damage to traffic on high-volume roads that meet the requirements for hazard class C dams or a high-volume railroad line, inundation of a frequently used recreation facility serving a relatively large number of persons, or two or more individual hazards described for significant hazard dams.

Source: National Inventory of Dams

Geographic Location

Dams in Planning Area

According to the National Inventory of Dams and Stanford National Performance of Dams Program, there are 13 recorded dams in Pulaski County; Each dam within the County is considered as a low hazard dam. **Table 3.17** provides the name of the dam, DNR hazard class and NID hazard class for each of the identified dams in Pulaski County. There are no state-regulated dams in Pulaski County. None of the dams are owned or operated by the United States Army Corps of Engineers (USACE). County dams are privately or commercially owned.

Table 3.17. Pulaski County Dams Hazard Risk

Name of Dam	DNR Hazard Class*	NID Hazard Class
Alexander Farms Dam		Low
Armistead Dam		Low
Big Basin		Low
Bloodland Lake		Low
Bloodland Quad No.3 Dam		Low
Cardin Lake Dam		Low
Engineer Lake		Low
Molar Pond Dam		Low
Penn's Pond (Federal)		Low
Red Lake (Federal)		Low
Robert's Dam		Low
Schultz Lake Dam		Low
Woolridge Lake Dam		Low

Source: National Performance of Dams Program (NPDP) was used since it is the most up to date information.
* There are no state regulated dams in Pulaski County, so there are no Hazard Class Ratings.

If a dam failure were to occur in Pulaski County, the severity would likely be limited since very few, if any people or critical facilities would be affected by the failure of one of the county's dams. None of the dams are located within an incorporated area and no critical facilities are located in the path of a possible dam failure.

Upstream Dams Outside the Planning Area

From the data available there are no upstream dams outside of the planning area that would impact Pulaski County in the event of failure.

Severity/Magnitude/Extent

The severity/magnitude of dam failure would be similar in some cases to the impacts associated with flood events (see the flood hazard vulnerability analysis and discussion). Based on the hazard class definitions, failure of any of the High Hazard/Class I dams could result in a serious threat of loss of human life, serious damage to residential, industrial or commercial areas, public utilities, public buildings, or major transportation facilities. Catastrophic failure of any high hazard dams has the potential to result in greater destruction due to the potential speed of onset and greater depth, extent, and velocity of flooding. For this reason, dam failures could flood areas outside of mapped flood hazards. However, review of the flow of water, should a breach occur, indicated that damage would be limited mainly to the dam owner's properties. Based on the locations, and probable flow of water should a breach occur, dams located in Pulaski County pose little or no risk to all jurisdictions.

Previous Occurrences

According to Stanford University's National Performance of Dams Program and the Missouri State

Emergency Management Agency, there were 86 recorded dam incidents in Missouri between 1917 and 2008. For the 42-year period from 1975 to 2016 for which dam failure statistics are available, 19 dam failures and 68 incidents are recorded. Fortunately, only one drowning has been associated with a dam failure in the state. The problem of unsafe dams in Missouri was underscored by dam failures at Lawrenceton in 1968, Washington County in 1975, Fredricktown in 1977, and a near failure in Franklin County in 1979. A severe rainstorm and flash flooding in October 1998 compromised about a dozen small, unregulated dams in the Kansas City area. But perhaps the most spectacular and widely publicized dam failure in recent years was the failure of the Taum Sauk Hydroelectric Power Plant Reservoir atop Profitt Mountain in Reynolds County, MO.

In the early morning hours of December 14, 2005, a combination of human and mechanical error in the pump station resulted in the reservoir being overfilled. The manmade dam around the reservoir failed and dumped over a billion gallons of water down the side of Profitt Mountain, into and through Johnson's Shut-Ins State Park and into the East Fork of the Black River. The massive wall of water scoured a channel down the side of the mountain that was over 6000 feet wide and 7,000 feet long that carried a mix of trees, rebar, concrete, boulders and sand downhill and into the park[8]. The deluge destroyed Johnson's Shut-Ins State Park facilities, including the campground, and deposited sediment, boulders and debris into the park. The flood of debris diverted the East Fork of the Black River into an older channel and turned the river chocolate brown. Fortunately the breach occurred in mid-winter. Five people were injured when the park superintendent's home was swept away by the flood, but all were rescued and eventually recovered. Had it been summer, and the campground filled with park visitors, the death toll could have been very high[9]. This catastrophe has focused the public's attention on the dangers of dam failures and the need to adequately monitor dams to protect the vulnerable.

Despite the significance of the immediate damage done by the Taum Sauk Reservoir dam failure, the incident also highlights the long-term environmental and economic impacts of an event of this magnitude. Four years later, the toll of the flooding and sediment on aquatic life in the park and Black River is still being investigated. Even after the removal of thousands of dump truck loads of debris and mud, the river is still being affected by several feet of sediment left in the park. The local economy, heavily reliant upon the tourism from the park and Black River, has also been hit hard[10].

Event Description

According to Stanford University's National Performance of Dams Program, no dam incidents have been recorded for Pulaski County[11].

Probability of Future Occurrence

Since it is unknown which dams, if any might fail at any given time, determining the probability of future occurrence is not possible[12]. Dam failure within the county has not occurred according to available data. In addition, Pulaski County there are no state or USACE regulated dams which means that the dams are all uninspected which further complicates determining the probability of future occurrences.

[8] United States Geological Survey. Damage Evaluation of the Taum Sauk Reservoir Failure using LiDAR. http://mcgsc.usgs.gov/publications/t_sauk_failure.pdf

9 The Alert. Spring 2006. After the Deluge…What's Ahead for Taum Sauk? By Dan Sherburne.

[10] The Alert. Spring 2006. After the Deluge…What's Ahead for Taum Sauk? By Dan Sherburne.

[11] http://npdp.stanford.edu/dam_incidents

[12] 2018 Missouri State Hazard Mitigation Plan

Vulnerability

Vulnerability Overview

Data was obtained from the 2018 Missouri State Hazard Mitigation Plan for the vulnerability analysis of dam failure for Pulaski County. There are however data limitations regarding dams unregulated by the State of Missouri due to height requirements. These limitations hinder vulnerability analysis; nonetheless, failure potential still exists.

For the vulnerability analysis of State regulated dams, the State developed the following assumptions for overview.

- Class 1 dams: the number of structures in the inundation area was estimated to be 10 or more permanent dwellings or any public building. Inspection of these dams must occur every two years.
- Class 2 dams: the area downstream from the dam that would be affected by inundation contains one to nine permanent dwellings, or one or more campgrounds with permanent water, sewer and electrical services or one or more industrial buildings. Inspection of these dams must occur once every three years.
- Class 3 dams: the area downstream from the dam that would be affected by inundation does not contain any of the structures identified for Class 1 or Class 2 dams. Inspection of these dams must occur once every five years.

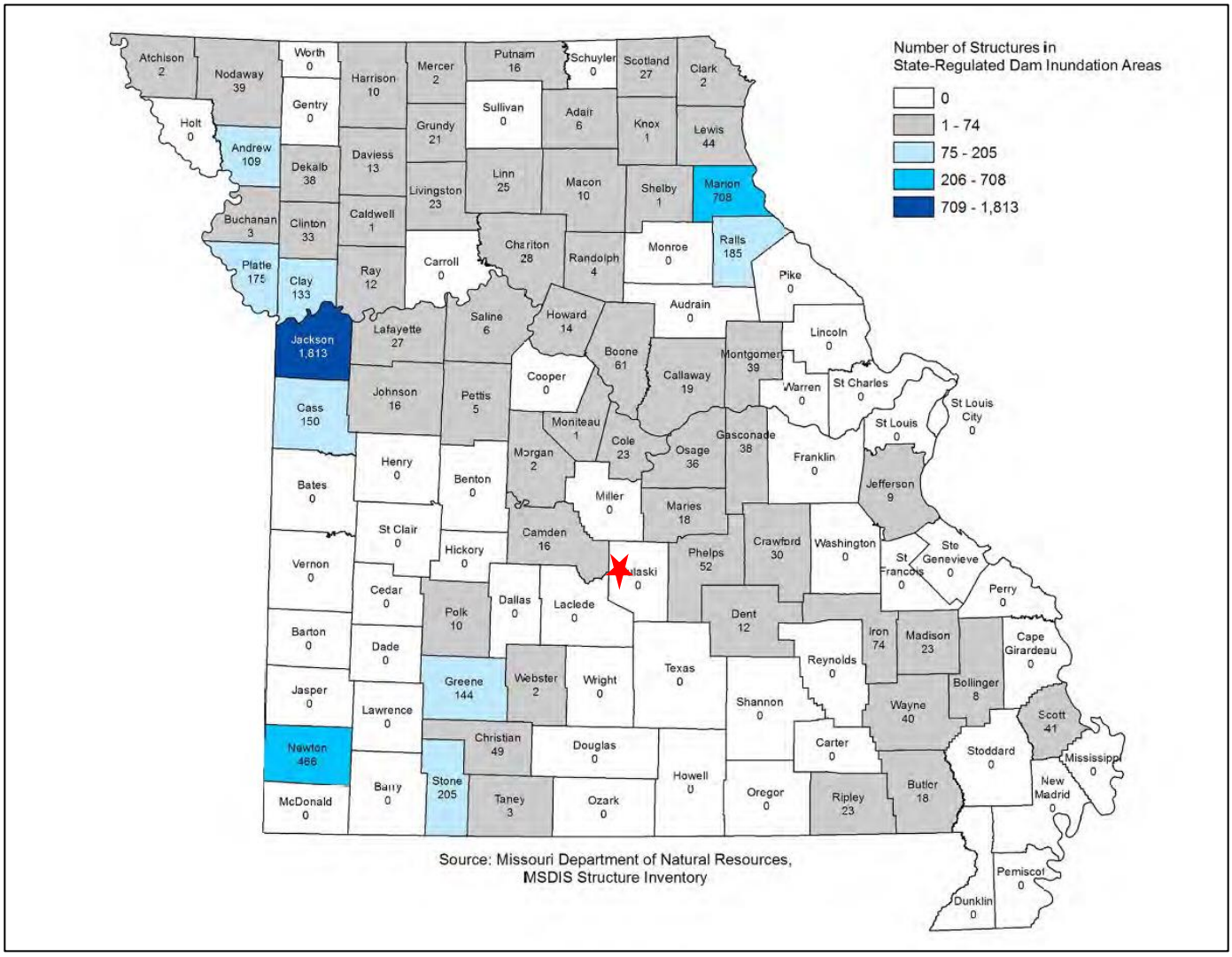
According to the 2018 Missouri State Hazard Mitigation Plan, there are no buildings vulnerable to failure of State-regulated dams (**0**) in Pulaski County. Furthermore, the state quantified potential loss estimates in terms of property damages. To execute the analysis, the following assumptions were utilized.

- For State-regulated Class 1 and Class 2 dams that have available inundation maps as well as USACE dams for which inundation maps were made available, GIS comparative analysis was accomplished against the building exposure data to determine the types, numbers and estimated values of buildings at risk to dam failure.
- The building exposure data was based on the structure inventory data layer available from the Missouri Spatial Data Inventory Service (MSDIS). The available dam inundation areas were compared against the structure inventory to determine the numbers and types of structures at risk to dam failure.
- To calculate estimated values of buildings at risk, buildings values available in the HAZUS census block data were used to determine an average value for each property type. This average value per property type was then applied to the number of structures in dam inundation areas by type to calculate an overall estimated value of buildings at risk by type.[13]

Figure 3.5 and **Figure 3.6** depict the total estimated building losses and population exposure by county, respectively. The estimated building losses from failure of State-regulated dams are $1 – $2 million. The estimated population exposure to failure of State-regulated dams ranges between 1 and 130.

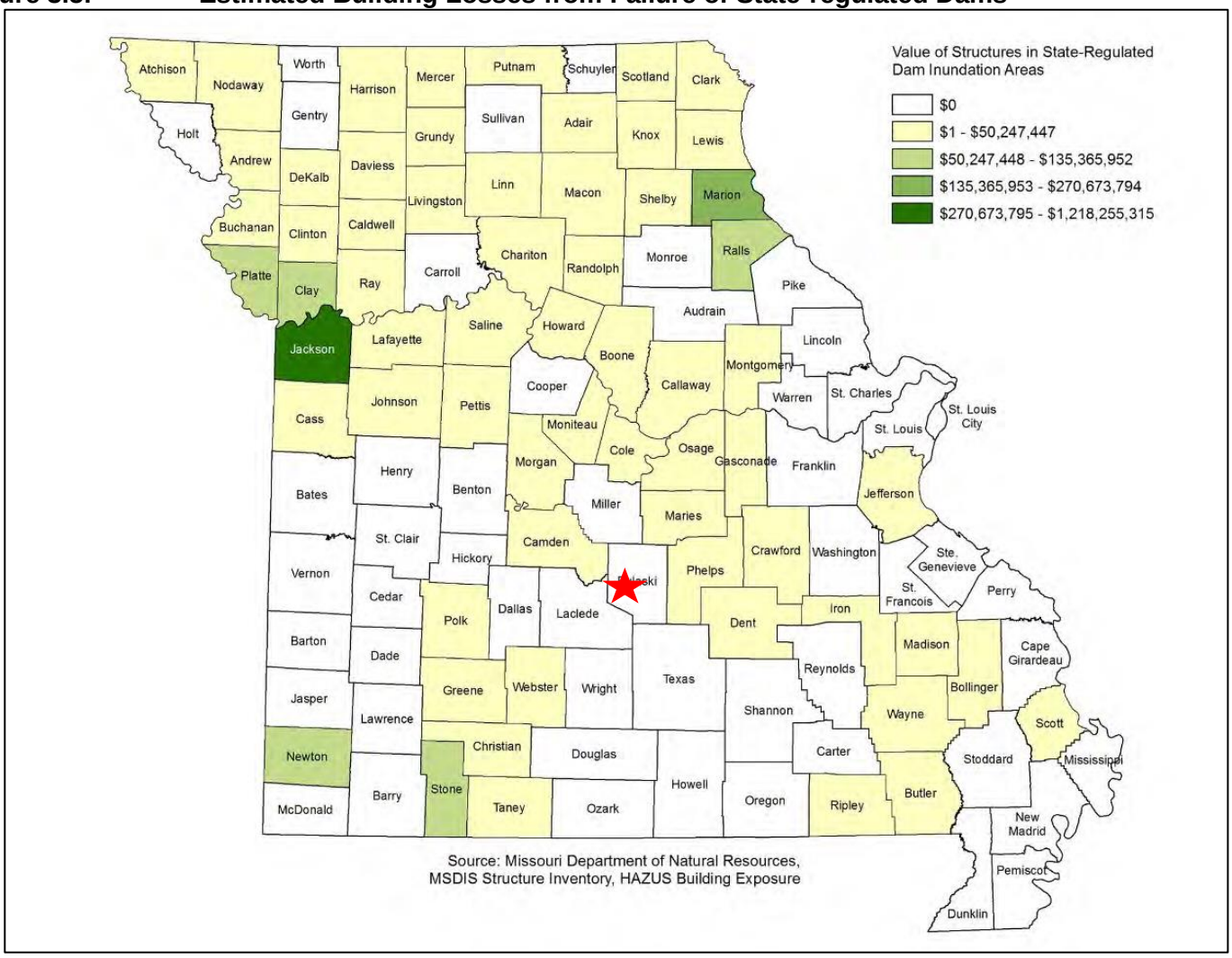
[13] 2018 Missouri State Hazard Mitigation Plan

Figure 3.4. Estimated Number of Buildings Vulnerable to Failure of State-regulated Dams



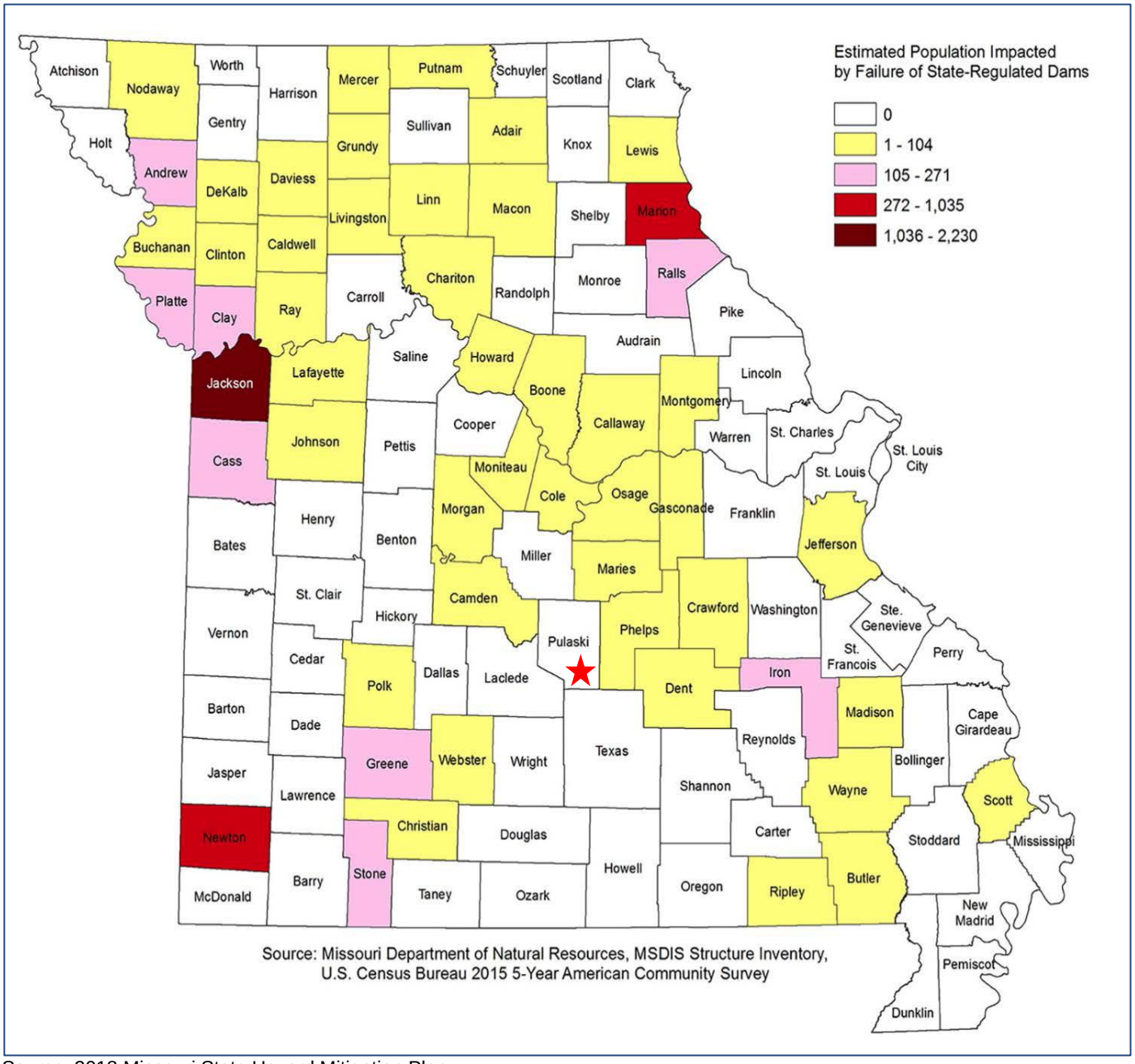
Source: 2018 Missouri State Hazard Mitigation Plan
*Red star indicates Pulaski County

Figure 3.5. Estimated Building Losses from Failure of State-regulated Dams



Source: 2018 Missouri State Hazard Mitigation Plan
*Red star indicates Pulaski County

Figure 3.6. Estimated Population Exposure to Failure of State-regulated Dams



Source: 2018 Missouri State Hazard Mitigation Plan
*Red star indicates Pulaski County

Potential Losses to Existing Development: (including types and numbers, of buildings, critical facilities, etc.)

Due to the locations of dams in Pulaski County, a dam failure would have little to no impact on the existing development of the County. Families living near the dam may experience washed out roadways, or property damage. There are no dams in Pulaski County that are economically significant enough to have an adverse economic impact on jurisdictions.

Impact of Future Development

Anticipated future development in the County is not foreseeable to impact the amount of damages caused by a dam failure. Since the planning area is rural in nature, and most dams are privately owned, little to no development is expected.

Hazard Summary by Jurisdiction

There are no variations in vulnerability across the planning area.

Problem Statement

In summary, the hazard risk for dam failure in Pulaski County is very low. If a dam does fail, the expected impacts are miniscule, and would be restricted to properties of private land owners. It is recommended to encourage land use management practices to decrease the potential for damage from a dam collapse, including the discouragement of development in areas with the potential for sustaining damage from a dam failure. Install public education programs to inform the public of dam safety measures and preparedness activities. Offer training programs for dam owners to encourage them to inspect their dams and so that they may learn how to develop and exercise emergency action plans.

3.4.2 Drought

Some specific sources for this hazard are:

- 2018 Missouri State Hazard Mitigation Plan, Chapter 3, Section 3.3.6, Page 3.235
- Maps of effects of drought, National Drought Mitigation Center (NDMC) located at the University of Nebraska in Lincoln; http://www.drought.unl.edu/.
- Historical drought impacts, National Drought Mitigation Center (NDMC) located at the University of Nebraska in Lincoln; at http://droughtreporter.unl.edu/ .
- Recorded low precipitation, NOAA Regional Climate Center, (http://www.hprcc.unl.edu).
- Water shortages, Missouri's Drought Response Plan, Missouri Department of Natural Resources, http://dnr.mo.gov/pubs/WR69.pdf
- Populations served by groundwater by county, USGS-NWIS, http://maps.waterdata.usgs.gov/mapper/index.html
- Census of Agriculture, http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Missouri/and http://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/Missouri/
- USDA Risk Management Agency, Insurance Claims, http://www.rma.usda.gov/data/cause.htm
- Natural Resources Defense Council, http://www.nrdc.org/globalWarming/watersustainability/
- Missouri Department of natural Resources (MDNR), Drought News, Conditions and Resources
- Missouri Hazard Mitigation Viewer
  http://bit.ly/MoHazardMitigationPlanViewer2018 - Website
  https://drive.google.com/file/d/1bPkc0jgF9ofwQLnTL9N0u-oPFWi9hkst/view - User Guide
    - Vulnerability to drought by County
    - Crop insurance claims due to drought by County

Hazard Profile

Hazard Description

Drought is generally defined as a condition of moisture levels significantly below normal for an extended period of time over a large area that adversely affects plants, animal life, and humans. A drought period can last for months, years, or even decades. There are four types of drought conditions relevant to Missouri, according to the 2018 Missouri State Hazard Mitigation Plan, which are as follows.

- Meteorological drought is defined in terms of the basis of the degree of dryness (in comparison to some "normal" or average amount) and the duration of the dry period. A meteorological drought must be considered as region-specific since the atmospheric conditions that result in deficiencies of precipitation are highly variable from region to region.

- Hydrological drought is associated with the effects of periods of precipitation (including snowfall) shortfalls on surface or subsurface water supply (e.g., streamflow, reservoir and lake levels, ground water). The frequency and severity of hydrological drought is often defined on a watershed or river basin scale. Although all droughts originate with a deficiency of precipitation, hydrologists are more concerned with how this deficiency plays out through the hydrologic system. Hydrological droughts are usually out of phase with or lag the occurrence of meteorological and agricultural droughts. It takes longer for precipitation deficiencies to show up in components of the hydrological system such as soil moisture, streamflow, and ground

water and reservoir levels. As a result, these impacts also are out of phase with impacts in other economic sectors.

- Agricultural drought focus is on soil moisture deficiencies, differences between actual and potential evaporation, reduced ground water or reservoir levels, etc. Plant demand for water depends on prevailing weather conditions, biological characteristics of the specific plant, its stage of growth, and the physical and biological properties of the soil.
- Socioeconomic drought refers to when physical water shortage begins to affect people[14] - which impacts supply and demand of some economic commodity.

Geographic Location

All areas and jurisdictions in Pulaski County are susceptible to drought, but particularly cities where thousands of residents are served by the same source of water. These cities use deep hard rock wells that are 1,100 to 1,800 feet deep and can experience drought when recharge of these wells is low. The majority of individuals living in Pulaski County rely on groundwater resources for drinking water. Approximately 31.9% of the land in the county is utilized for agricultural purposes. Furthermore, livestock sales comprise 84% of the market of agricultural products sold in Pulaski County. A drought would directly impact livestock production and the agriculture economy in Pulaski County[15].

Severity/Magnitude/Extent

The National Drought Monitor Center at the University of Nebraska at Lincoln summarized the potential severity of drought as follows. Drought can create economic impacts on agriculture and related sectors, including forestry and fisheries, because of the reliance of these sectors on surface and subsurface water supplies. In addition to losses in yields in crop and livestock production, drought is associated with increases in insect infestations, plant disease, and wind erosion. Droughts also bring increased problems with insects and disease to forests and reduce growth. The incidence of forest and range fires increases substantially during extended droughts, which in turn place both human and wildlife populations at higher levels of risk. Income loss is another indicator used in assessing the impacts of drought because so many sectors are affected. Finally, while drought is rarely a direct cause of death, the associated heat, dust and stress can all contribute to increased mortality[16].

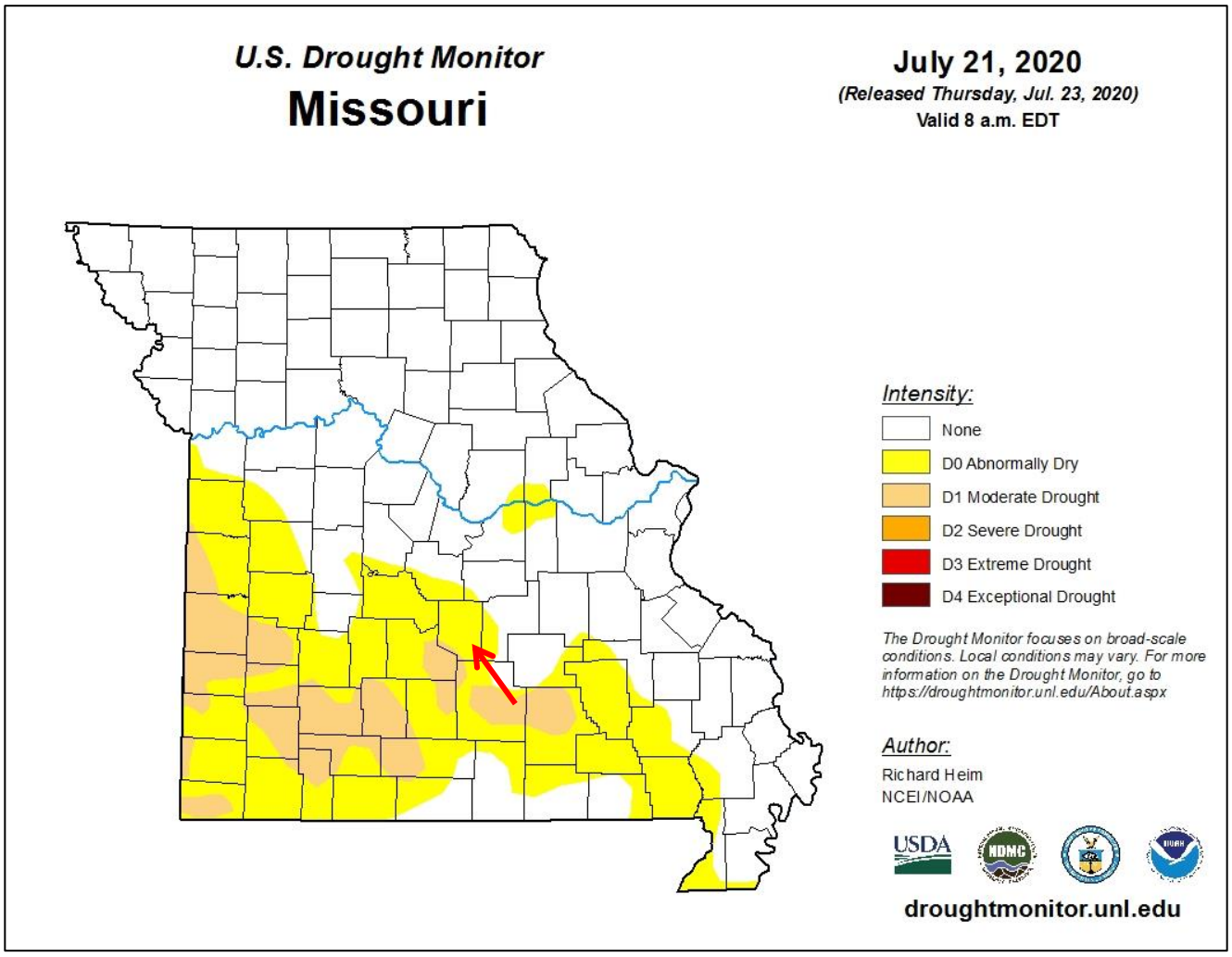
Figure 3.7 depicts a U.S. Drought Monitor map of Missouri on July 21, 2020. This map illustrates the planning area, which could be in drought at any given moment in time. A red arrow indicates the location of the planning area (Pulaski County).

[14] http://www.drought.unl.edu/ http://droughtreporter.unl.edu/

[15] http://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/Missouri/cp29161.pdf

[16] Ibid

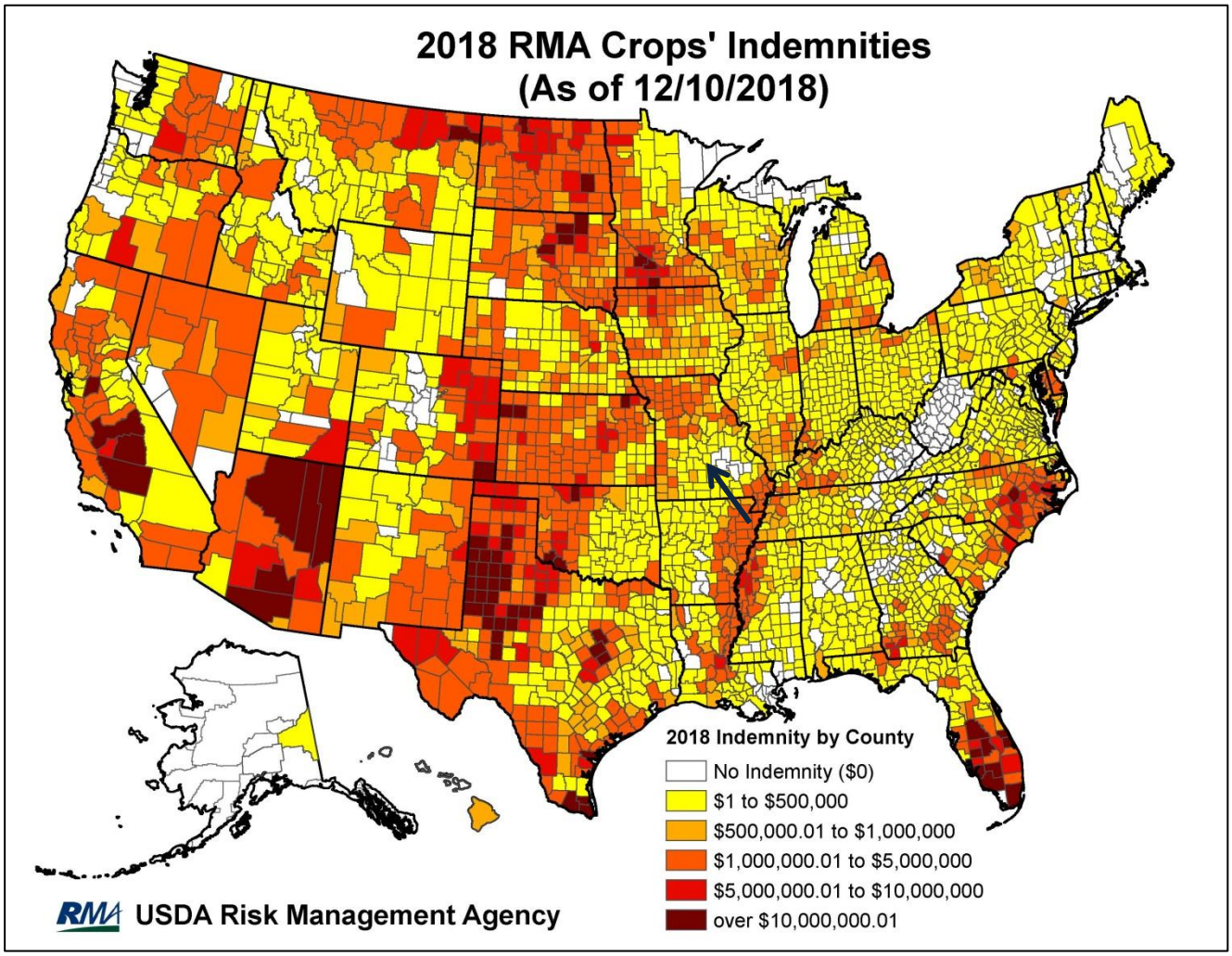
Figure 3.7. U.S. Drought Monitor Map of Missouri on July 21, 2020



Source: U.S. Drought Monitor, http://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?MO

Figure 3.8 illustrates RMA crop indemnities for 2018 across the United States. Pulaski County fell in the range of $1 to $500,000 for crop indemnities.

Figure 3.8. 2018 RMA Crop Indemnities for the United States



Source: http://www.rma.usda.gov/data/indemnity/ *Black arrow indicates Pulaski County

According to the USDA's Risk Management Agency, there have been 15 crop insurance payments due to drought in Pulaski County since 1999, totaling $179,583.98. **Table 3.18** illustrates the year, number of payments, and total amount of crop insurance payments.

Table 3.18. Pulaski County Crop Indemnity Payments (1999-2019)

Year	Number of Payments	Total
1999	4	$24,451.00
2000	2	$15,634.00
2001	0	0
2002	0	0
2003	0	0
2004	0	0
2005	0	0
2006	0	0

Year	Number of Payments	Total
2007	1	$2107.00
2008	0	0
2009	0	0
2010	0	0
2011	0	0
2012	4	$98,471.90
2013	0	0
2014	0	0
2015	0	0
2016	0	0
2017	1	$9521.00
2018	3	$29,399.08
2019	0	0
TOTAL	**15**	**$179,583.98**

Source: https://www.rma.usda.gov/Information-Tools/Summary-of-Business/Cause-of-Loss

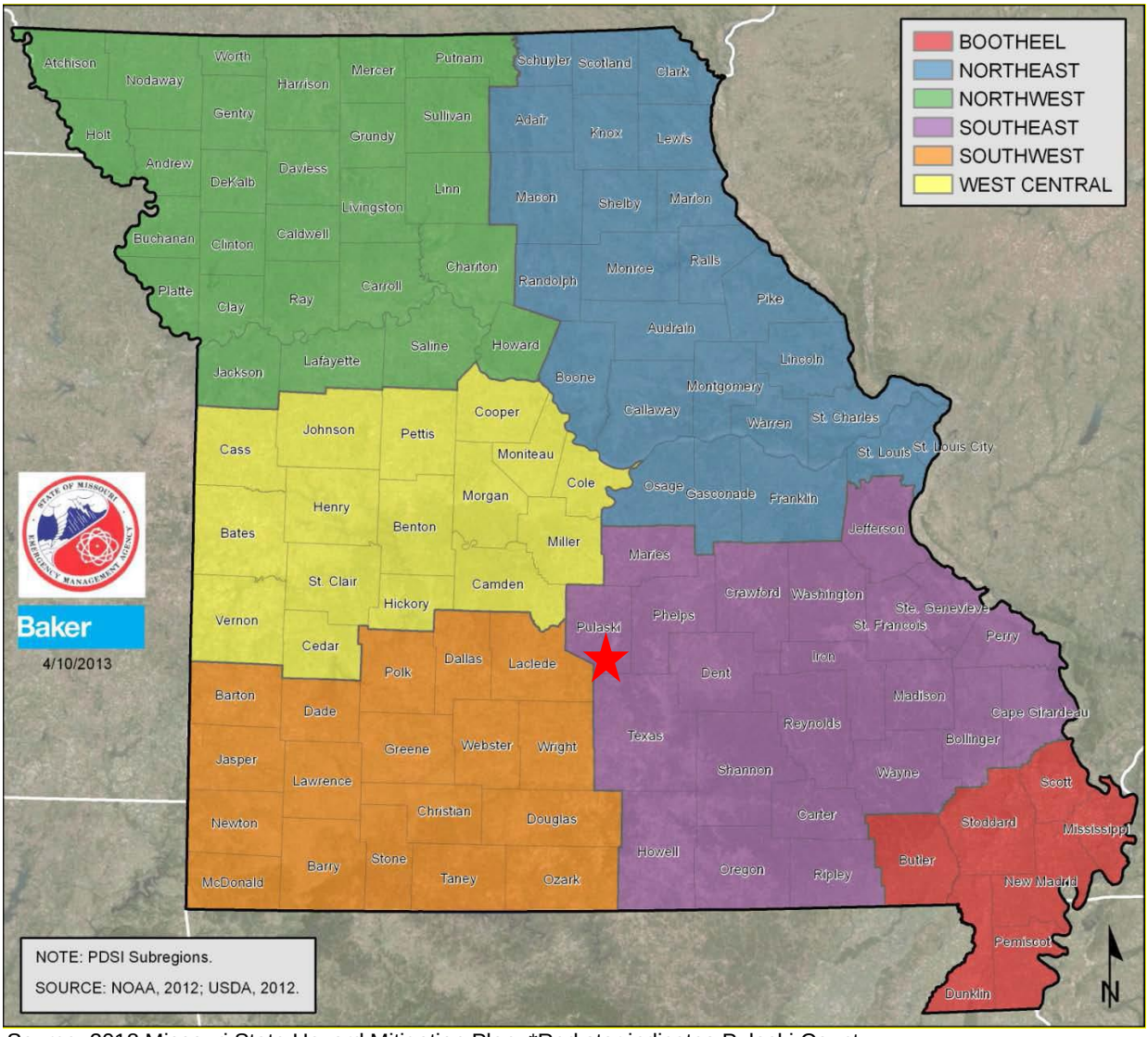
The Palmer Drought Indices measure dryness based on recent precipitation and temperature. The indices are based on a "supply-and-demand model" of soil moisture. Calculation of supply is relatively straightforward, using temperature and the amount of moisture in the soil. However demand is more complicated as it depends on a variety of factors, such as evapotranspiration and recharge rates. These rates are harder to calculate. Palmer tried to overcome these difficulties by developing an algorithm that approximated these rates, and based the algorithm on the most readily available data — precipitation and temperature.

The Palmer Index has proven most effective in identifying long-term drought of more than several months. However, the Palmer Index has been less effective in determining conditions over a matter of weeks. It uses a "0" as normal, and drought is shown in terms of negative numbers; for example, negative 2 is moderate drought, negative 3 is severe drought, and negative 4 is extreme drought. Palmer's algorithm also is used to describe wet spells, using corresponding positive numbers.

Palmer also developed a formula for standardizing drought calculations for each individual location based on the variability of precipitation and temperature at that location. The Palmer index can therefore be applied to any site for which sufficient precipitation and temperature data is available.

Figure 3.9 illustrates the Palmer Drought Severity Index sub-regions of Missouri. Pulaski County is categorized under the Southeast sub-region.

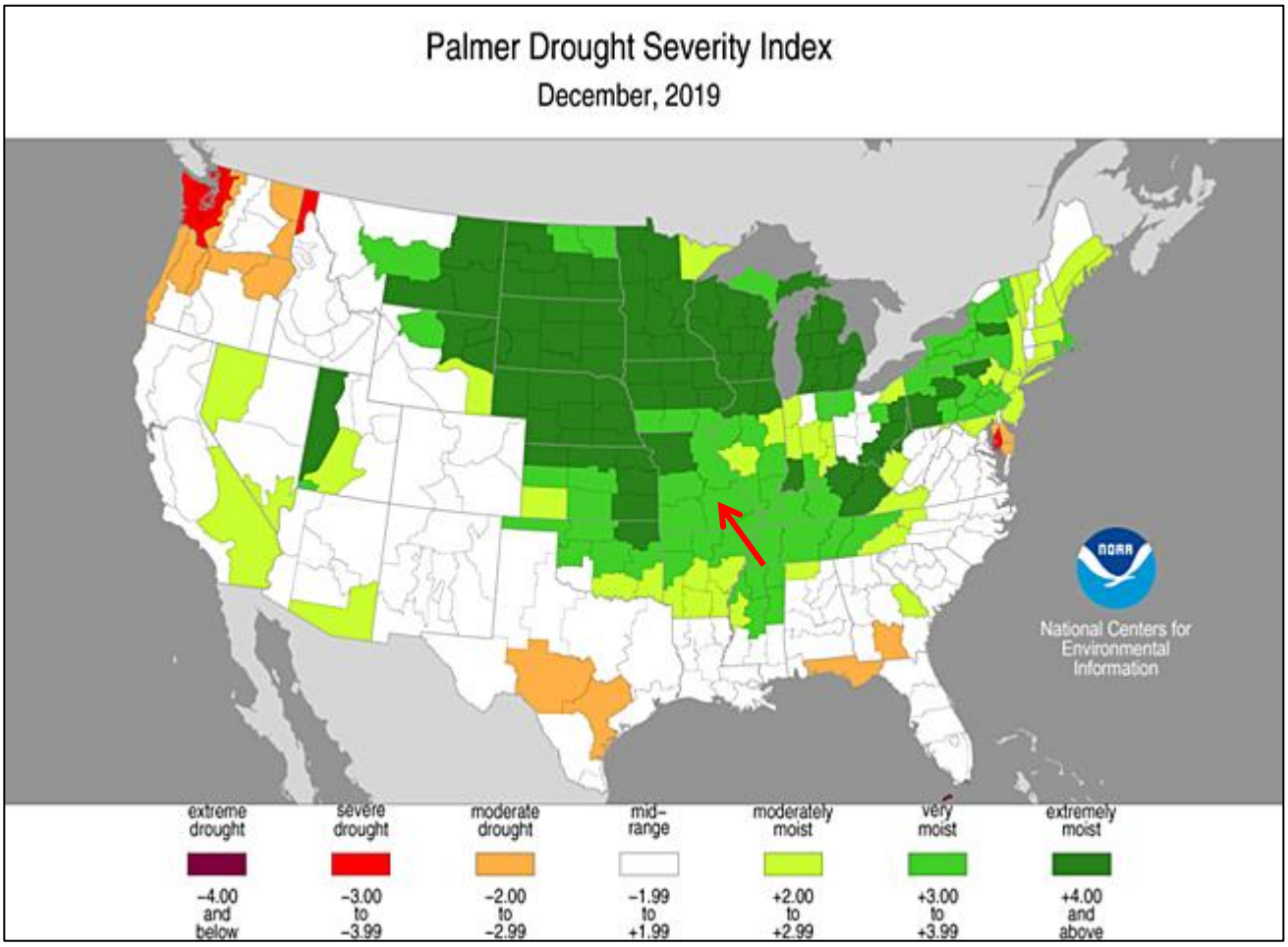
Figure 3.9. Palmer Drought Severity Index: Missouri Sub-regions



Source: 2018 Missouri State Hazard Mitigation Plan; *Red star indicates Pulaski County

Figure 3.10 is an example of the Palmer Modified Drought Index for the United States on December, 2019.

Figure 3.10. Palmer Modified Drought Index National Map December, 2019



*Source: http://www.ncdc.noaa.gov/temp-and-precip/drought/historical-palmers/; *Red arrow indicates Pulaski County*

Data was collected from the Missouri Department of Natural Resources (2018 Census of Missouri Public Water Systems) to determine water source by jurisdiction. Each of the participating communities within Pulaski County utilizes well water as the primary source of water. These communities could experience hardship in the event of a long-term drought. **Table 3.19** provides information in regard to the percent of source that is groundwater for each jurisdiction in the county.

Table 3.19. 2018 Water Source by Jurisdiction

Jurisdiction	% of source that is groundwater
Crocker	100
Dixon	100
Richland	100
St. Robert	100
Waynesville	100

Source: Missouri Dept. of Natural Resources, 2017 Census of Missouri Public Water Systems

Previous Occurrences

Table 3.20 offers Palmer Drought Severity Index data for Pulaski County between 2010 and 2019. This information exemplifies drought conditions on a monthly basis for Missouri's Southeast sub-region within the United States.

Table 3.20. Palmer Drought Severity Index for Pulaski County, MO (2010 – 2019)

	Year									
Month	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Jan.	Extremely moist	Mid-range	Mid-range	Mid-range	Moderately moist	Mid-range	Very moist	Mid-range	Severe drought	Moderately moist
Feb.	Mid-range	Mid-range	Mid-range	Mid-range	Mid-range	Mid-range	Very moist	Mid-range	Mid-range	Moderately moist
March	Mid-range	Mid-range	Mid-range	Mid-range	Mid-range	Mid-range	Moderately moist	Mid-range	Mid-range	Moderately moist
April	Mid-range	Very moist	Mid-range	Mid-range	Mid-range	Mid-range	Mid-range	Moderately moist	Mid-range	Moderately moist
May	Mid-range	Very moist	Moderate drought	Mid-range	Mid-range	Mid-range	Moderately moist	Very moist	Mid-range	Very moist
June	Mid-range	Mid-range	Moderate drought	Mid-range	Mid-range	Mid-range	Mid-range	Moderately moist	Mid-range	Very moist
July	Mid-range	Mid-range	Severe drought	Mid-range	Mid-range	Moderately moist	Moderately moist	Moderately moist	Mid-range	Very moist
Aug.	Mid-range	Mid-range	Severe drought	Moderately moist	Mid-range	Very moist	Very moist	Moderately moist	Mid-range	Extremely moist
Sept.	Mid-range	Mid-range	Severe drought	Moderately moist	Mid-range	Moderately moist	Very moist	Mid-range	Mid-range	Very moist
Oct.	Mid-range	Mid-range	Moderate drought	Moderately moist	Mid-range	Mid-range	Very moist	Mid-range	Mid-range	Very moist
Nov.	Mid-range	Mid-range	Severe drought	Moderately moist	Mid-range	Very moist	Very moist	Moderate drought	Mid-range	Extremely moist
Dec.	Mid-range	Mid-range	Severe drought	Moderately moist	Mid-range	Extremely moist	Moderately moist	Severe drought	Mid-range	Very moist

Source: http://www.ncdc.noaa.gov/temp-and-precip/drought/historical-palmers/psi/

Probability of Future Occurrence

To calculate the probability of future occurrence of drought in Pulaski County, historical climate data was analyzed. There were 34 months of recorded drought (**Table 3.21**) over a 21 year span (January, 1999 to December, 2019). The number of months in drought (53) was divided by the total number of months (252) and multiplied by 100 for the annual average percentage probability of drought (**Table 3.22**). Although drought is not predictable, long-range outlooks and predicted impacts of climate change could indicate an increase change of drought.

Table 3.21. Palmer Drought Severity Index for Pulaski County, MO (1999 – 2019)

	Year											
Month	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
1999							x		x	x	x	
2000			x	x	x						x	
2001			x	x								
2002											x	
2003	x		x									
2004		x							x			
2005			x		x	x				x		x
2006		x				x						
2007			x					x			x	
2008												
2009												
2010				x		x		x		x		x
2011	x						x			x		
2012			x	x	x	x	x	x			x	x
2013												
2014		x	x									
2015										x		
2016	x					x						
2017		x							x	x	x	x
2018	x											
2019									x			

Source: https://www.ncdc.noaa.gov/temp-and-precip/drought/historical-palmers/zin/199901-201912
*x indicates drought

Table 3.22. Annual Average Percentage Probability of Drought in Pulaski County, MO

Location	Annual Avg. % P of Drought
Pulaski County	21.03%

Source: NOAA National Centers for Environmental Information, Historical Palmer Drought Indices
*P = probability; see page 3.44 for definition.

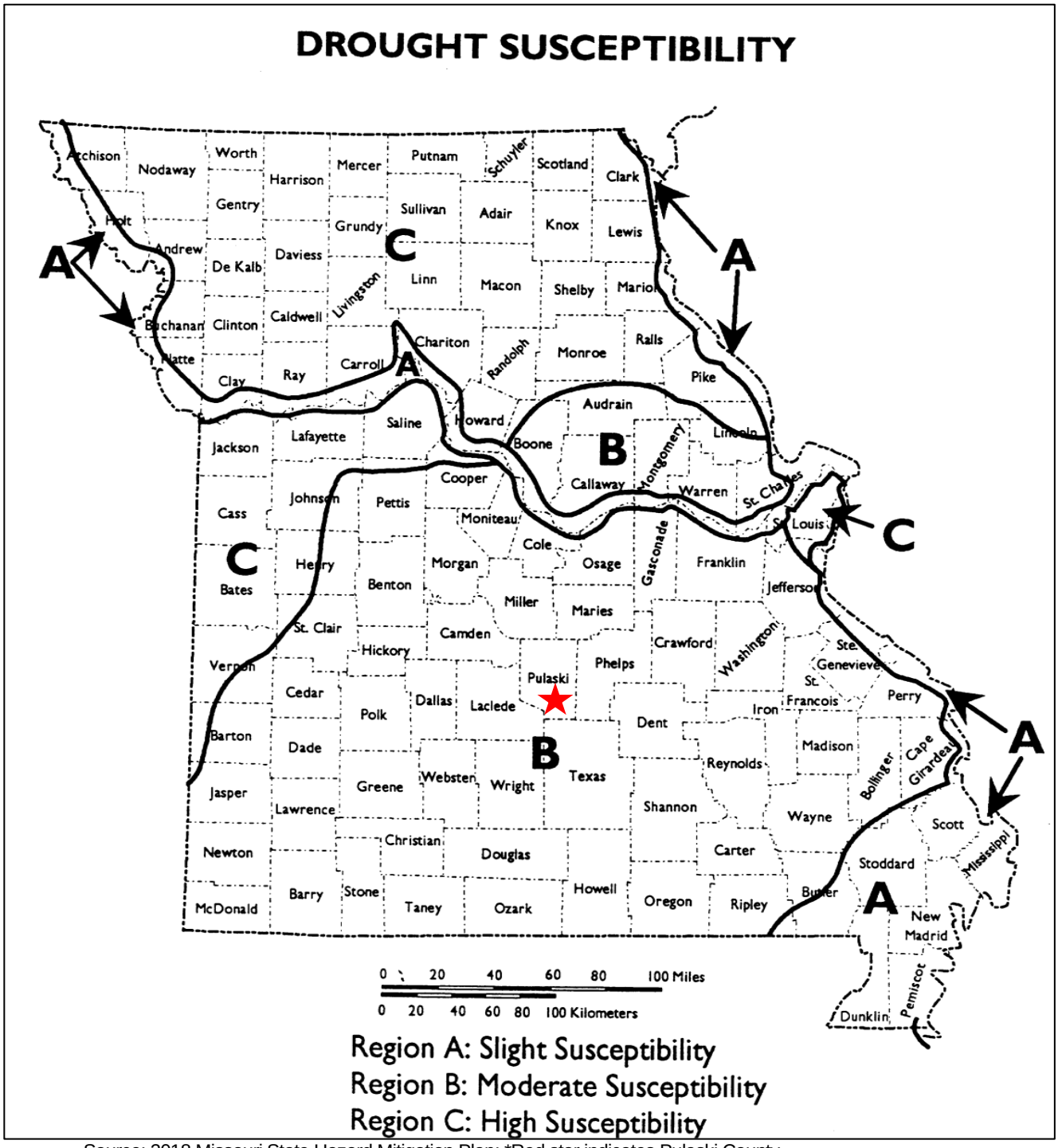
Vulnerability

Vulnerability Overview

Data was obtained from the 2018 Missouri State Hazard Mitigation Plan for the drought vulnerability analysis. **Table 3.23** depicts the ranges for drought vulnerability factor ratings created by SEMA. The array ranges between 1 (low) and 5 (high). The factors considered include social vulnerability, crop exposure ratio, annualized crop claims paid and likelihood of occurrence. **Table 3.23** provides the factors considered and the ranges for the rating values assigned. Once the ranges were determined and applied to all factors considered in the analysis, the ratings were combined to determine an overall vulnerability rating for drought. Pulaski County is determined as having low to medium vulnerability to crop loss (**Table 3.24**) as a result of a drought. Additionally, SEMA has divided the State into 3 regions in regards to drought susceptibility (**Figure 3.11**). Pulaski County is included in Region B (Moderate Susceptibility). Region B is described as having groundwater sources that are suitable in meeting domestic and municipal water needs, but due to required well depths, irrigation wells are very expensive. Also, the topography is commonly unsuitable for row-crop irrigation[17].

[17] 2018 Missouri State Hazard Mitigation Plan

Figure 3.11. Drought Susceptibility in Missouri



Source: 2018 Missouri State Hazard Mitigation Plan; *Red star indicates Pulaski County

Table 3.23. Ranges for Drought Vulnerability Factor Ratings

Factors Considered	Low (1)	Medium-low (2)	Medium (3)	Medium-high (4)	High (5)
Social Vulnerability Index	1	2	3	4	5
Crop Exposure Ratio Rating	$866,000 - $10,669,000	$10,669,001 - $33,252,000	$33,252,001 - $73,277,000	$73,277.001 - $155,369,000	$155,369,001 - $256,080,000
Annualized USDA Crop Claims Paid	<$340,000	$340,000 - $669,999	$670,000 – $999,999	$1M - $1,299,999	>$1,300,000
Likelihood of Occurrence of Severe or Extreme Drought	1-1.9%	2-3.9%	4-5.9%	6-8.9%	9-10.72%
Total Drought Vulnerability Rating	7-8	9-10	11-12	13-14	15-17

Source: 2018 Missouri State Hazard Mitigation Plan

Table 3.24. Vulnerability of Pulaski County to Drought

SOVI index rating	USDA RMA Total Drought Crop Claims	Avg Annualized Crop Claims	USDA Claims Rating	2012 Crop Exposure	Crop Exposure Rating	Likelihood of severe drought %	Drought occurrence rating	Total Rating	Total rating (text) drought
4	$100,579	$11,175	1	$2,008,000	1	6.42	4	10	Low-medium

Source: 2018 Missouri State Hazard Mitigation Plan

Potential Losses to Existing Development

Drought is not limited to a hazard that affects just agriculture, but can extend to encompass the nation's whole economy. Its impact can adversely affect a small town's water supply, the corner grocery store, commodity markets, or tourism. Additionally, extreme droughts have the ability to damage roads, water mains, and building foundations. On average, drought costs the U.S. economy about $7 billion to $9 billion a year, according to the National Drought Mitigation Center. Moreover, drought prone regions are also prone to increased fire hazards[18].

Impact of Future Development

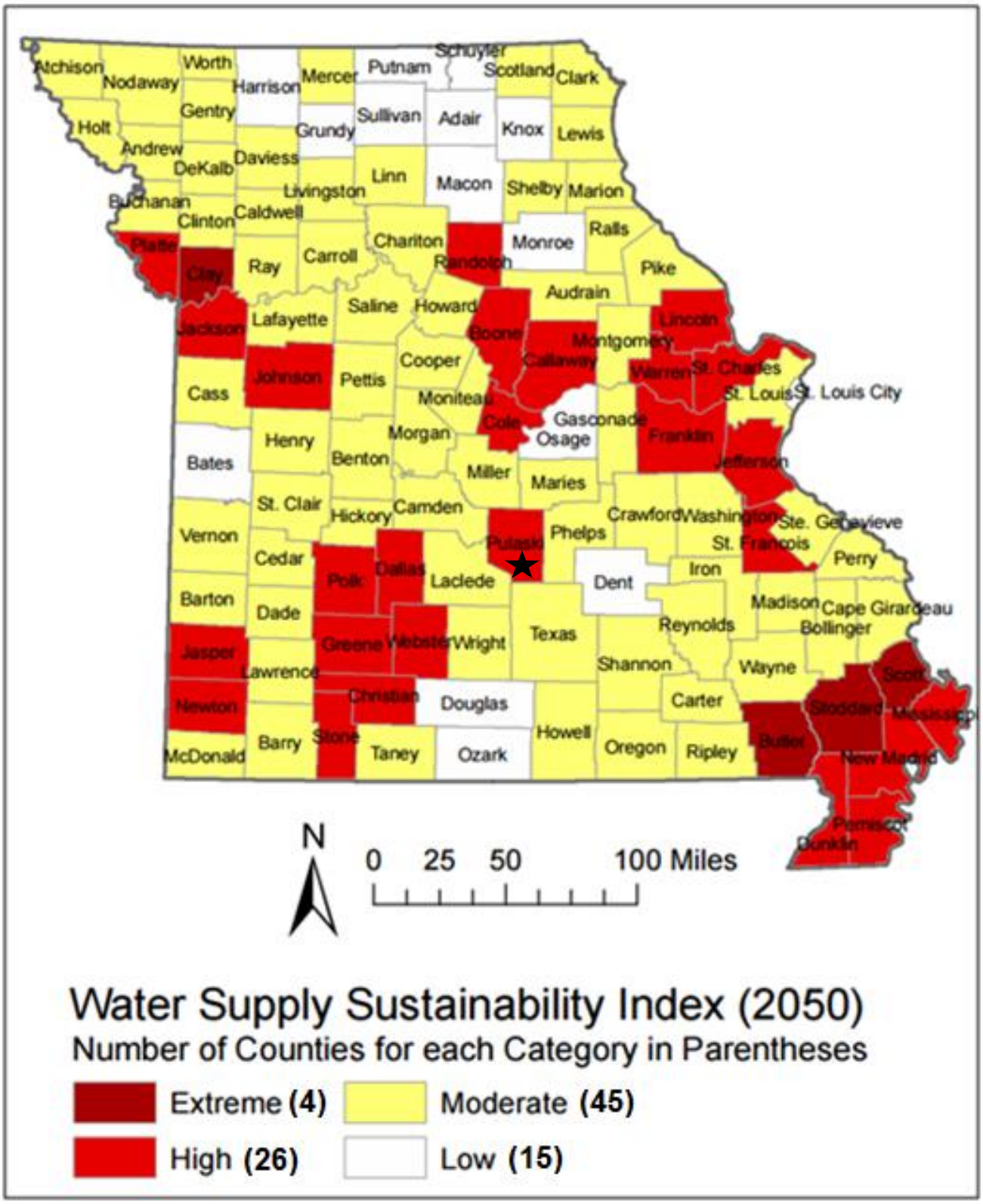
Impacts of drought on future development within Pulaski County would be low-medium. The NRDC water supply sustainability index prediction for 2050 suggests a high risk for drought. Population projections as provided by the Missouri Office of Administration suggest that Pulaski County will increase by approximately 1,000 individuals within the next 10 years[19]. Moreover, with an increasing population, water use and demand would be expected to increase as well; potentially straining the water supply systems. Long term drought could expose vulnerabilities during construction/upgrades of water distribution and sewer infrastructures. Furthermore, any agriculture related development in terms of crop or livestock production would also be at risk.

[18] 2015 Boone County Hazard Mitigation Plan
[19] Missouri Office of Administration http://oa.mo.gov/budget-planning/demographic-information/population-projections/2000-2030-projections

Impact of Climate Change

A new analysis, performed for the Natural Resources Defense Council, examined the effects of climate change on water supply and demand in the contiguous United States. The study found that more than 1,100 counties will face higher risks of water shortages by mid-century as a result of climate change. Two of the principal reasons for the projected water constraints are shifts in precipitation and potential evapotranspiration (PET). Climate models project decreases in precipitation in many regions of the U.S., including areas that may currently be described as experiencing water shortages of some degree. Pulaski County is predicted to experience high water shortages as a result of global warming (**Figure 3.12**) by the year 2050.

Figure 3.12. Water Supply Sustainability Index (2050) with Climate Change Impacts



Source: Natural Resources Defense Council (NRDC), Climate Change, Water, and Risk
**Black star indicates Pulaski County*

Hazard Summary by Jurisdiction

The variations between jurisdictions are non-existent to minimal. Pulaski County and the communities of Crocker, Dixon, Richland, St. Robert, and Waynesville utilize ground/well water as their water source. In all cities, drought conditions would be the same as those experienced in rural areas, but the magnitude would be different with only lawns and local gardens impacted. Long term drought, spanning months at a time, could negatively impact the amount of potable drinking water available.

Problem Statement

In summary, drought within Pulaski County is considered low-moderate risk. Climate change predictions also suggest low-moderate risks by the year 2050. Pulaski County has a strong agricultural economy. Drought would impact commodities, specifically livestock and crops. Potential impacts to local economies and infrastructures are foreseeable in the event of a long-term drought.

The county and all cities should develop water monitoring plans as an early warning system. Each sector should inventory and review their groundwater operation plans. A water conservation awareness program should be presented to the public either through pamphlets, workshops or a drought information center. Voluntary water conservation should be encouraged to the public. The county and both cities should continually look for and fund water system improvements, new systems, and new wells.

3.4.3 Earthquakes

Some specific sources for this hazard are:

- 2018 Missouri State Hazard Mitigation Plan, Chapter 3, Section 3.3.4, Page 3.192
- U.S. Seismic Hazard Map, United States Geological Survey, http://earthquake.usgs.gov/hazards/products/conterminous/2014/HazardMap2014_lg.jpg;
- Impact of Earthquakes on the Central USA http://www.cusec.org/documents/aar/NMSZ_CAT_PLANNING_SCENARIO.pdf
- Missouri Hazard Mitigation Viewer http://bit.ly/MoHazardMitigationPlanViewer2018 - Website https://drive.google.com/file/d/1bPkc0jgF9ofwQLnTL9N0u-oPFWi9hkst/view - User Guide
  - Total population impacted by earthquakes by County
  - Total number of structures impacted by earthquakes by County
  - Total value of structures impacted by earthquakes by County
  - Property loss ratio to earthquakes by County
- 6.5 Richter Magnitude Earthquake Scenario, New Madrid Fault Zone map, http://www.igsb.uiowa.edu/Browse/quakes/quakes.htm;
- Probability of magnitude 5.0 or greater within 100 Years, United States Geological Survey, https://geohazards.usgs.gov/eqprob/2009/index.php

Hazard Profile

Hazard Description

An earthquake is a sudden motion or trembling that is caused by a release of energy accumulated within or along the edge of the earth's tectonic plates. Earthquakes occur primarily along fault zones and tears in the earth's crust. Along these faults and tears in the crust, stresses can build until one side of the fault slips, generating compressive and shear energy that produces the shaking and damage to the built environment. Heaviest damage generally occurs nearest the earthquake epicenter, which is that point on the earth's surface directly above the point of fault movement. The composition of geologic materials between these points is a major factor in transmitting the energy to buildings and other structures on the earth's surface.

The closest fault to Pulaski County is the New Madrid Seismic Zone (NMSZ). The NMSZ is the most active seismic area in the United States east of the Rocky Mountains. Unfortunately, the faults in the NMSZ are poorly understood due to concealment by alluvium deposits. Moreover, the NMSZ is estimated to be 30 years overdue for a 6.3 magnitude earthquake[20].

Geographic Location

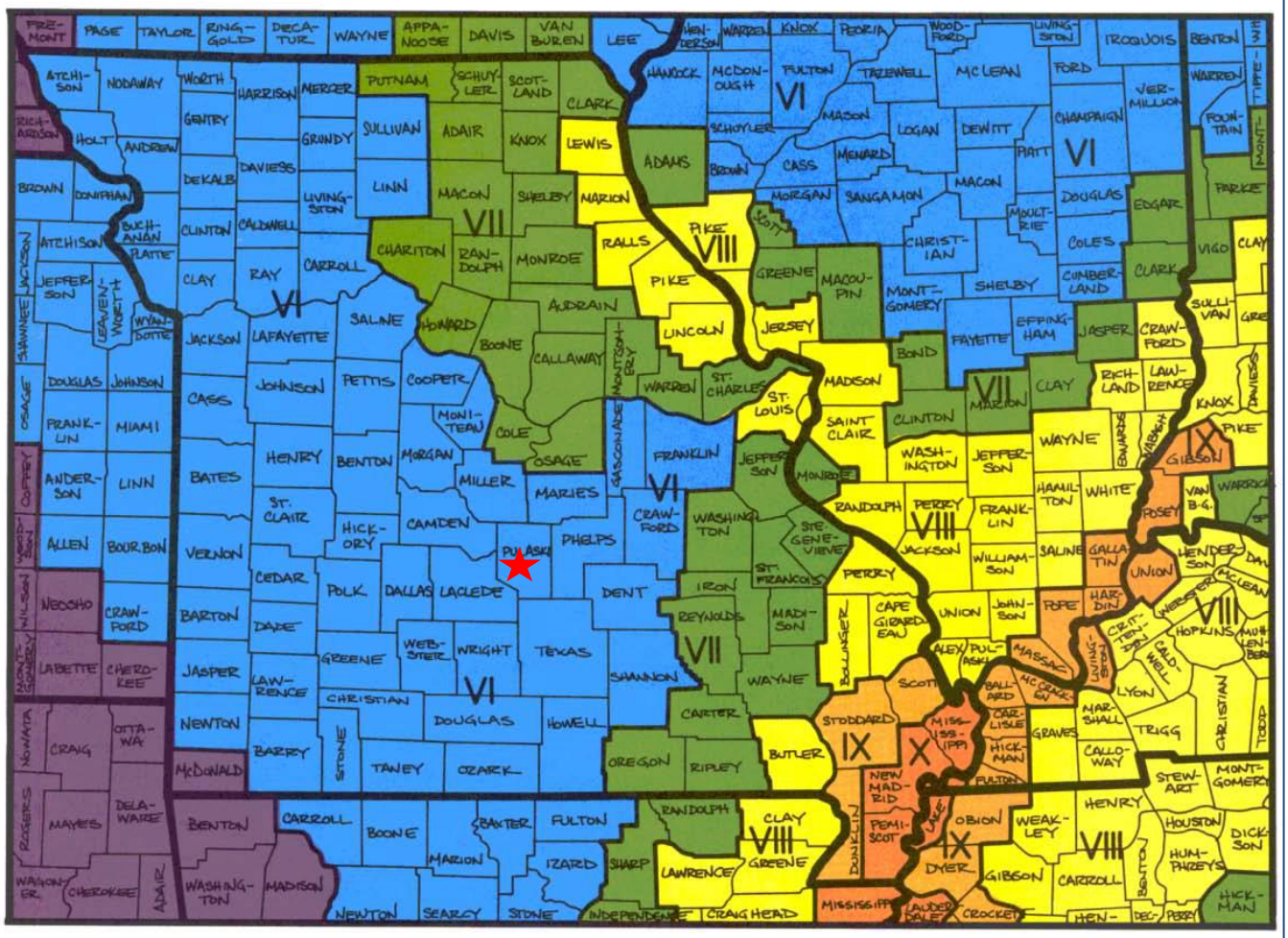
There are eight earthquake source zones in the Central United States, one of which is located within the state of Missouri—the New Madrid Fault. Other seismic zones, because of their close proximity, also affect Missourians. These are the Wabash Valley Fault, Illinois Basin, and the Nemaha Uplift. The most active zone is the New Madrid Fault, which runs from Northern Arkansas through Southeast Missouri and Western Tennessee and Kentucky to the Illinois side of the Ohio River Valley.

Figure 3.13 depicts impact zones for a magnitude 7.6 earthquake along the New Madrid Fault along with associated Modified Mercalli Intensities. Pulaski County is indicated by a red star. Furthermore,

[20] Missouri Department of Natural Resources, Facts about the New Madrid Seismic Zone

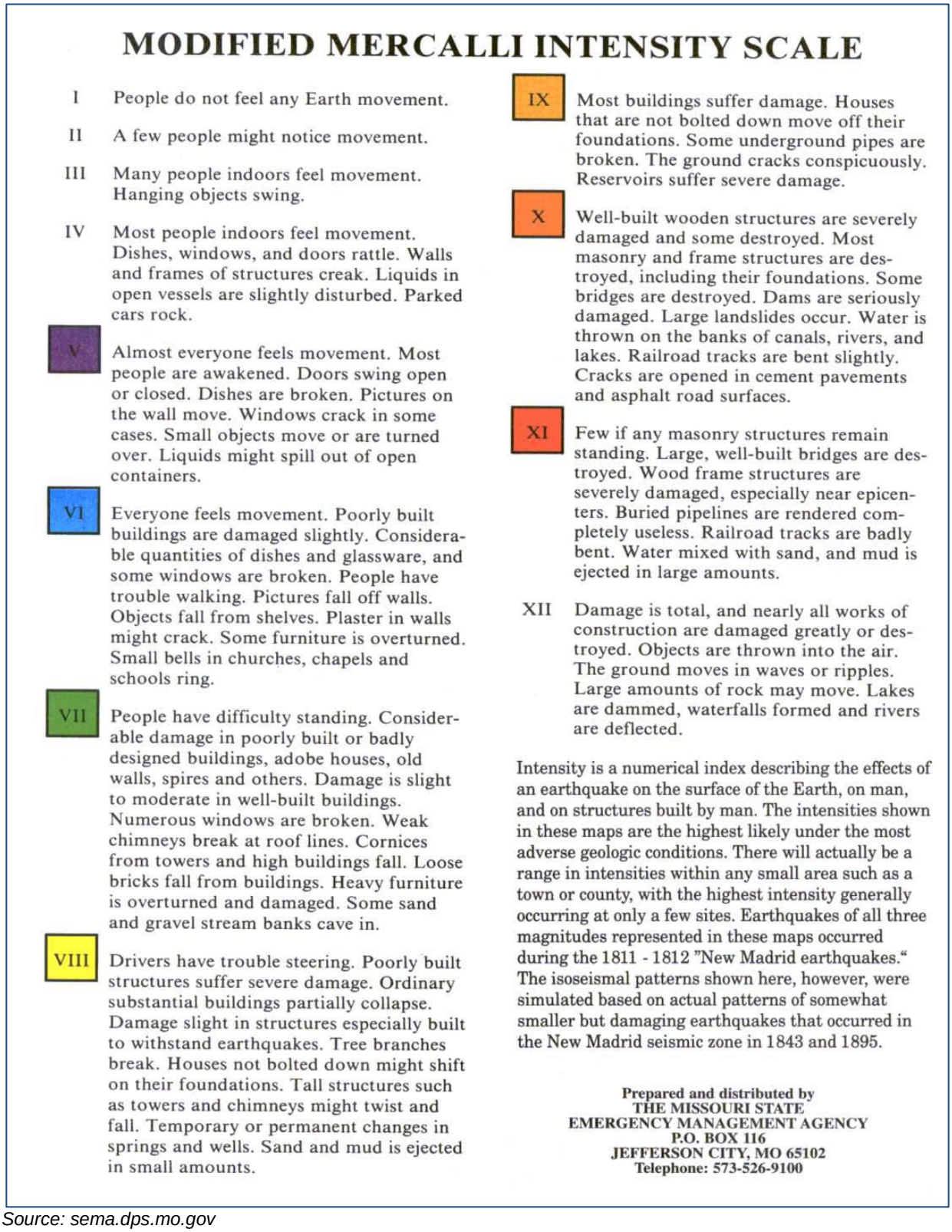
the Modified Mercalli Intensities for potential 6.7 and 8.6 magnitude earthquakes are illustrated. In the event of a 6.7 magnitude earthquake, Pulaski County would experience a Modified Mercalli Intensity of V (**Figure 3.14**). This intensity is categorized as being almost felt by everyone. Most people are awakened. Doors swing open or closed. Dishes are broken. Pictures on the wall move. Windows crack in some cases. Small objects move or are turned over. Liquids might spill out of open containers. Additionally, in the occurrence of 7.6 and 8.6 magnitude earthquakes; the county would experience Modified Mercalli Intensities of VI and VII respectively. There will actually be a range in intensities within any small area such as town or county**. Figure 3.14** and **Table 3.25** further define Richter Scale intensities.

Figure 3.13. Impact Zones for Earthquake Along the New Madrid Fault



Source: sema.dps.mo.gov; *Red star indicates Pulaski County

Figure 3.14. Projected Earthquake Intensities



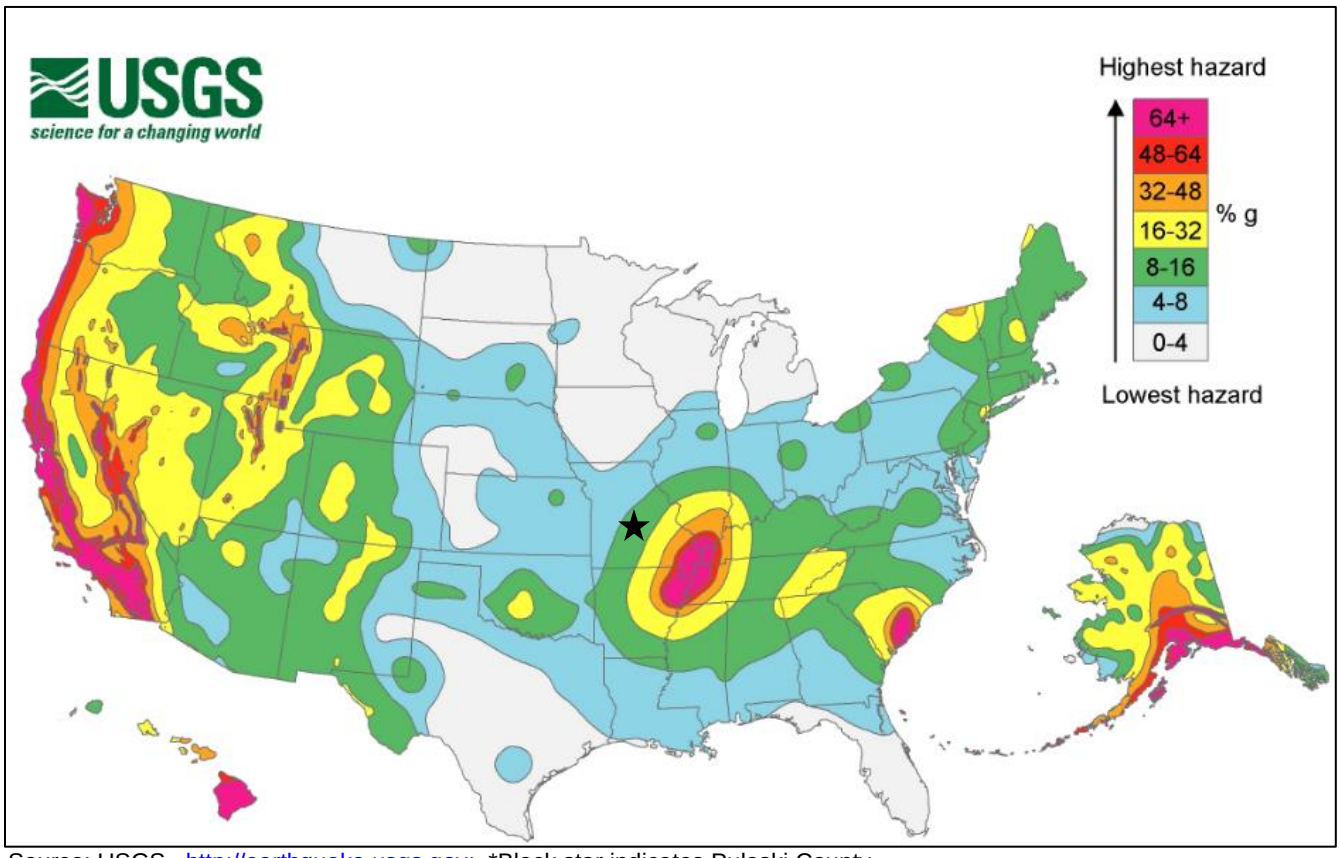
Source: sema.dps.mo.gov

Table 3.25. Richter Scale of Earthquake Magnitude

Magnitude Level	Category	Effects	Earthquake per Year
Less than 1.0 to 2.9	Micro	Generally not felt by people, though recorded on local instruments	More than 100,000
3.0-3.9	Minor	Felt by many people; no damage	12,000-100,000
4.0-4.9	Light	Felt by all; minor breakage of objects	2,000-12,000
5.0-5.9	Moderate	Some damage to weak structures	200-2,000
6.0-6.9	Strong	Moderate damage in populated areas	20-200
7.0-7.9	Major	Serious damage over large areas; loss of life	3-20
8.0 and higher	Great	Severe destruction and loss of life over large areas	Fewer than 3

Figure 3.15 illustrates the seismicity in the United States. A black star indicates the location of Pulaski County. The seismic hazard map displays earthquake peak ground acceleration (PGA) that has a 2% chance of being exceeded in 50 years; which has a value between 16-32% g.

Figure 3.15. United States Seismic Hazard Map



Source: USGS, http://earthquake.usgs.gov; *Black star indicates Pulaski County

Severity/Magnitude/Extent

The extent or severity of earthquakes is generally measured in two ways: 1) the Richter Magnitude Scale is a measure of earthquake magnitude; and 2) the Modified Mercalli Intensity Scale is a measure of earthquake severity. The two scales are defined a follows.

Richter Magnitude Scale

The Richter Magnitude Scale was developed in 1935 as a device to compare the size of earthquakes. The magnitude of an earthquake is measured using a logarithm of the maximum extent of waves recorded by seismographs. Adjustments are made to reflect the variation in the distance between the various seismographs and the epicenter of the earthquakes. On the Richter Scale, magnitude is expressed in whole numbers and decimal fractions. Each whole number increase in magnitude represents a tenfold increase in measured amplitude; an estimate of energy. For example, comparing a 5.3 and a 6.3 earthquake shows that a 6.3 earthquake is ten times bigger than a magnitude 5.3 earthquake on a seismogram, but is 31.622 times stronger (energy release)[21].

Modified Mercalli Intensity Scale

The intensity of an earthquake is measured by the effect of the earthquake on the earth's surface. The intensity scale is based on the responses to the quake, such as people awakening, movement of furniture, damage to chimneys, etc. The intensity scale currently used in the United States is the Modified Mercalli (MM) Intensity Scale. It was developed in 1931 and is composed of 12 increasing levels of intensity. They range from imperceptible shaking to catastrophic destruction, and each of the twelve levels is denoted by a Roman numeral. The scale does not have a mathematical basis, but is based on observed effects. Its use gives the laymen a more meaningful idea of the severity.

Previous Occurrences

Most of Missouri's earthquake activity has been concentrated in the southeast corner of the state, which lies within the New Madrid seismic zone. The written record of earthquakes in Missouri prior to the nineteenth century is virtually nonexistent; however, there is geologic evidence that the New Madrid seismic zone has had a long history of activity. The first written account of an earthquake in the region was by a French missionary on a voyage down the Mississippi River. He reported feeling a distinct tremor on Christmas Day 1699 while camped in the area of what is now Memphis, TN.

Whatever the seismic history of the region may have been before the first Europeans arrived, after Dec. 16, 1811, there could be no doubt about the area's potential to generate severe earthquakes. On that date, shortly after 2 a.m., the first tremor of the most violent series of earthquakes in the United States history struck southeast Missouri. In the small town of New Madrid, about 290 kilometers south of St. Louis, residents were aroused from their sleep by the rocking of their cabins, the cracking of timbers, the clatter of breaking dishes and tumbling furniture, the rattling of falling chimneys, and the crashing of falling trees. A terrifying roaring noise was created as the earthquake waves swept across the ground. Large fissures suddenly opened and swallowed large quantities of river and marsh water. As the fissures closed again, great volumes of mud and sand were ejected along with the water.

The earthquake generated great waves on the Mississippi River that overwhelmed many boats and washed others high upon the shore. The waves broke off thousands of trees and carried them into the river. High river banks caved in, sand bars gave way, and entire islands disappeared. The violence of

[21] Measuring the Size of an Earthquake, https://www.usgs.gov/faqs/how-are-earthquakes-recorded-how-are-earthquakes-measured-how-magnitude-earthquake-determined?qt-news_science_products=0#qt-news_science_products

the earthquake was manifested by great topographic changes that affected an area of 78,000 to 130,000 square kilometers.

On Jan. 23, 1812, a second major shock, seemingly more violent than the first, occurred. A third great earthquake, perhaps the most severe of the series, struck on Feb. 7, 1812.

The three main shocks probably reached intensity XII, the maximum on the Modified Mercalli scale, although it is difficult to assign intensities, due to the scarcity of settlements at the time. Aftershocks continued to be felt for several years after the initial tremor. Later evidence indicates that the epicenter of the first earthquake (Dec. 16, 1811) was probably in northeast Arkansas. Based on historical accounts, the epicenter of the Feb. 7, 1812, shocks was probably close to the town of New Madrid.

Although the death toll from the 1811-12 series of earthquakes has never been tabulated, the loss of life was very slight. It is likely that if at the time of the earthquakes the New Madrid area had been as heavily populated as at present, thousands of persons would have perished. The main shocks were felt over an area covering at least 5,180,000 square kilometers. Chimneys were knocked down in Cincinnati, Ohio, and bricks were reported to have fallen from chimneys in Georgia and South Carolina. The first shock was felt distinctly in Washington, D.C., 700 miles away, and people there were frightened badly. Other points that reported feeling this earthquake included New Orleans, 804 kilometers away; Detroit, 965 kilometers away; and Boston, 1,769 kilometers away.

The New Madrid seismic zone has experienced numerous earthquakes since the 1811-12 series, and at least 35 shocks of intensity V or greater have been recorded in Missouri since 1811. Numerous earthquakes originating outside of the state's boundaries have also affected Missouri. Five of the strongest earthquakes that have affected Missouri since the 1811-12 series are described below.

On Jan. 4, 1843, a severe earthquake in the New Madrid area cracked chimneys and walls at Memphis, Tennessee. One building reportedly collapsed. The earth sank at some places near New Madrid; there was an unverified report that two hunters were drowned during the formation of a lake. The total felt area included at least 1,036,000 square kilometers.

The Oct. 31, 1895, earthquake near Charleston, MO probably ranks second in intensity to the 1811-12 series. Every building in the commercial area of Charleston was damaged. Cairo, Illinois, and Memphis, Tennessee, also suffered significant damage. Four acres of ground sank near Charleston and a lake was formed. The shock was felt over all or portions of 23 states and at some places in Canada.

A moderate earthquake on April 9, 1917, in the Ste. Genevieve/St. Mary’s area was reportedly felt over a 518,000 square kilometer area from Kansas to Ohio and Wisconsin to Mississippi. In the epicentral area people ran into the street, windows were broken, and plaster cracked. A second shock of lesser intensity was felt in the southern part of the area.

The small railroad town of Rodney, MO experienced a strong earthquake on Aug. 19, 1934. At nearby Charleston, windows were broken, chimneys were overthrown or damaged, and articles were knocked from shelves. Similar effects were observed at Cairo Mounds and Mound City, IL, and at Wickliff, KY. The area of destructive intensity included more than 596 square kilometers.

The Nov. 9, 1968, earthquake centered in southern Illinois was the strongest in the central United States since 1895. The magnitude 5.5 shock caused moderate damage to chimneys and walls at Hermann, St. Charles, St. Louis, and Sikeston, Missouri. The felt areas include all or portions of 23 states[i].

Several area residents observed a small seismic occurrence during the early morning hours of July 8, 2003 in Crawford County. According to information from the USGS, a micro-earthquake happened about 20 miles northeast of Rolla and measured 2.9 on the Richter scale. The earthquake originated at a depth of about 3.1 miles beneath the earth's surface. In southern parts of Missouri, earthquakes of this magnitude happen frequently, but are an unusual event in Pulaski County.

Small earthquakes continue to occur frequently in Missouri. Averages of 200 earthquakes are detected every year in the New Madrid Seismic Zone alone. Most are detectable only with sensitive instruments, but on an average of every 18 months, southeast Missouri experiences an earthquake strong enough to crack plaster in buildings[22].

Vulnerability

Vulnerability Overview

As stated in the 2018 Missouri Hazard Mitigation Plan, the impacts and severity of earthquakes on Missouri can be significant. The New Madrid earthquakes of 1811-1812 are among the largest that have happened on the North American continent. Losses at the time were limited due to low population and little development. However, a similar quake at this time would result in devastating damage.

The most important direct earthquake hazard it ground shaking, which affects structures close to the earthquake epicenter. However, ground shaking can also affect structures located great distances from epicenters, particularly where thick clay-rich soils can amplify ground motions. Certain types of buildings are more vulnerable to ground shaking than others. Unreinforced masonry structures, tall structures without adequate lateral resistance and poorly maintained structures are specifically susceptible to large earthquakes.

According to MDNR's Missouri Geological Survey, damage from earthquakes in the New Madrid Seismic Zone will vary depending on the earthquake magnitude, the character of the land and the degree of urbanization. Infrastructure in the region such as highways, bridges, pipelines, communication lines and railroads might suffer damage, which would adversely affect Pulaski County, even if the county itself did not suffer heavy damage. Infrastructure could take a significant time to repair.

An important tool for homeowners to address the risk of earthquake damage to property is the purchase earthquake insurance coverage. The Missouri Department of Insurance, Financial Institutions and Professional Registration (DIFP) prepared a report in 2017 on the state of earthquake insurance coverage in Missouri. The report notes that earthquake coverage has become less available and less affordable over the last 15 years. The cost of earthquake insurance has increased from an average of $50 per year to $149 per year. In high risk counties the increases have been more substantial – from $57 per year in 2000 to $405 per year in 2017. The number of residences covered by earthquake insurance has dropped over the last 15 years – likely due to the increased cost of premiums. In 2018 the percentage of residential policies with earthquake coverage in Pulaski County was less than 12.4 percent with the average cost of coverage at $96 per year.[23]

Probability of Future Occurrence

No earthquakes have been reported in Pulaski County since 1998. The county, located in south central Missouri, is a good distance from the southeast corner of the state where the New Madrid Fault resides.

[22] Missouri State Hazard Mitigation Plan 2018
[23] The State of Earthquake Coverage Report https://insurance.mo.gov/earthquake/

Should a significant earthquake occur, it would have the potential to cause moderate damage within the county.

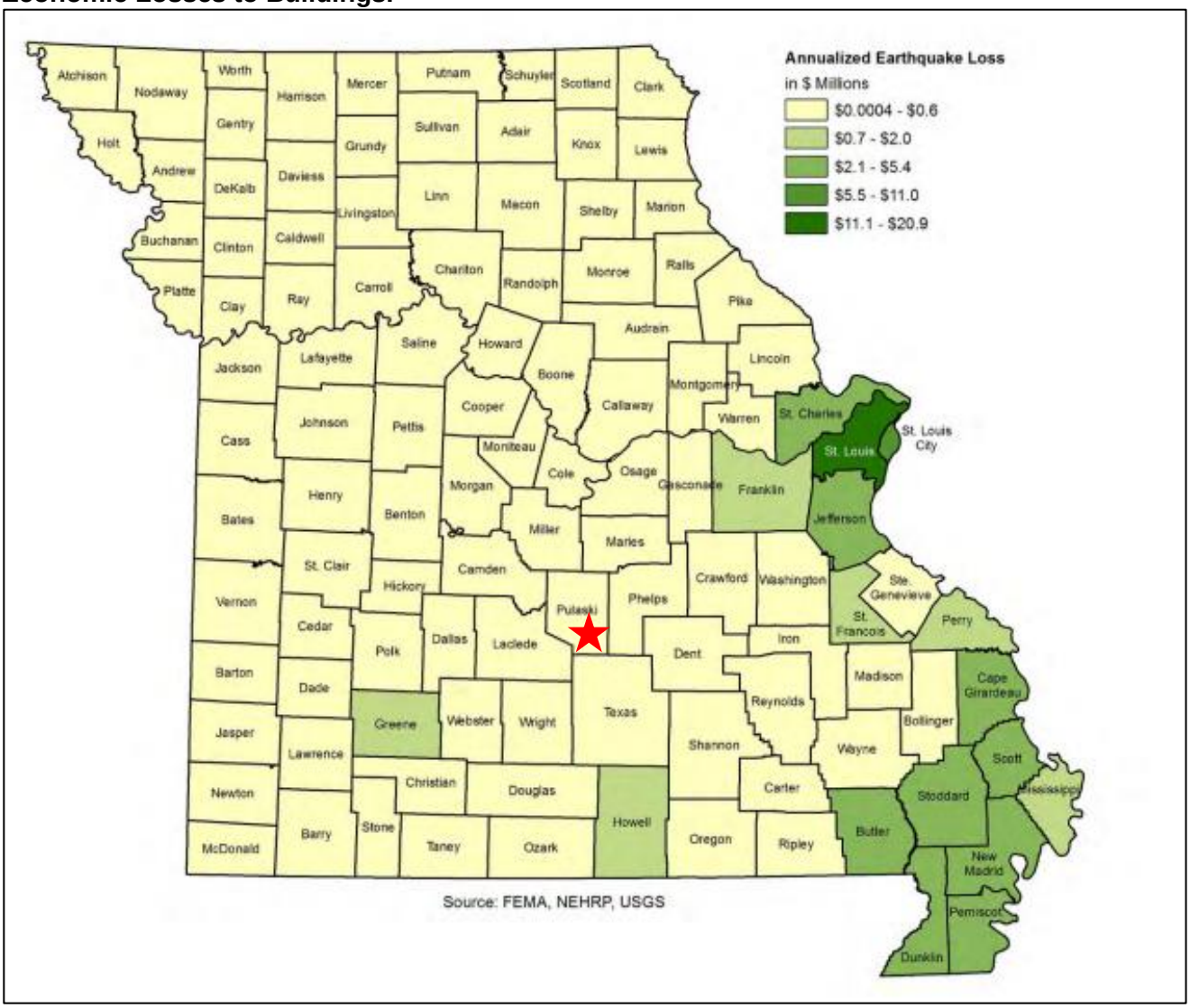
The 2018 Missouri Hazard Mitigation Plan states that there have been 31 recorded earthquake events greater than or equal to M 4.0 in the 43-year period from 1973 to 2018. According to this data, annual probability calculates to 72 percent. Additionally, the USGS estimated in 2006 that the probability of a repeat of the 1811-1812 earthquakes (magnitude 7.5 – 8.0) was seven to ten percent in a 50-year time period (Source: http://pubs.usgs.gov/fs/2006/3125). Given the historical frequency of earthquake events, this hazard is determined to have a high probability of occurrence within the State.

SEMA utilized Hazus V 3.2 to analyze vulnerability and estimate losses to earthquakes. Hazus is a program developed by FEMA which is a nationally applicable standardized methodology that encompasses models for assessing potential losses from earthquakes, floods, and hurricanes. All Hazus analyses were run using Level 1 building inventory database comprised of updated demographic and aggregated data based on the 2010 census. An annualized loss scenario that enabled an "apples to apples" comparison of earthquake risk for each county was synthesized from a FEMA nationwide annualized loss study (FEMA 366 Hazus Estimated Annualized Earthquake Losses for the United States, April 2017). A second scenario, based on an event with a two percent probability of exceedance in 50 years, was done to model a worst-case earthquake using a level of ground shaking recognized in earthquake-resistant design.

Annualized loss is the maximum potential annual dollar loss resulting from eight return periods (100, 200, 500, 750, 1,000, 1,500, 2,000, and 2,500 years) averaged on a 'per year' basis[24]. This is the scenario that FEMA uses to compare relative risk from earthquakes and other hazards at the county level nationwide. The Hazus earthquake loss estimation is depicted in **0** which shows annualized loss scenario direct economic losses to buildings. In this scenario, the annualized earthquake loss for buildings in Pulaski County in any one year is estimated to be $4,000 to $600,000. **Table 3.26** provides information on total estimated losses, estimated losses per capita and loss ratio. This results in the county being ranked 24th in the state for expected loss with low vulnerability for this hazard. This loss ratio indicates impacts on local economies in the event of an earthquake, and the difficulty for jurisdictions to recover from said event.[25]

[24] 2018 Missouri State Hazard Mitigation Plan
[25] Ibid

Figure 3.16. HAZUS-MH Earthquake Loss Estimation: Annualized Loss Scenario –Direct Economic Losses to Buildings.



*Source: 2018 Missouri State Hazard Mitigation Plan; *Red star indicates Pulaski County*

Table 3.26. HAZUS-MH Earthquake Loss Estimation-Pulaski County: Annualized Loss Scenario

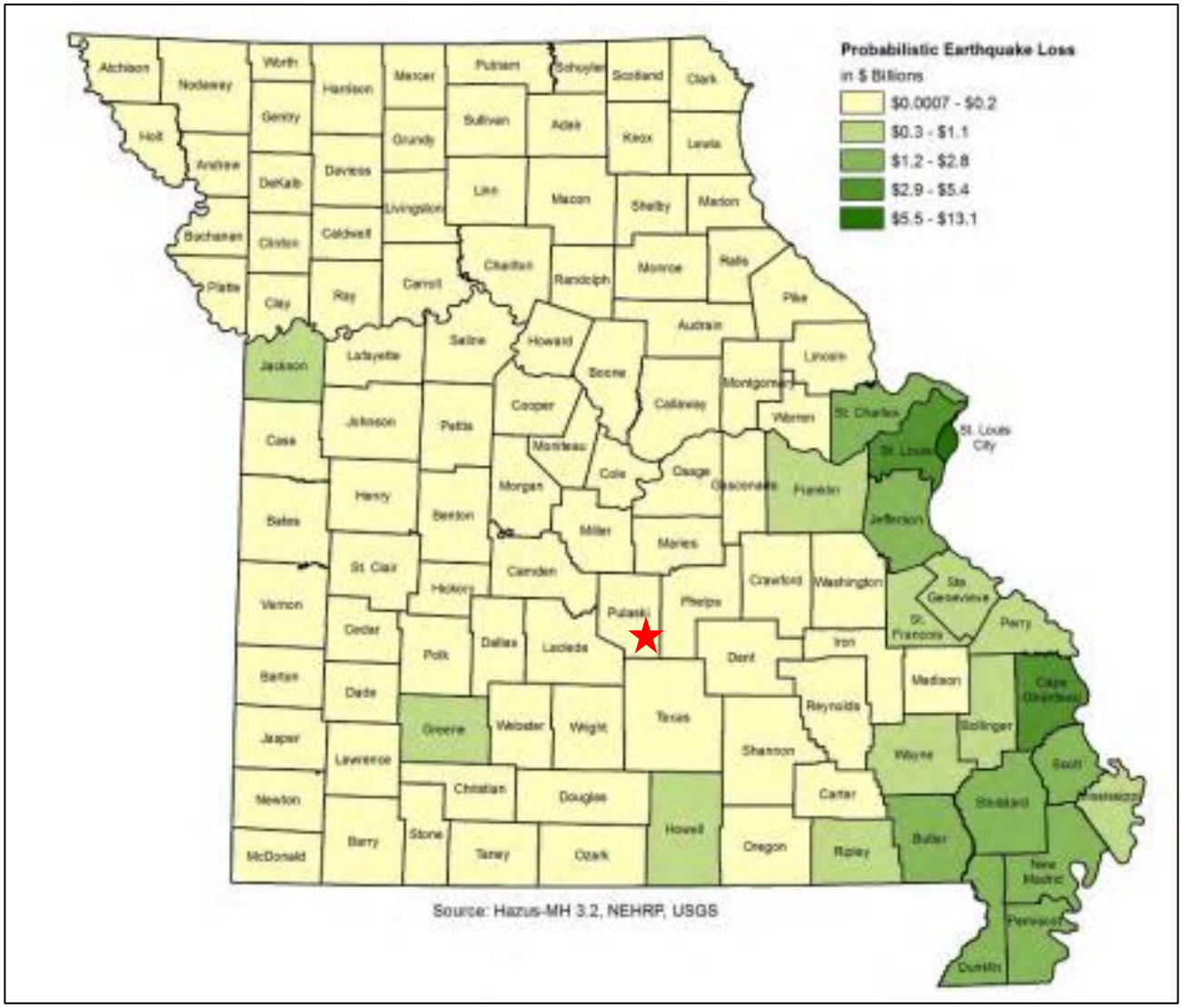
Total Losses in $ Thousands	Loss Per Capita, In $ Thousands	Loss Ratio in $ Per Million	Statewide Ranking for Expected Losses
$342	$0.0065	$64	24th

Source: Hazus 2.1
**All $values are in thousands*
***Loss ratio is the sum of structural and nonstructural damage divided by the entire building inventory value within a county*

Likewise, SEMA developed a second scenario which incorporated a 2% probability of exceedance in 50 years. This model was to demonstrate a worst-case scenario. This scenario is equivalent to the 2,500 year earthquake scenario in HAZUS-MH. The methodology is based on probabilistic seismic hazard shaking grids developed by the U.S. Geological Survey (USGS) for the National Seismic Hazard

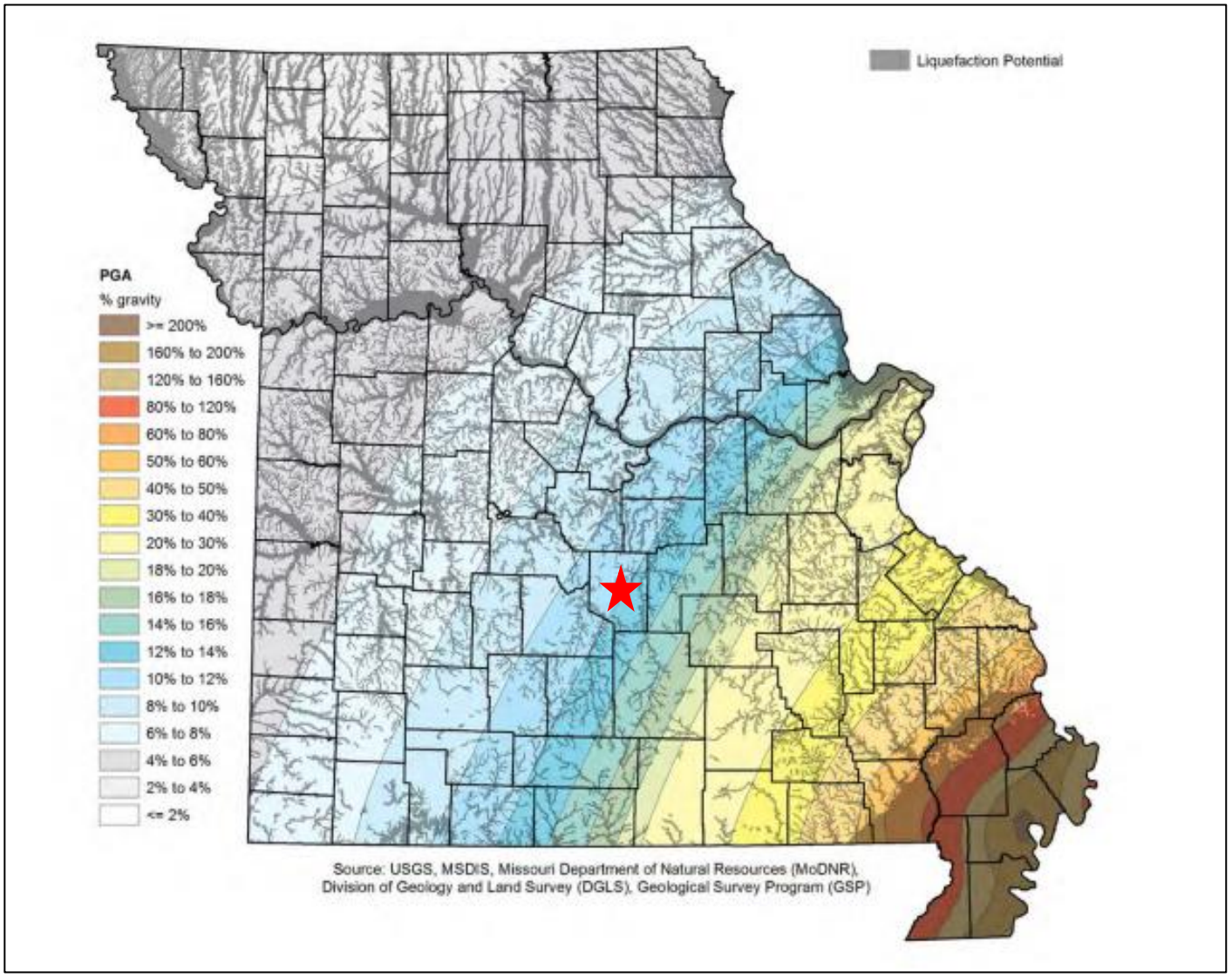
Maps that are included with HAZUS-MH. The USGS updated this mapping in 2014. **0** illustrates direct economic loss to buildings. Pulaski County is anticipated to lose between $700,000 and $200,000,000 in a 50 year scenario. Moreover, in the same event the county is estimated to experience between 3.1 percent and 7 percent loss (damage) of the total. **0** provides estimates of peak ground acceleration and spectral acceleration (ground shaking potential) at intervals of 0.3 and 1.0 seconds, respectively which have a two percent probability of exceedance in the next 50 years. These acceleration events have a 2% probability of exceedance in the next 50 years. A 7.7 magnitude earthquake was utilized in this scenario, which is typically utilized for New Madrid fault planning scenarios in Missouri. Furthermore, this pattern of shaking can be seen in with corresponding potential for damage and areas with soils potentially susceptible to liquefaction. Pulaski County is estimated to have peak ground acceleration between 10 percent and 14 percent.

Figure 3.17. HAZUS-MH Earthquake Loss Estimation with a 2% Probability of Exceedance in 50 Years Scenario – Total Building Loss



*Source: 2018 Missouri State Hazard Mitigation Plan; *Red star indicates Pulaski County*

Figure 3.18. Hazus Earthquake 2% Probability of Exceedance in 50 Years – Ground Shaking and Liquefaction Potential



*Source: 2018 Missouri State Hazard Mitigation Plan; *Red star indicates Pulaski County*

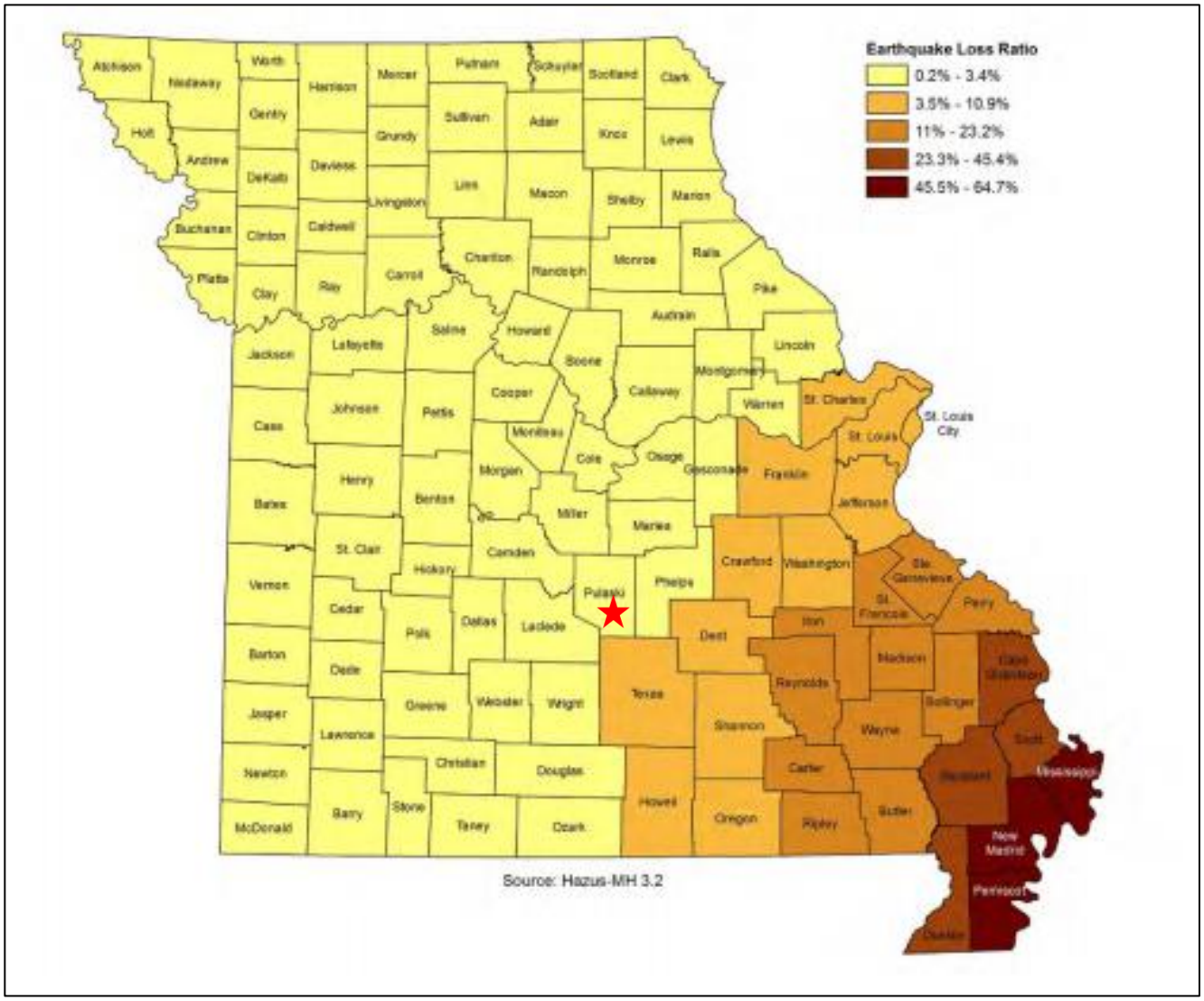
Figure 3.19 depicts a map of the modeled earthquake impacts by county based on building losses, including structural and nonstructural damage, content and inventory loss, and wage and income loss. Pulaski County shows a loss ratio of 0.2 percent to 3.4 percent. **Figure 3.19** depicts loss ratio by county, which is the ratio of the building structure and nonstructural damage to the value of the entire building inventory. The loss ratio is a measure of the disaster impact to community sustainability, which is generally considered at risk when losses exceed 10 percent of the built environment (FEMA). **Table 3.27** provides information on estimated direct economic losses for Pulaski County, including structural, nonstructural, inventory, contents, relocation costs, capital related loss, wages and rental income loss. According to the 2018 Missouri Hazard Mitigation Plan, Pulaski County's loss ratio is 2.55 percent. Pulaski County ranks 27th in the state for direct economic losses in this scenario.

Table 3.27. HAZUS-MH Earthquake Loss Estimation 2% Probability of Exceedance in 50 Years Scenario Direct Economic Losses Results Summary for Pulaski County*

Cost Structural Damage	Cost Non-Structural Damage	Cost Contents Damage	Inventory Loss	Loss Ratio %	Relocation Loss	Capital Related Loss	Wages Losses	Rental Income Loss	Total Loss
$37,007	$98,954	$30,192	$359	2.55	$16,823	$4,313	$5,918	$11,663	$205,229

Source: 2018 Missouri Hazard Mitigation Plan
**All values in thousands*

Figure 3.19. Hazus Earthquake Loss Estimation with a 2% Probability of Exceedance in 50 Years Scenario – Loss Ratio



*Source: 2018 Missouri State Hazard Mitigation Plan; *Red star indicates Pulaski County*

Changing Future Conditions Considerations

Scientists are beginning to believe that there may be a correlation between changing climate conditions and earthquakes. Changing ice caps and sea-level redistribute weight over fault lines, which could potentially have an influence on earthquake occurrences. However, currently no studies quantify the relationship to a high level of detail, so recent earthquakes should not be linked with climate change. While not conclusive, early research suggests that more intense earthquakes and tsunamis may eventually be added to the adverse consequences that are caused by changing future conditions.[26]

Impact of Previous and Future Development

Future development is not expected to increase the risk other than contributing to the overall exposure of what could be damaged as a result of an earthquake. There has not been any significant development since the last update in any of the cities or county since the last update. As new development arises, minimum standards of building codes should be established in all jurisdictions to decrease the potential damage/loss should an earthquake occur.

The Revised Statutes of MO, Section 160.451 require that: The governing body of each school district which can be expected to experience an intensity of ground shaking equivalent to a Modified Mercalli Intensity of VII or above from an earthquake occurring along the New Madrid Fault with a potential magnitude of 7.6 on the Richter Scale shall establish an earthquake emergency procedure system in every school building under its jurisdiction[27].

Hazard Summary by Jurisdiction

There will be a range of intensities with only some areas in the county feeling the highest intensity. Pulaski County is not near the New Madrid Seismic Zone, but it will most likely endure mild secondary effects from the earthquake, such as fire, structure damage, utility disruption, environmental impacts, and economic disruptions/losses. However, damages could differ if there are structural variations in the planning area's built environment. For example, if one community has a higher percentage of residences built prior to 1939 than the other participants, that community is likely to experience higher damages. **Table 3.28** depicts the percent of residences built prior to 1939 in Pulaski County. In addition, if school districts have buildings built prior to 1939, those facilities may be at higher risk of damage should an earthquake occur. However, all school districts indicated that school facilities in the county were built later than 1939. If a major earthquake should occur, Pulaski County would likely be impacted by the number of refugees traveling through the area seeking safety and assistance.

Table 3.28. Percent of Pulaski County Residences Built Prior to 1939

Jurisdiction	Number of Residences Built Prior to 1939	% of Residences Built Prior to 1939
Unincorporated Pulaski County	419	3.7%
Crocker	44	8.9%
Dixon	88	14.8%
Richland	63	7.0%
St. Robert	74	2.2%

[26] Missouri State Hazard Mitigation Plan 2018

[27] 2015 Boone County Hazard Mitigation Plan

Jurisdiction	Number of Residences Built Prior to 1939	% of Residences Built Prior to 1939
Waynesville	62	2.5%

Source:https://data.census.gov/cedsci/table?q=United%20States%20Housing&g=0100000US&tid=ACSDP1Y2018.DP04&t=Housing

Problem Statement

In a worst case scenario, the county is expected to encounter $205,229,000 in total economic losses to buildings. Dixon has a higher risk of damage to buildings due to over 14 percent of the homes having been built prior to 1939.

Jurisdictions should encourage purchase of earthquake hazard insurance. As well as establishing structurally sound emergency shelters in several parts of the county. In addition, stringent minimum standards of building codes should be established. Lastly, outreach and education should be utilized more frequently to prepare citizens for the next occurrence.

3.4.4 Extreme Temperatures

Hazard Profile

Some specific sources for this hazard are:

- 2018 Missouri State hazard Mitigation Plan, Chapter 3, Section 3.3.7, Page 3.253 https://sema.dps.mo.gov/docs/programs/LRMF/mitigation/MO_Hazard_Mitigation_Plan2018.pdf
- National Centers for Environmental Information, Storm Events Database, http://www.ncdc.noaa.gov/stormevents/
- Heat Index Chart & typical health impacts from heat, National Weather Service; National Weather Service Heat Index Program, www.weather.gov/os/heat/index.shtml ;
- Wind Chill chart, National Weather Service, http://www.nws.noaa.gov/om/cold/wind_chill.shtml ;
- Daily temperatures averages and extremes, High Plains Regional Climate Summary, http://www.hprcc.unl.edu/data/historical/index.php?state=ia&action=select_state&submit=Select+State, http://climod.unl.edu/ ;
- Hyperthermia mortality, Missouri; Missouri Department of Health and Senior Service, http://health.mo.gov/living/healthcondiseases/hyperthermia/pdf/hyper1.pdf;
- Hyperthermia mortality by Geographic area, Missouri Department of Health and Senior Services,
- http://health.mo.gov/living/healthcondiseases/hyperthermia/pdf/hyper2.pdf;
- Missouri Hazard Mitigation Viewer
  http://bit.ly/MoHazardMitigationPlanViewer2018 - Website
  https://drive.google.com/file/d/1bPkc0jgF9ofwQLnTL9N0u-oPFWi9hkst/view - User Guide
    - Average annual occurrence for extreme heat by County
    - Vulnerability to extreme heat by County
    - Average annual occurrence for extreme cold by County
    - Vulnerability to extreme cold by County

Hazard Profile

Hazard Description

Extreme temperature events, both hot and cold, can impact human health and mortality, natural ecosystems, agriculture and other economic sectors. According to information provided by FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several days. Ambient air temperature is one component of heat conditions, with relative humidity being the other. The relationship of these factors creates what is known as the apparent temperature. The Heat Index chart shown in **Figure 3.20** uses both of these factors to produce a guide for the apparent temperature or relative intensity of heat conditions. Other factors that should be taken into account include duration of exposure to high temperatures, wind and activity.

The NWS has increased its efforts to more effectively alert the general public and local authorities on the hazards of heat waves. The Heat Index (HI) is an effective tool in helping people understand the dangers of high temperatures and how temperature and relative humidity together provide a more accurate gauge of heat intensity. The HI, provided in degrees Fahrenheit, is an accurate measure of how hot it actually feels when the relative humidity is added to the air temperature. For example – using the Heat Index Chart in Figure 3.23 - if the air temperature is 96 degrees Fahrenheit, (found in the top of the table), and the relative humidity is 55 percent (found on the left of the table), the Heat Index is 112 degrees Fahrenheit (the intersection of the 96 degree row and the 55 percent column). Because HI values were devised for shady, light wind conditions, exposure to full sunshine can increase HI

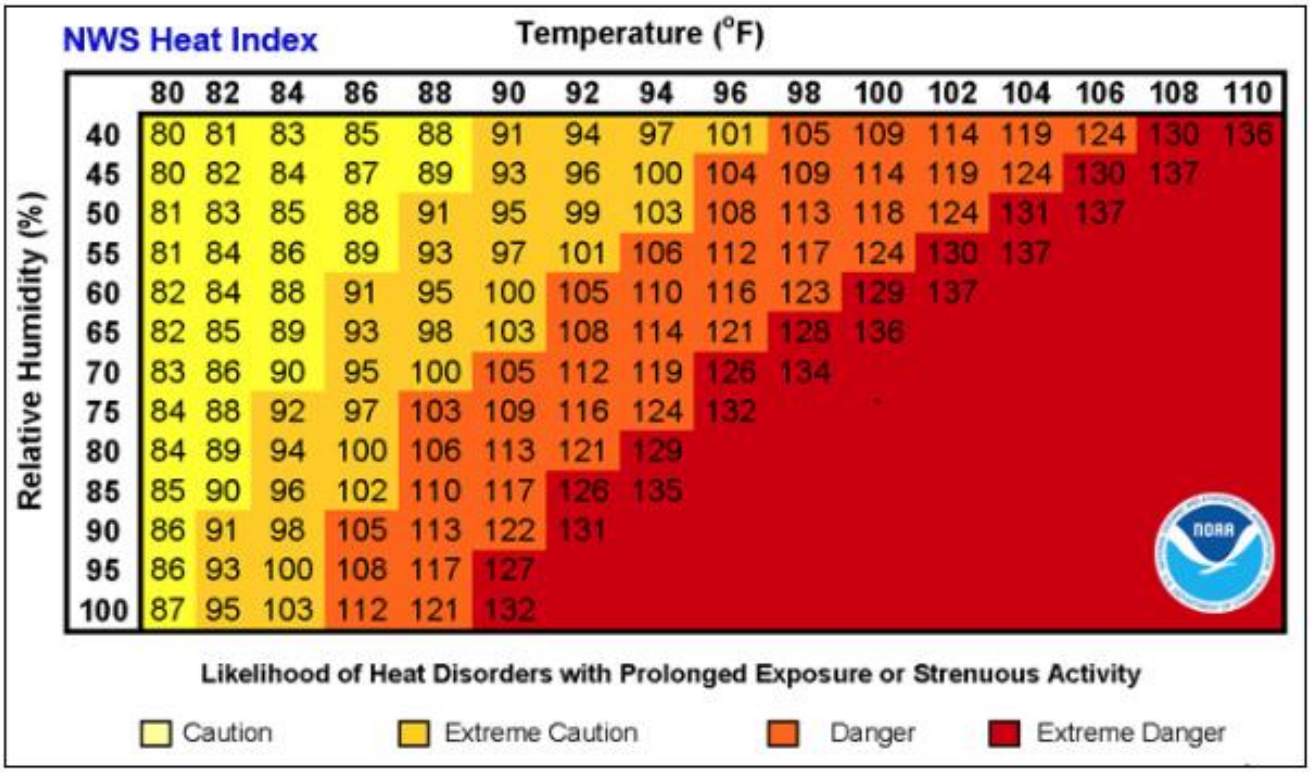
values by up to 15 degrees Fahrenheit. Also, strong winds, particularly with very hot, dry air, can be extremely dangerous.

High humidity, a common factor in Missouri, can magnify the effects of extreme heat. While heat-related illness and death can occur from exposure to intense heat in just one afternoon, heat stress on the body has a cumulative effect. The persistence of a heat wave increases the threat to public health.

Extreme cold often accompanies severe winter storms and can lead to hypothermia and frostbite in people without adequate clothing protection. Cold can cause fuel to congeal in storage tanks and supply lines, stopping electric generators and furnaces. Cold temperatures can also overpower a building's heating system and cause water and sewer lines to freeze and rupture. Extreme cold also increases the likelihood for ice jams on flat rivers and streams. When combined with high winds from winter storms, extreme cold becomes extreme wind chill, which is hazardous to health and safety.

The National Institute on Aging estimates that more than 2.5 million Americans are elderly and especially vulnerable to hypothermia, with those who are isolated being most at risk. About 10 percent of people over the age of 65 have some kind of bodily temperature-regulating defect, and three to four percent of all hospital patients over 65 are hypothermic.

Figure 3.20. Heat Index (HI) Chart

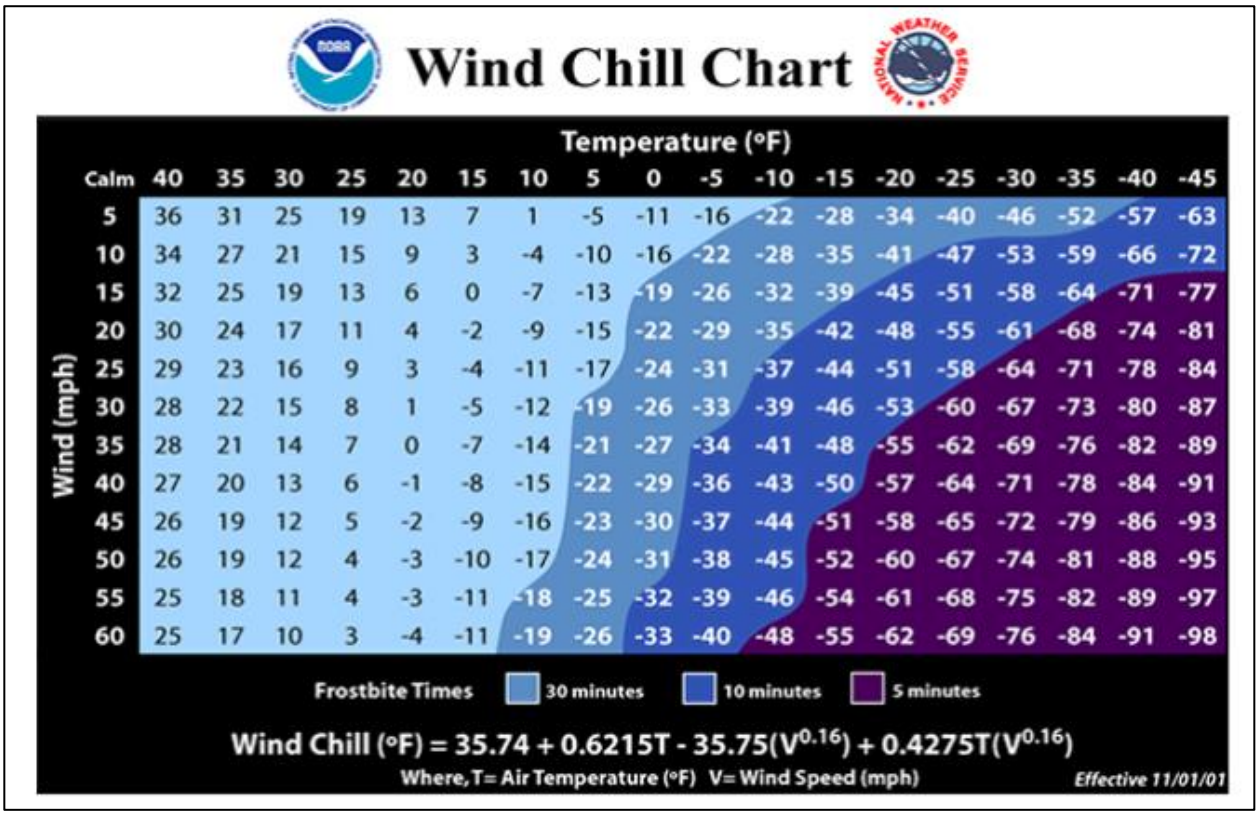


Source: National Weather Service (NWS); https://www.weather.gov/safety/heat-index
Note: Exposure to direct sun can increase Heat Index values by as much as 15°F. The shaded zone above 105°F corresponds to a HI that may cause increasingly severe heat disorders with continued exposure and/or physical activity.

Also at risk, are those without shelter, those who are stranded, or who live in a home that is poorly insulated or without heat. Other impacts of extreme cold include asphyxiation (unconsciousness or death from a lack of oxygen) from toxic fumes from emergency heaters; household fire, which can be caused by fireplaces and emergency heaters; and frozen/burst pipes.

The NWS Wind Chill Temperature (WCT) index, shown in **Figure 3.21,** uses advances in science, technology and computer modeling to provide an accurate understandable and useful formula for calculating the dangers from winter winds and freezing temperatures. The figure below presents wind chill temperatures which are based on the rate of heat loss from exposed skin caused by wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature and eventually the internal body temperature.

Figure 3.21. Wind Chill Chart



Source: https://www.weather.gov/safety/cold-wind-chill-chart

Geographic Location

Extreme temperature is considered to be an area-wide hazard event. In such a case, the chance of variation in temperatures across Pulaski County is minimal to nonexistent.

Strength/Magnitude/Extent

The National Weather Service (NWS) has an alert system in place (advisories or warnings) when the Heat Index is expected to have a significant impact on public safety. The expected severity of the heat determines whether advisories or warnings are issued. A common guideline for issuing excessive heat alerts is when for two or more consecutive days: (1) when the maximum daytime Heat Index is expected to equal or exceed 105 degrees Fahrenheit (°F); and the night time minimum Heat Index is 80°F or above. A heat advisory is issued when temperatures reach 105 degrees and a warning is issued at 115 degrees.

The NWS Wind Chill Temperature (WCT) index uses advances in science, technology, and computer modeling to provide an accurate, understandable, and useful formula for calculating the dangers from winter winds and freezing temperatures. **Figure 3.21** presents wind chill temperatures which are based on the rate of heat loss from exposed skin caused by wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature and eventually the internal body temperature.

Extreme heat can cause stress to crops and animals. However, according to the NOAA Storm Events Data Base, there were no reported agricultural losses for Pulaski County during that 20 year time period. Data specifically on agricultural losses due to extreme heat was not available on the USDA Risk Management website. Extreme heat can also strain electricity delivery infrastructure overloaded during peak use of air conditioning during extreme heat events. Another type of infrastructure damage from extreme heat is road damage. When asphalt is exposed to prolonged extreme heat, it can cause buckling of asphalt-paved roads, driveways, and parking lots.

From 1988 through 2011, there were 3,496 fatalities in the U.S. attributed to summer heat. This translates to an annual average of 146 deaths. During the same time period, zero deaths were recorded in Pulaski County, according to NOAA Storm Events Data Base. The national Weather Service stated that among natural hazards, no other natural disaster – not lightning, hurricanes, tornadoes, floods or earthquakes – causes more deaths.

Those at greatest risk for heat-related illness include infants and children up to five years of age, people 65 years of age and older, people who are overweight, and people who are ill or on certain medications. However, even young and healthy individuals are susceptible if they participate in strenuous physical activities during hot weather. In agricultural areas, the exposure of farm workers, as well as livestock, to extreme temperatures is a major concern.

Table 3.29 lists typical symptoms and health impacts due to exposure to extreme heat.

Table 3.29. Typical Health Impacts of Extreme Heat

Heat Index (HI)	Disorder
80-90° F (HI)	Fatigue possible with prolonged exposure and/or physical activity
90-105° F (HI)	Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and/or physical activity
105-130° F (HI)	Heatstroke/sunstroke highly likely with continued exposure

Source: National Weather Service Heat Index Program, www.weather.gov/os/heat/index.shtml

The National Weather Service has an alert system in place (advisories or warnings) when the Heat Index is expected to have a significant impact on public safety. The expected severity of the heat determines whether advisories or warnings are issued. A common guideline for issuing excessive heat alerts is when for two or more consecutive days: (1) when the maximum daytime Heat Index is expected to equal or exceed 105 degrees Fahrenheit (°F); and the night time minimum Heat Index is 80°F or above. A heat advisory is issued when temperatures reach 105 degrees and a warning is issued at 115 degrees.

Previous Occurrences

Table 3.30 provides data in relation to record heat events between 1999 and 2019 in Pulaski County.

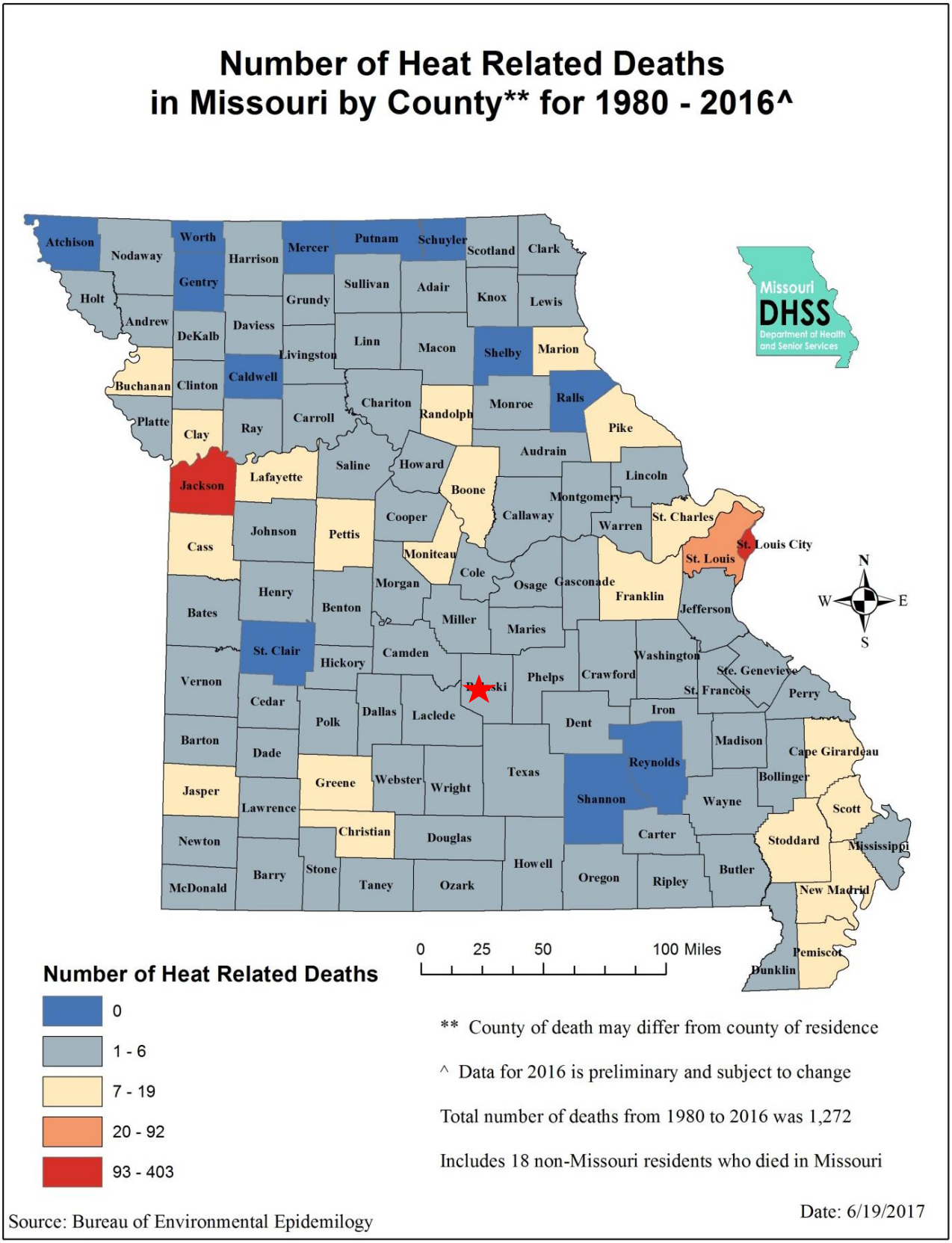
Maximum heat index values and temperatures are shown for each extreme temperature event. Fortunately, there were zero recorded injuries and fatalities during this time. In addition, **Figure 3.22** illustrates heat related deaths by county in Missouri between 1980 and 2016.

Table 3.30. Pulaski County Recorded Heat Events 1999 – 2019

Month, Year	# of Event Days	Fatalities	Injuries	Temperature (F°)	Heat Index Values (F°)
7/23/1999	9	0	0	95+	105-115
8/01/1999	18	0	0	95+	100+
8/27/2000	5	0	0	100+	100-110
9/01/2000	4	0	0	100	100+
7/17/2001	15	0	0	90-100	100-110
8/01/2001	9	0	0	-	100-110
6/01/2012	30	0	0	90+	100+
7/01/2012	31	0	0	100	104+
8/01/2012	31	0	0	90+	106
Total	**152**	**0**	**0**	**-**	**-**

Source: http://www.ncdc.noaa.gov/stormevents/

Figure 3.22. Heat Related Deaths in Missouri 2000 - 2016



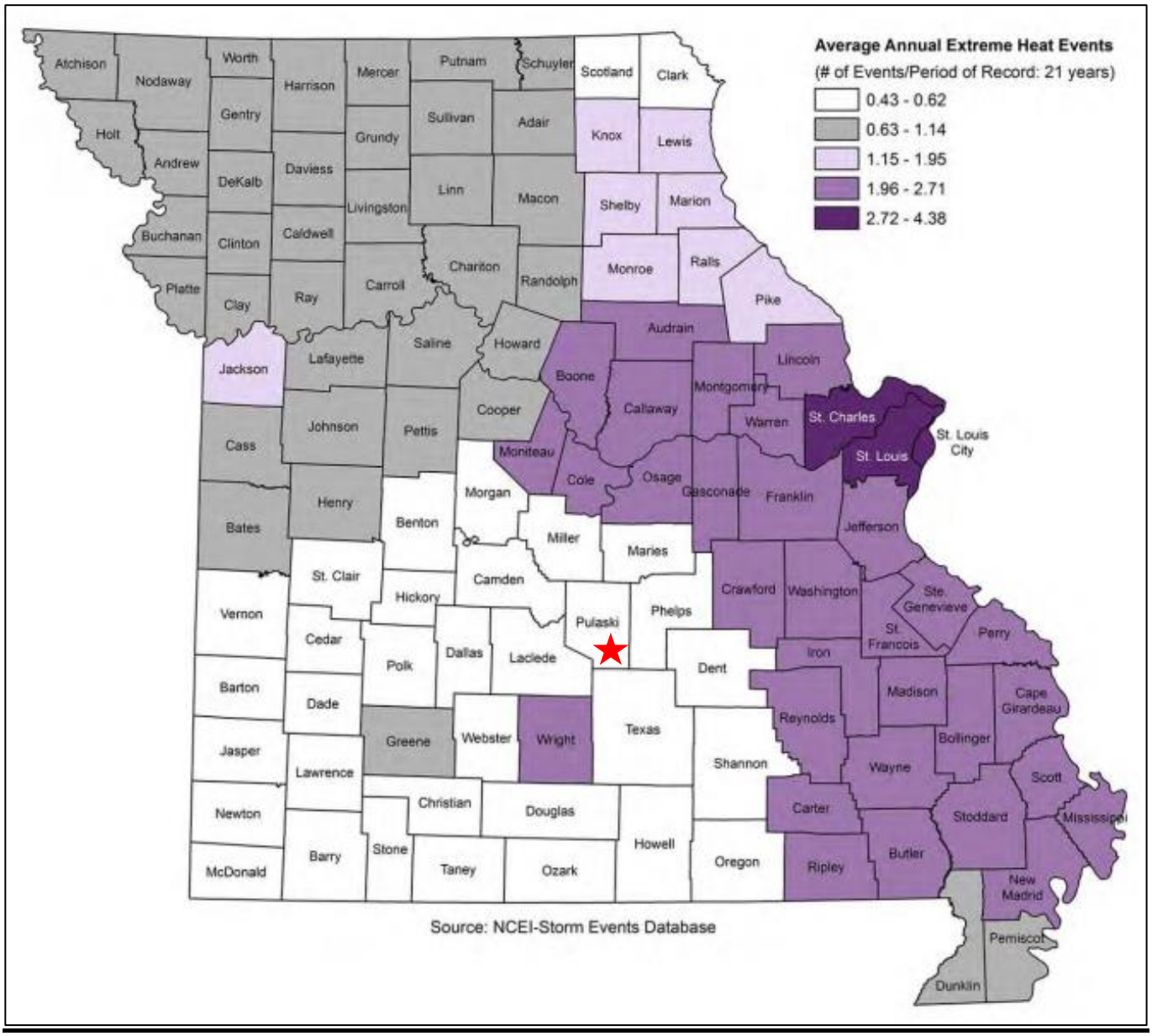
Source: https://health.mo.gov/living/healthcondiseases/hyperthermia/pdf/stat-report.pdf

*Red star indicates Pulaski County

Probability of Future Occurrence

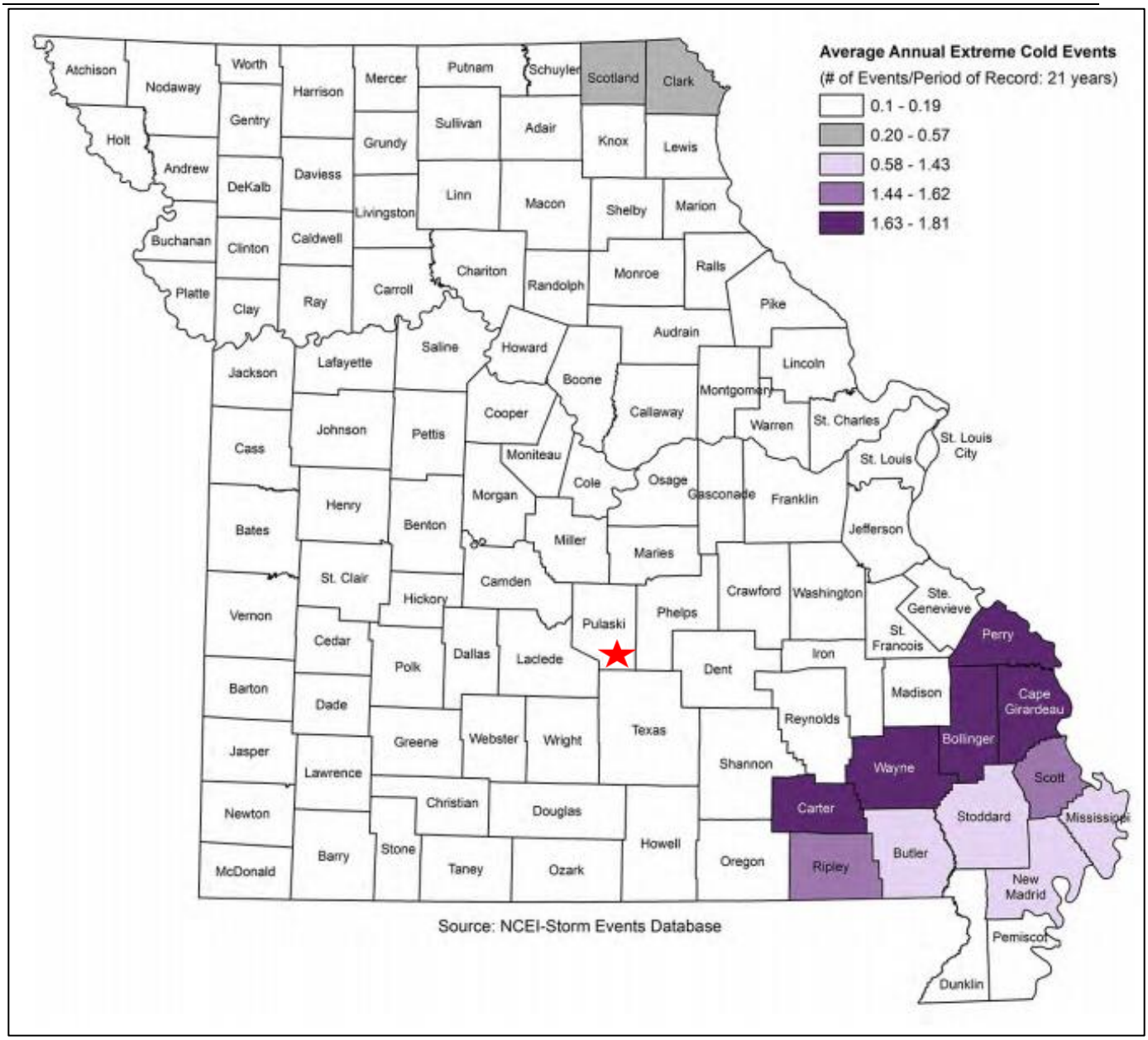
Figure 3.23 illustrates the average annual occurrence for extreme heat statewide. Based on information provided in the 2018 Missouri State Hazard Mitigation Plan, Pulaski County has an average of .43 to .62 events per year based on data from 21 years. **Figure 3.24** illustrates the average annual occurrence for extreme cold statewide. Pulaski County has an average of 0.1 to 0.19 events per year based on data from 21 years. It should be noted that there are data limitations due to underreporting of extreme heat and cold events.

Figure 3.23. Average Annual Occurrence for Extreme Heat



*Source: 2018 Missouri State Hazard Mitigation Plan; *Red star indicates Pulaski County*

Figure 3.24. Average Annual Occurrence for Extreme Cold



*Source: 2018 Missouri Hazard Mitigation Plan, *Red star indicates Pulaski County*

Changing Future Conditions Considerations

According to the 2018 Missouri Hazard Mitigation Plan, under a higher emissions pathway, historically unprecedented warming is projected by the end of the century. Even under a pathway of lower greenhouse gas emissions, average annual temperatures are projected to most likely exceed historical record levels by the middle of the 21st century. For example, in southern Missouri, the annual maximum number of consecutive days with temperatures exceeding 95 degrees F is projected to increase by up to 20 days. Temperature increases will cause future heat waves to be more intense, a concern for this region which already experiences hot and humid conditions. If the warming trend continues, future heat waves are likely to be more intense and cold spells are

projected to decrease.

Furthermore, higher temperatures are experienced more acutely by vulnerable populations such as the elderly, the very young, the homeless, the ill and disabled, and those living in poverty. Higher demands and costs for electricity to run air conditioners can stress power systems. Higher temperatures can also cause harmful algal blooms in warmer water – resulting in poor water quality.

Mitigation against the impacts of future temperature increases may include increasing education on heat stress prevention, organizing cooling centers, allocating additional funding to repair and maintain roads damaged by buckling and potholes and reducing nutrient runoff that contributes to algal blooms. Local governments should also prepare for increased demand on utility systems. Improving energy efficiency in public buildings will also present an increasingly valuable savings potential.

Vulnerability

Vulnerability Overview

Pulaski County, along with the rest of the state of Missouri is vulnerable to extreme heat and cold events. **Table 3.31** shows the typical health impacts of extreme heat. Jurisdictions with higher percentages of individuals below the age of 5, and above the age of 65 tend to be more at risk for extreme heat (**Table 3.34**). People who are overweight, ill or on certain medication can also be more vulnerable to high temperatures. Unincorporated Pulaski County has an estimated 6.7 percent of individuals are 65 or older. The city of St. Robert had the lowest number of older residents with 8.0 percent aged 65 and over. Crocker had the highest rate overall with 19.9 percent of residents falling into the 65 and older category and Dixon was also high at 19.8 percent. However, even young and healthy individuals are susceptible if they participate in strenuous physical activities during hot weather. The exposure to extreme temperatures of farm workers and livestock is also a major concern.

Table 3.31. Typical Health Impacts of Extreme Heat

Heat Index (HI)	Disorder
80°- 90° F (HI)	Fatigue possible with prolonged exposure and/or physical activity.
90° - 105° F (HI)	Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and/or physical activity.
105° - 130° F (HI)	Heatstroke/sunstroke highly likely with continued exposure.

Source: National Weather Service Heat Index Program, www.weather.gov/os/heat/index/shtml

The method used by state planners to determine vulnerability to extreme temperatures across Missouri was statistical analysis of data from several sources: National Centers for Environmental Information (NCEI) storm events data (1996- December 31, 2016), total population and percentage of population over 65 data from the U.S. Census (2015 ACS) and the calculated Social Vulnerability Index for Missouri counties from the hazards and Vulnerability Research Institute in the Department of Geography at the University of South Carolina. Four factors were considered in determining overall vulnerability to extreme temperatures – total population, percentage of population over 65, likelihood of occurrence and social vulnerability. Based on natural breaks in the data, a rating value of one through five was assigned with one being low, two being low-medium, three being medium, four being medium-high and five being high.

Table 3.32 shows the population, percent of population over 65 and social vulnerability index data for Pulaski County overall.

Table 3.32. Population, Percent of Population Over 65 and SOVI Data for Pulaski County

County	Total Population (2015 ACS)	Total Population Rating	Percentage of Population Over 65	Percent of Population Over 65 Rating	SOVI Ranking	SOVI Rating
Pulaski	3,920	1	7.2	1	Medium High	4

Source: 2018 Missouri Hazard Mitigation Plan

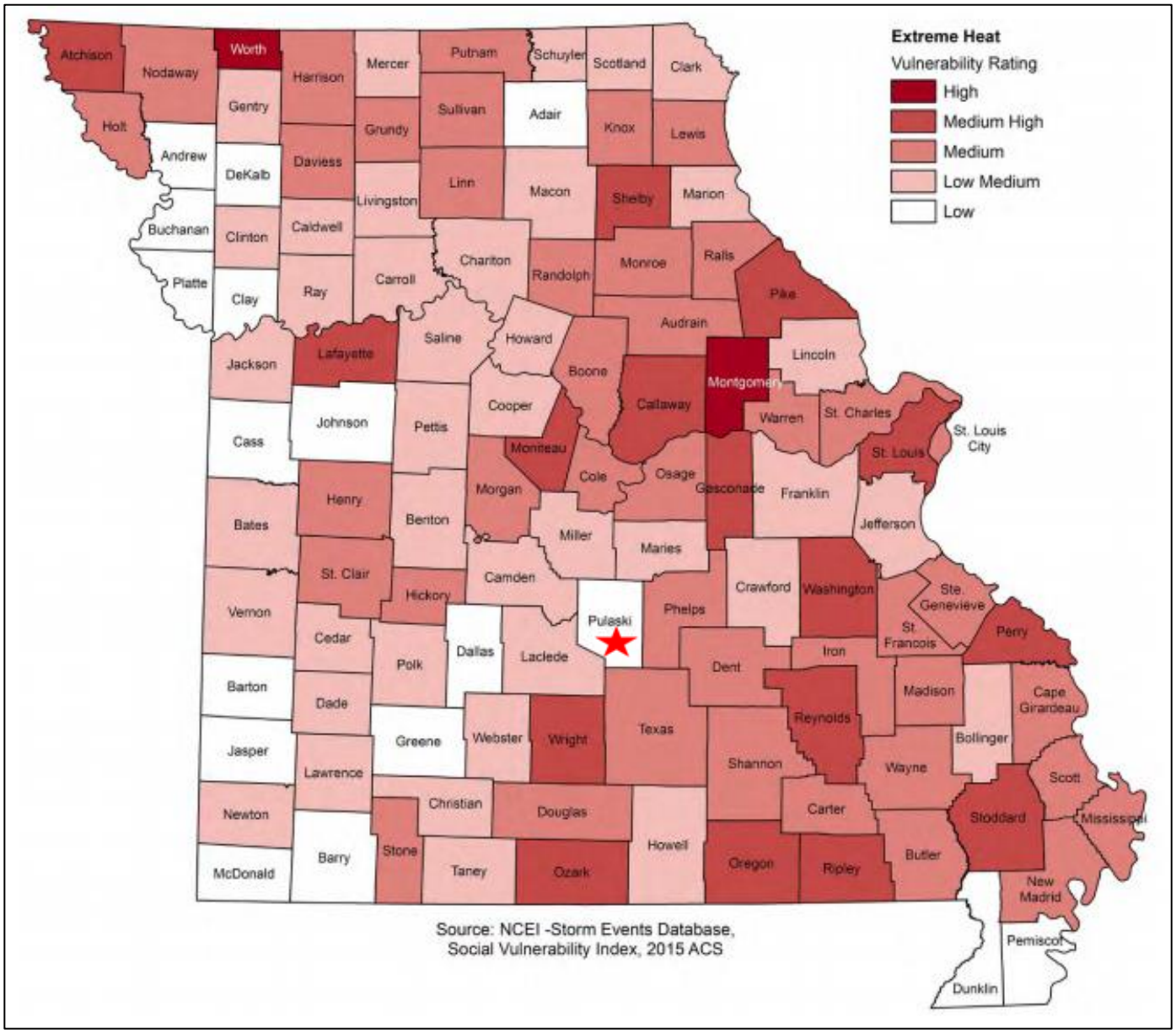
Table 3.33 illustrates the likelihood of occurrence and overall vulnerability rating for extreme temperatures for Pulaski County. **Figure 3.25** and **Figure 3.26** provide a vulnerability summary for extreme heat and extreme cold, respectively. Pulaski County has Low vulnerability for extreme heat and Low-Medium vulnerability for extreme cold.

Table 3.33. Pulaski County Likelihood of Occurrence and Overall Vulnerability Rating for Extreme Temperatures

Heat					Cold				
Total Events	Likelihood of Occurrence	Likelihood Rating	Total Vulnerability	Total Vulnerability Description	Total Events	Likelihood of Occurrence	Likelihood Rating	Total Vulnerability	Total Vulnerability Description
11	0.52	1	7	Low	3	0.14	1	7	Low Medium

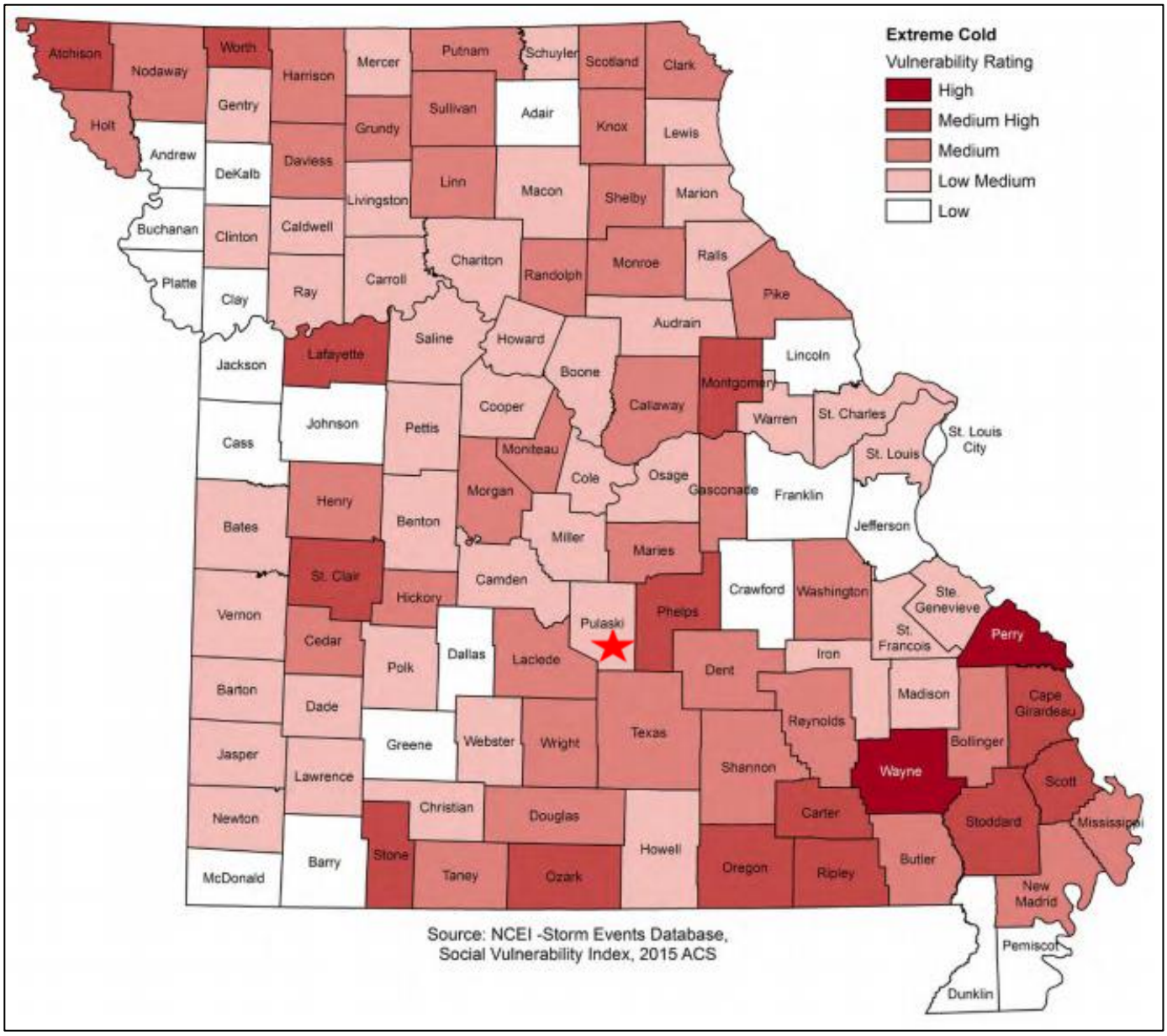
Source: 2018 Missouri Hazard Mitigation Plan

Figure 3.25. Vulnerability Summary for Extreme Heat



*Source: 2018 Missouri Hazard Mitigation Plan, *Red star indicates Pulaski County*

Figure 3.26. Vulnerability Summary for Extreme Cold



*Source: 2018 Missouri Hazard Mitigation Plan, *Red star indicates Pulaski County*

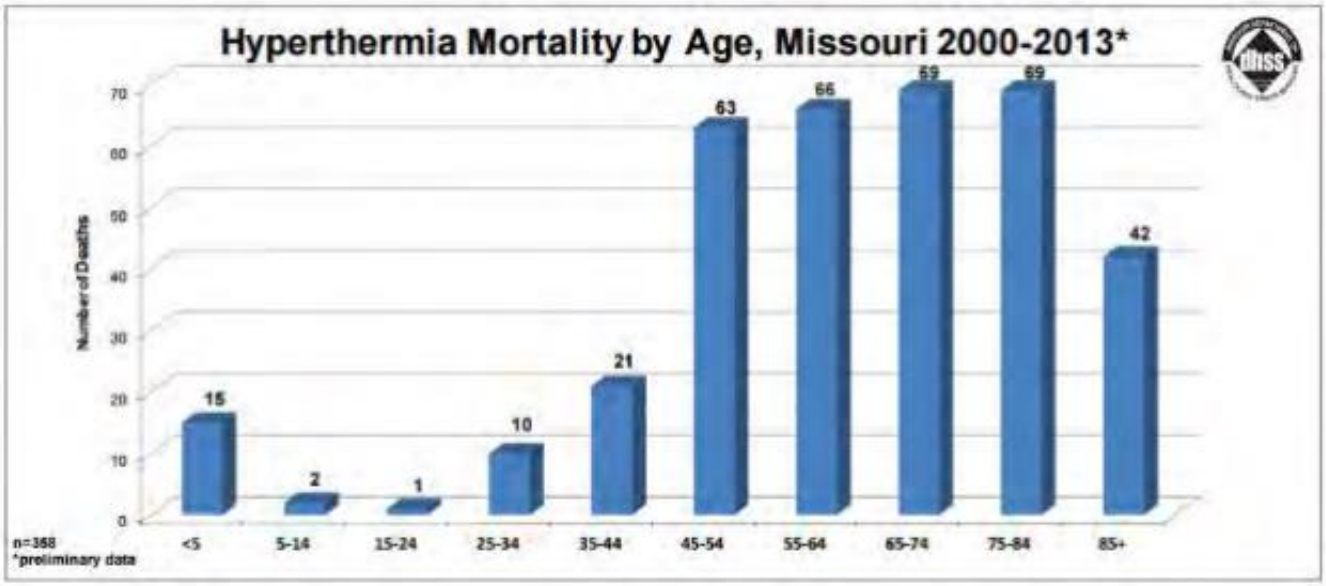
Potential Losses to Existing Development

Extreme Heat/Heat Wave

Of greatest concern during extreme heat events are hyperthermia injuries and deaths. The 2018 Missouri Hazard Mitigation plan states that there were 358 heat-related deaths reported in Missouri from 2000 through 2013. There were 217 (61%) deaths in the metropolitan areas of Kansas City and St. Louis and 141 (39%) deaths in rural parts of the state. Half of the deaths were age 65 or older. People in this demographic group are more vulnerable to this hazard for a number of reasons. Many live alone and have medical conditions that put them at higher risk. The lack of air conditioning or the refusal to use it for fear of higher utility bills further increases their risk. Deaths among children under

the age of five are often linked to being left in vehicles during hot weather. Between 2000 and 2013 there were 15 (4%) heat-related deaths of children less than five years old. In the age group between 5 years and 65 years deaths are generally due to over exertion at work or in sports activities, complicating medical conditions or substance abuse. **Figure 3.27** shows the hyperthermia mortality rate by age for the 2000-2013 timeframe.

Figure 3.27. Hyperthermia Mortality of Age, Missouri 2000-2013



Source: Missouri DHSS, http://health.mo.gov/living/healthcondiseases/hyperthermia/pdf/hyper4.pdf

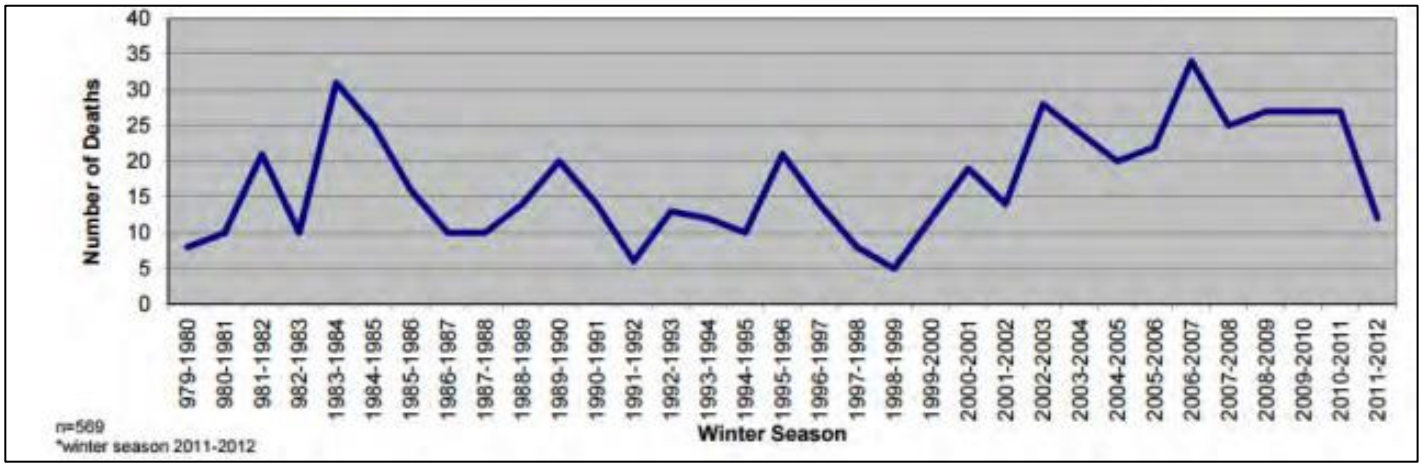
During extreme heat events structural, road, and electrical infrastructure are vulnerable to damages. Depending upon temperatures and duration of extreme heat, losses will vary.

Extreme Cold

According to the Missouri Department of Health and Senior Services, 569 people died in Missouri due to extreme cold conditions between 1979 and 2012, see **Figure 3.28**. As with extreme heat, the elderly are more vulnerable to cold-related deaths. Elderly or disabled individuals fall outside their homes and are not able to call for help or reach the safety of shelter during periods of extreme cold. According to the 2018 Missouri State Hazard Mitigation plan, during the winters of 1989-2012, a total of 414 hypothermia deaths occurred, with 186 (44.9%) being 65 years of age or older. As with extreme heat, substance abuse can be a contributing factor for people between the ages of 25 and 64. Between 1989 and 2012, substance abuse factored into the hypothermia deaths of 107 of the 208 (51.4%) of the deaths in this age group. Fortunately, hypothermia deaths in people under the age of 25 are rare in Missouri, accounting for only 19 (4.6%) of the total extreme cold related deaths during this timeframe. There were two (0.5%) deaths of children under the age of five. Over 72 percent of hypothermia deaths are among males – 299 of the total 414. The remaining 115 (27.8%) were female.

In regards urban versus rural, hypothermia deaths tend to be higher in rural areas than in urban communities. There were 183 (44.2%) cold related deaths in the Kansas City and St. Louis metropolitan areas, while 231 (55.8%) occurred in other parts of the state.

Figure 3.28. Hypothermia Deaths, Missouri: Winter Seasons 1979-2012



Source: Missouri DHSS, http://health.mo.gov/living/healthcondiseases/hypothermia/pdf/hypo1.pdf

Impact of Future Development

Population trends from 2000 to 2018 for Pulaski County and the city of Dixon indicate that the population in unincorporated areas has fallen by an estimated 3.44 percent. The city of Dixon's population has decreased by a significant 18.92 percent. The city of Crocker's population has grown by an estimated 3.78 percent. The city of Richland's population has increased by 1.72 percent and the city of St. Robert has grown by a significant 32.8 percent. The city of Waynesville's population has increased by an estimated 9.03 percent. Population growth can result in increased age groups that are more susceptible to extreme heat and cold. Additionally, as populations increase, so does the strain on each jurisdiction's electricity and road infrastructure. Local government and local emergency management should take extreme heat and cold in consideration when upgrades occur to the local power grid.

Hazard Summary by Jurisdiction

Those at greatest risk for heat-related illness and deaths include children up to five years of age, people 65 years of age and older, people who are overweight, and people who are ill or on certain medications or have medical conditions that make them more vulnerable. To determine jurisdictions within the planning area with populations more vulnerable to extreme heat, demographic data was obtained from the 2014-2018 census on population percentages in each jurisdiction comprised of those under age 5 and over age 65. Data was not available for overweight individuals and those on medications vulnerable to extreme heat or with medical conditions that made them more vulnerable. **Table 3.34** below summarizes vulnerable populations in the participating jurisdictions. Note that school and special districts are not included in the table because students and those working for the special districts are not customarily in these age groups.

Table 3.34. County Population Under Age 5 and Over Age 65 (2014-2018)

Jurisdiction	Population Under 5 Years	Population 65 Years and over
Unincorporated Pulaski County	6.8%	8.3%
Crocker	9.0%	19.9%
Dixon	5.0%	19.8%
Richland	3.3%	17.3%

Jurisdiction	Population Under 5 Years	Population 65 Years and over
St. Robert	4.1%	8.0%
Waynesville	8.5%	11.4%

Source: U.S. Census Bureau, 2014-2017 American Community Survey 5-Year Estimates

Due to lack of data, strategic buildings that lack air-conditioning could not be analyzed for this report. Additionally, school policy data in regard to extreme heat or cold were not available.

In summary, the risks of extreme heat or cold can impact the health/lives of citizens within the county, specifically the young and elderly. The cities of Crocker and Dixon have a high percentage of individuals 65 and over, 19.9 percent and 19.8 percent respectively.

Many people do not realize how deadly a heat wave can be. Extreme heat is a natural disaster that is not as dramatic as floods or tornadoes. Working with the Pulaski County Health Department and EMD, local governments should encourage residents to:

- Stay indoors as much as possible and limit exposure to the sun;
- Stay on the lowest floor out of the sunshine if air conditioning is not available;
- Consider spending the warmest part of the day in public buildings such as libraries or other public or community buildings. Circulating air can cool the body by increasing the evaporation rate of perspiration;
- Eat light, well-balanced meals at regular intervals and avoid using salt tablets unless directed by a physician;
- Hydrate by drinking plenty of water. Individuals with epilepsy or heart, kidney or liver disease who are on fluid restricted diets or have problems with fluid retention should consult their physicians on liquid intake;
- Limit consumption of alcoholic beverages;
- Dress in loos-fitting, lightweight and light colored clothes that dover as much skin as possible;
- Protect your face and head by wearing a wide-brimmed hat. Wear sunscreen;
- Check on family, friends and neighbors who do not have air conditioning and are generally alone;
- Never leave children or pets in closed vehicles;
- Avoid strenuous work during the warmest part of the day and use the buddy system when working in extreme heat and take frequent breaks.

People who work outdoors should be educated about the dangers and warning signs of heat disorders. Buildings, ranging from homes (particularly those of the elderly) to factories, should be equipped with properly installed, working air conditioning units, or have fans that can be used to generate adequate ventilation. However, although fans are less expensive to operate than air conditioning, they may not be effective, and may even be harmful when temperatures are very high. As the air temperature rises, air flow is increasingly ineffective in cooling the body. At temperatures above 100° F, the fan may be delivering overheated air to the skin at a rate that exceeds the capacity of the body to get rid of this heat – even with perspiring – and the net effect is to add heat rather than to cool the body. An air conditioner is a much better option. Charitable organizations and the health department should work together to provide fans, when appropriate, to at-risk residents during times of critical heat. When temperatures are too high, however, these groups should work to get at-risk populations into cooling shelters.

Extreme Cold

Extreme cold can also be life-threatening and the following precautions should be taken when someone is suffering from hypothermia:

- Call 9-1-1 for immediate medical assistance;
- Move the victim to a warm place;
- Monitor the victim's blood pressure and breathing;
- If necessary, provide rescue breathing and CPR;
- Remove wet clothing;
- Dry off the victim;
- Take the victim's temperature;
- Warm the body core first, NOT the extremities. Warming the extremities first can cause the victim to go into shock and can also drive cold blood toward the heart and lead to heart failure;
- Do not warm the victim too fast – rapid warming may cause heart arrhythmias

Problem Statement

In summary, the risks of extreme heat and cold can impact the health/lives of citizens within the county, specifically the young and elderly. Based on the vulnerability analysis, the cities of Crocker and Dixon have the highest risk because both have large populations of people aged 65 and over (**Table 3.34**).

All jurisdictions should make sure they have plans in place to provide both cooling and warming shelters during times of extreme temperatures. School districts should have policies in place to minimize strenuous exercise outdoors during heat waves and to consider policies for delaying or cancelling school during times of extreme cold to reduce risk to students waiting for buses.

3.4.5 Wildfires

The specific sources for this hazard are:

- 2018 Missouri State Hazard Mitigation Plan, Chapter 3, Section 3.3.11, Page 3.390 https://sema.dps.mo.gov/docs/programs/LRMF/mitigation/MO_Hazard_Mitigation_Plan2018.pdf
- Missouri Department of Conservation Wildfire Data Search at https://mdc12.mdc.mo.gov/Applications/MDCFireReporting/Home/FireReportSearch
- Statistics, Missouri Division of Fire Safety;
- National Statistics, US Fire Administration;
- Fire/Rescue Mutual Aid Regions in Missouri;
- Forestry Division of the Missouri Dept. of Conservation;
- National Fire Incident Reporting System (NFIRS), http://www.dfs.dps.mo.gov/programs/resources/fire-incident-reporting-system.php
- University of Wisconsin Slivis Lab, http://silvis.forest.wisc.edu/data/wui-change/
- Missouri Hazard Mitigation Viewer
  http://bit.ly/MoHazardMitigationPlanViewer2018 - Website
  https://drive.google.com/file/d/1bPkcojgF9ofwQLnTL9N0u-oPFWi9hkst/view - User Guide
    - Likelihood of Occurrence of wildfire by County
    - Average annual land burned (acres) by County
    - Number of structures within the WUI Interface/Intermix Area
    - Potential loss, average annual land burned by County

Hazard Profile

Hazard Description

The fire incident types for wildfires include: 1) natural vegetation fire, 2) outside rubbish fire, 3) special outside fire, and 4) cultivated vegetation, crop fire.

The Missouri Division of Fire Safety (MDFS) indicates that approximately 80 percent of the fire departments in Missouri are staffed with volunteers. Whether paid or volunteer, these departments are often limited by lack of resources and financial assistance.

The Forestry Division of the Missouri Department of Conservation (MDC) is responsible for protecting privately owned and state-owned forests and grasslands from wildfires. To accomplish this task, eight forestry regions have been established in Missouri for fire suppression. The Forestry Division works closely with volunteer fire departments and federal partners to assist with fire suppression activities. Currently, approximately 700 rural fire departments in Missouri have mutual aid agreements with the Forestry Division to obtain assistance in wildfire protection if needed. Over 300 have mutual aid agreements with the State to obtain assistance in wildfire protection if needed. A cooperative agreement with the Mark Twain National Forest is renewed annually.

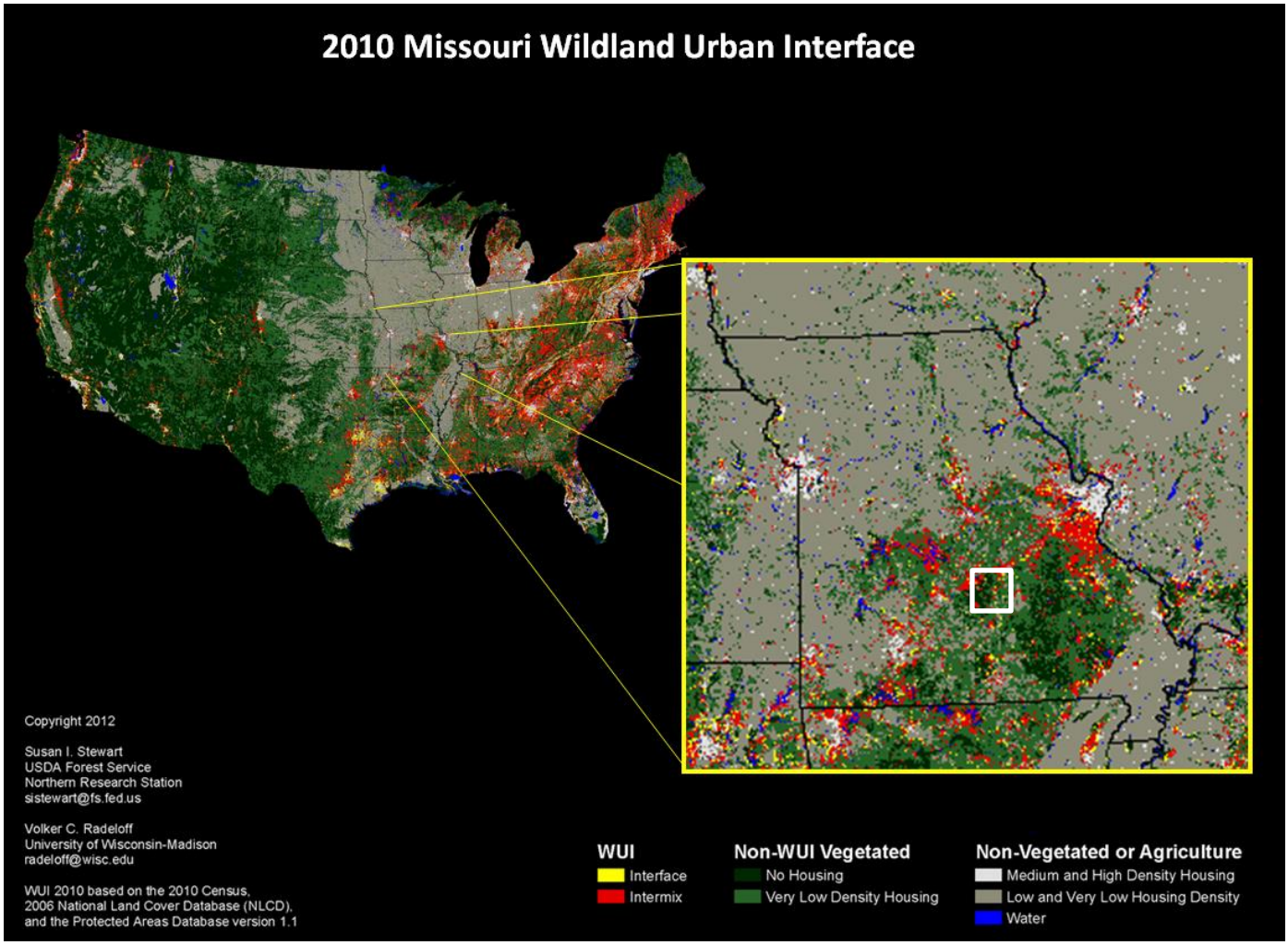
Most of Missouri fires occur during the spring season between February and May. The length and severity of both structural and wildland fires depend largely on weather conditions. Each year, an average of about 3,200 wildfires burn more than 52,000 acres of forest and grassland in Missouri. Spring in Missouri is usually characterized by low humidity and high winds. These conditions result in higher fire danger. Drought conditions can also hamper firefighting efforts, as decreasing water supplies may not prove adequate for firefighting. It is common for rural residents burn their garden spots, brush piles, and other areas in the spring. Some landowners also believe it is necessary to burn their forests

in the spring to promote grass growth, kill ticks, and reduce brush. Therefore, spring months are the most dangerous for wildfires. The second most critical period of the year is fall. Depending on the weather conditions, a sizeable number of fires may occur between mid-October and late November.

Geographic Location

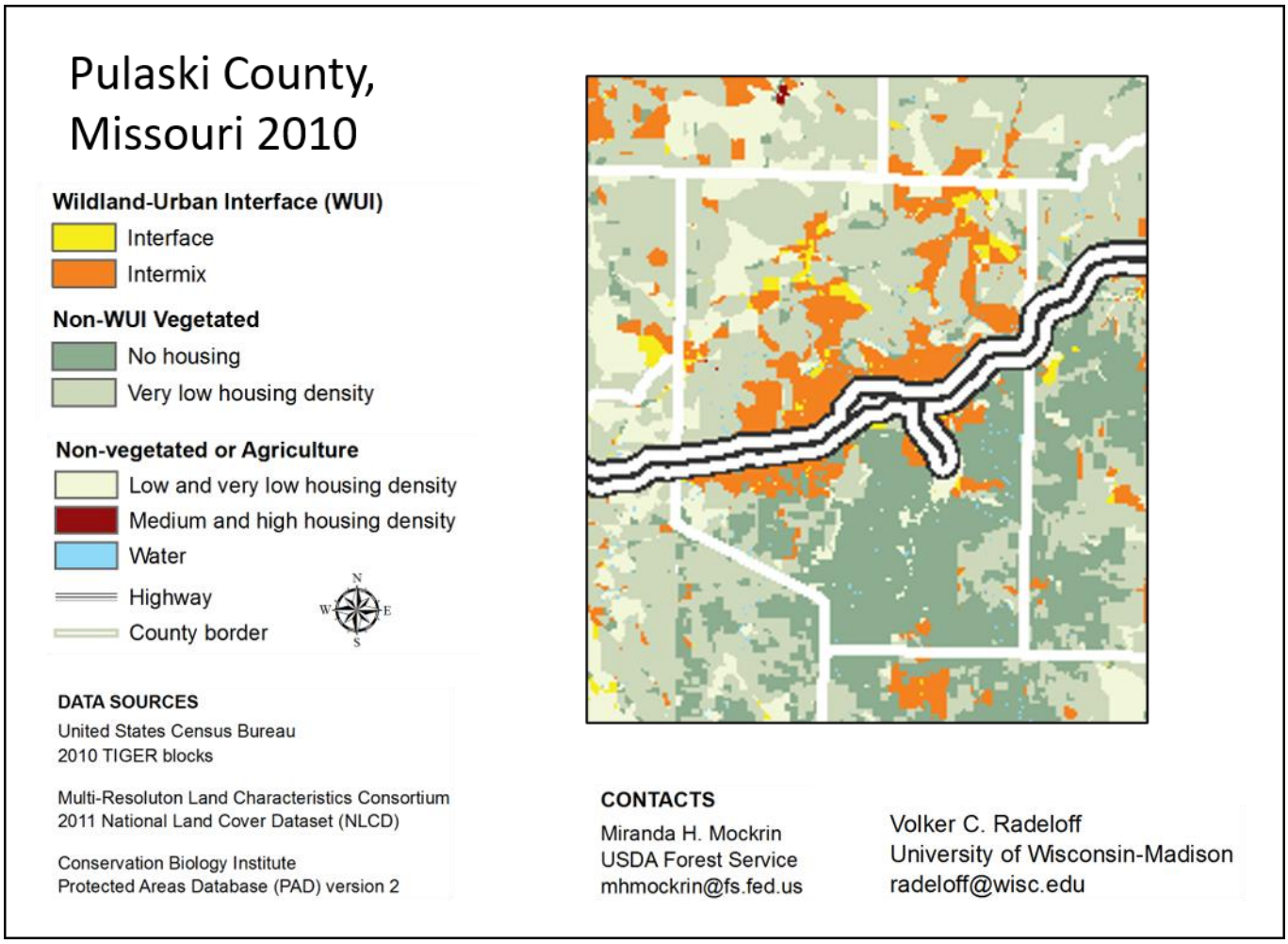
The risk of wildfire does not vary widely across the planning area. However, damages due to wildfires are expected to be higher in communities with more wildland–urban interface (WUI) areas. WUI refers to the zone of transition between unoccupied land and human development and needs to be defined in the plan. Within the WUI, there are two specific areas identified: 1) Interface and 2) Intermix. The interface areas are those areas that abut wildland vegetation and the Intermix areas are those areas that intermingle with wildland areas (**Figure 3.29**). To determine specific WUI areas and variations, data was obtain from ArcGIS, Streets and SILVIS (**Figure 3.30**). According to the WUI area map of Pulaski County, all cities partially reside in a WUI area.

Figure 3.29. 2010 Missouri Wildland Urban Interface (WUI)



Source: http://silvis.forest.wisc.edu/maps/wui; White square roughly estimates Pulaski County's location

Figure 3.30. Pulaski County Wildlife Urban Interface



Source: http://silvis.forest.wisc.edu/GeoData/WUI_cp12/maps/gifs/white/Missouri_WUI_cp12_white_2010.gif

Strength/Magnitude/Extent

Wildfires damage the environment, killing some plants and occasionally animals. Firefighters have been injured or killed, and structures can be damaged or destroyed. The loss of plants can heighten the risk of soil erosion and landslides. Although Missouri wildfires are not the size and intensity of those in the Western United States, they could impact recreation and tourism in and near the fires.

Wildland fires in Missouri have been mostly a result of human activity rather than lightning or some other natural event. Wildfires in Missouri are usually surface fires, burning the dead leaves on the ground or dried grasses. They do sometimes “torch” or “crown” out in certain dense evergreen stands like eastern red cedar and shortleaf pine. However, Missouri does not have the extensive stands of evergreens found in the western US that fuel the large fire storms seen on television news stories.

While very unusual, crown fires can and do occur in Missouri native hardwood forests during prolonged periods of drought combined with extreme heat, low relative humidity, and high wind. Tornadoes, high winds, wet snow and ice storms in recent years have placed a large amount of woody material on the forest floor that causes wildfires to burn hotter and longer. These conditions also make it more difficult for fire fighters suppress fires safely.

The severity of wildfires in Missouri is considered low to moderate, and wildfires in Missouri often go unnoticed by the general public because the sensational fire behavior that captures the attention of television viewers is rare in the state. Yet, from the standpoint of destroying homes and other property, Missouri wildfires can be quite destructive. Large fires have the potential to kill people, livestock, fish and wildlife as well as destroy crops and pastures. Wildfires can destroy not only natural areas, but homes, businesses and other facilities. Loss of life due to wildfires is not common in Missouri, but injuries to residents and firefighters can include falls, sprains, abrasions or heat-related injuries such as dehydration.

Previous Occurrences

Between 2000 and 2019 there were 571 wildfires reported in Pulaski County, according to wildfire reporting to the Missouri Department of Conservation[28]. This is an average of 28.5 wildfires per year. The size of the fires varied from as small as .1 acre to as large as 300 acres. **Table 3.35** shows the cause of wildfires, number of wildfires and acres burned for the period 2000-2019. Debris fires account for the largest number of fires and the greatest number of acres burned.

Table 3.35. 2000-2019 Pulaski County Wildfires by Cause

Cause	Number	Acres	% Number	% Acres
Equipment	29	164.8	5%	3%
Debris	252	2,346.72	44%	42%
Arson	32	213.24	6%	4%
Lightning	1	.5	<1%	<1%
Unknown	170	2,373.93	30%	42%
Unreported	16	104.5	3%	2%
Railroad	2	2.5	<1%	<1%
Smoking	4	9.35	<1%	<1%
Miscellaneous	58	416.65	10%	7%
Totals	**571**	**5,632.19**	**100%**	**100%**

Records for school and special districts are not available at this time.

Probability of Future Occurrence

From the data obtained from the Missouri Department of Conservation[29] (Appendix: F), 571 wildfire events occurred in Pulaski County between 2000 and 2019. This information was utilized to determine the annual average percent probabilities of wildfires. Since multiple occurrences are anticipated per year (571 events/20 years), the probability of wildfires per year is 100% with an average of 28.55 events per year **Table 3.376**.

Table 3.36. Annual Average Percentage Probability of Wildfires in Pulaski County

Location	Annual Avg. % P	Avg. Number of Events

[28] http://mdc7.mdc.mo.gov/applications/FireReporting/Report.aspx
[29] http://mdc7.mdc.mo.gov/applications/FireReporting/Report.aspx

Pulaski County	100%	28.55

*P = probability; see page 3.24 for definition.

Changing Future Conditions Considerations

Higher temperatures and changes in rainfall are unlikely to substantially reduce forest cover in Missouri, although the composition of trees in the forests may change. More droughts would reduce forest productivity and changing future conditions are also likely to increase the damage from insects and diseases. But longer growing seasons and increased carbon dioxide concentrations could offset the losses from those factors. Forests cover about one-third of the state, dominated by oak and hickory trees. As the climate changes, the abundance of pines in Missouri's forests are likely to increase, while the population of hickory trees is likely to decrease.[30]

Higher temperatures will also reduce the number of days prescribed burning can be performed. Reduction of prescribed burning will allow for growth of understory vegetation – providing fuel for destructive wildfires. Drought is also anticipated to increase in frequency and intensity during summer months under projected future scenarios. Drought can lead to dead or dying vegetation and landscaping material close to structures which creates fodder for wildfires.[31]

Vulnerability

Vulnerability Overview

According to the 2018 Missouri State Hazard Mitigation Plan, the Department of Conservation historical wildfire data was the best resource for data on wildfires. The Missouri State Hazard Mitigation Plan used data from 2004-2016 and determined that Pulaski County should expect to have 35.62 wildfires per year, impacting 270 acres (**Table 3.37**).

The state plan also indicates that Pulaski County is at the low-medium possible likelihood for building damage from wildfires – likely from the low population numbers in the county. **Figure 3.31** illustrates the likelihood of wildfire events based on data from 2004-2016. **Figure 3.312** provides a map that illustrates the average annual acreage burned.

Table 3.37. Statistical Data for Wildfire Vulnerability in Pulaski County

Number of Wildfires 2004-2016	Likelihood of Occurrence (#/year)	Total Acres Burned	Average Annual Acreage Burned
463	35.62	3513.45	270

Source: 2018 Missouri State Hazard Mitigation Plan

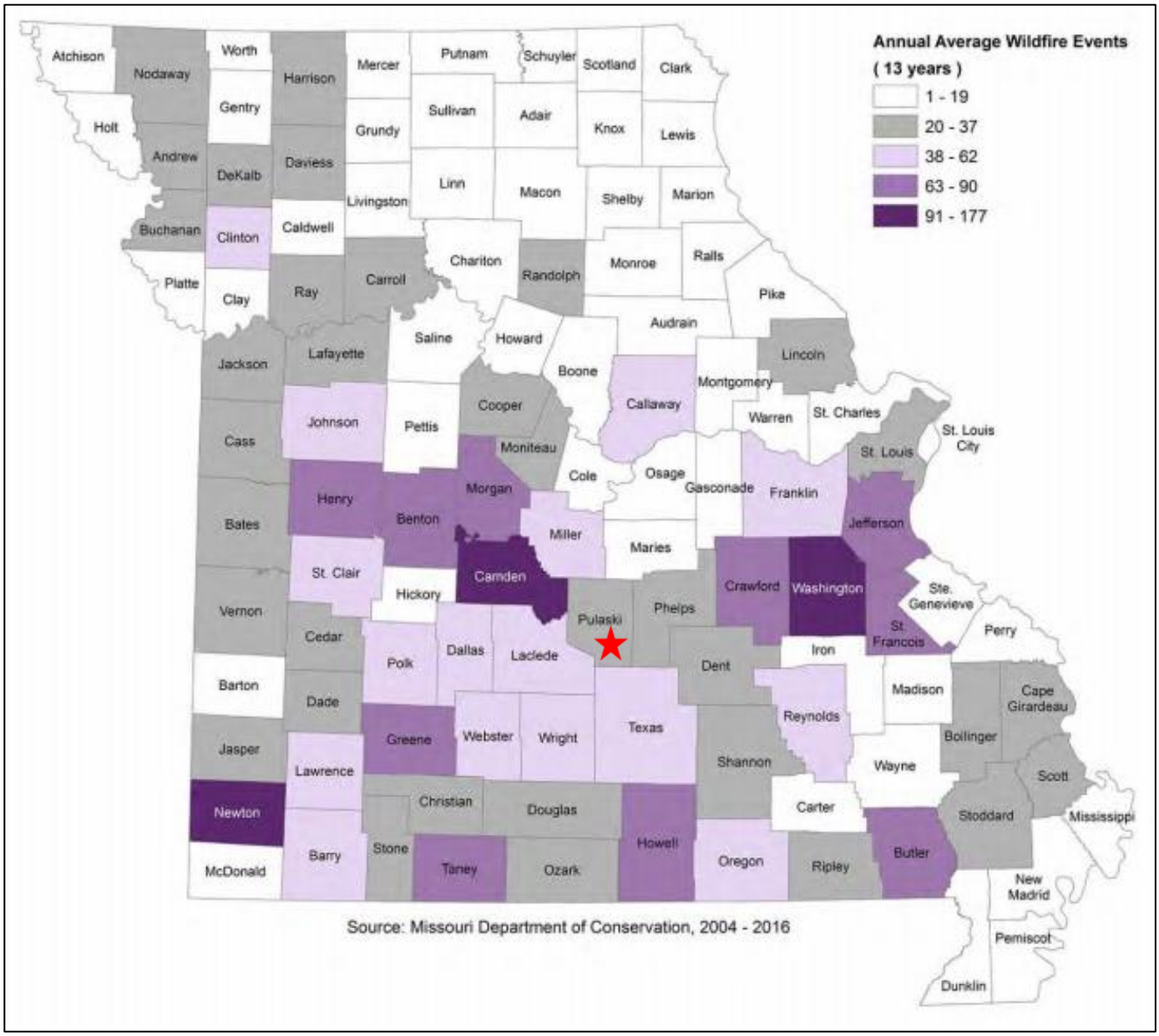
The method used to determine vulnerability to wildfires in the 2018 Missouri Hazard Mitigation plan

[30] 2018 Missouri Hazard Mitigation Plan
[31] Ibid

was a GIS comparative analysis of wildland urban interface and intermix (WUI) areas against building exposure data to determine the types, numbers and estimated values of buildings at risk to wildfire. This GIS-based analysis utilized data from several sources: the Missouri Spatial Data Inventory Service (MSDIS), HAZUS building exposure value data and wildland urban interface and intermix area data from the University of Wisconsin-Madison SILVIS Lab.

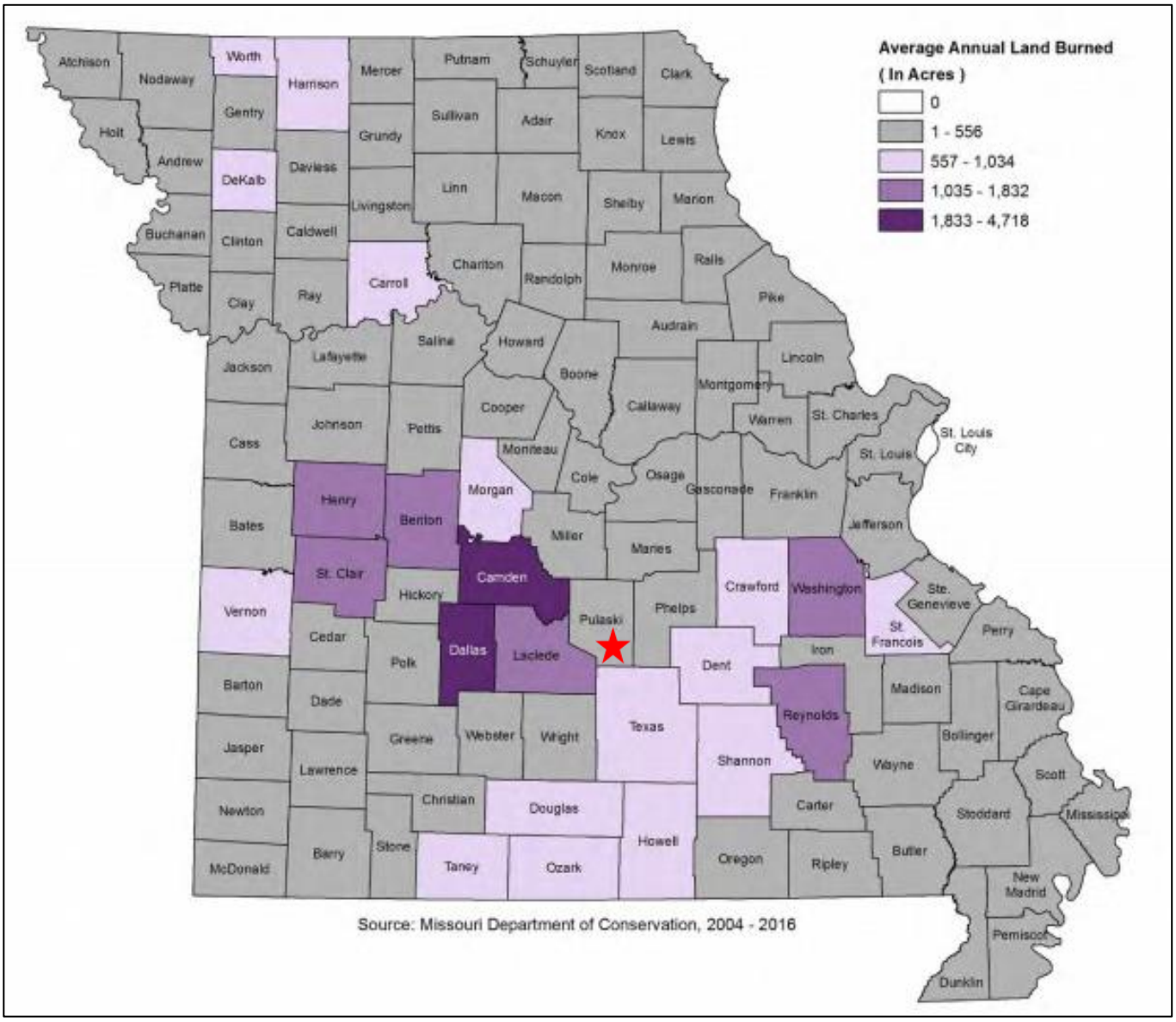
The results of that analysis, including estimated number of structures, value of structures and population are illustrated in **Table 3.38.** The total estimated number of structures vulnerable to wildfires is 13,588. The overall value of structures vulnerable to wildfire in Pulaski County is estimated at $5,360,526,096. To further illustrate vulnerability in Pulaski County, maps from the 2018 Missouri Hazard Mitigation plan illustrating these numbers and comparing them statewide are included. The number of structures in the WUI interface and intermix areas statewide are shown in **Figure 3.33** . Pulaski County shows that it has between 9,828 and 19,923 structures within these areas. **Figure 3.34** shows the estimated value of structures in the WUI interface and intermix areas. **Figure 3.35** illustrates the number of people at risk to wildfire in the WUI interface and intermix areas.

Figure 3.31. Likelihood of Wildfire Events, 2004-2016



*Source: 2018 Missouri State Hazard Mitigation Plan, *Red star indicates Pulaski County*

Figure 3.32. Average Annual Acreage Burned



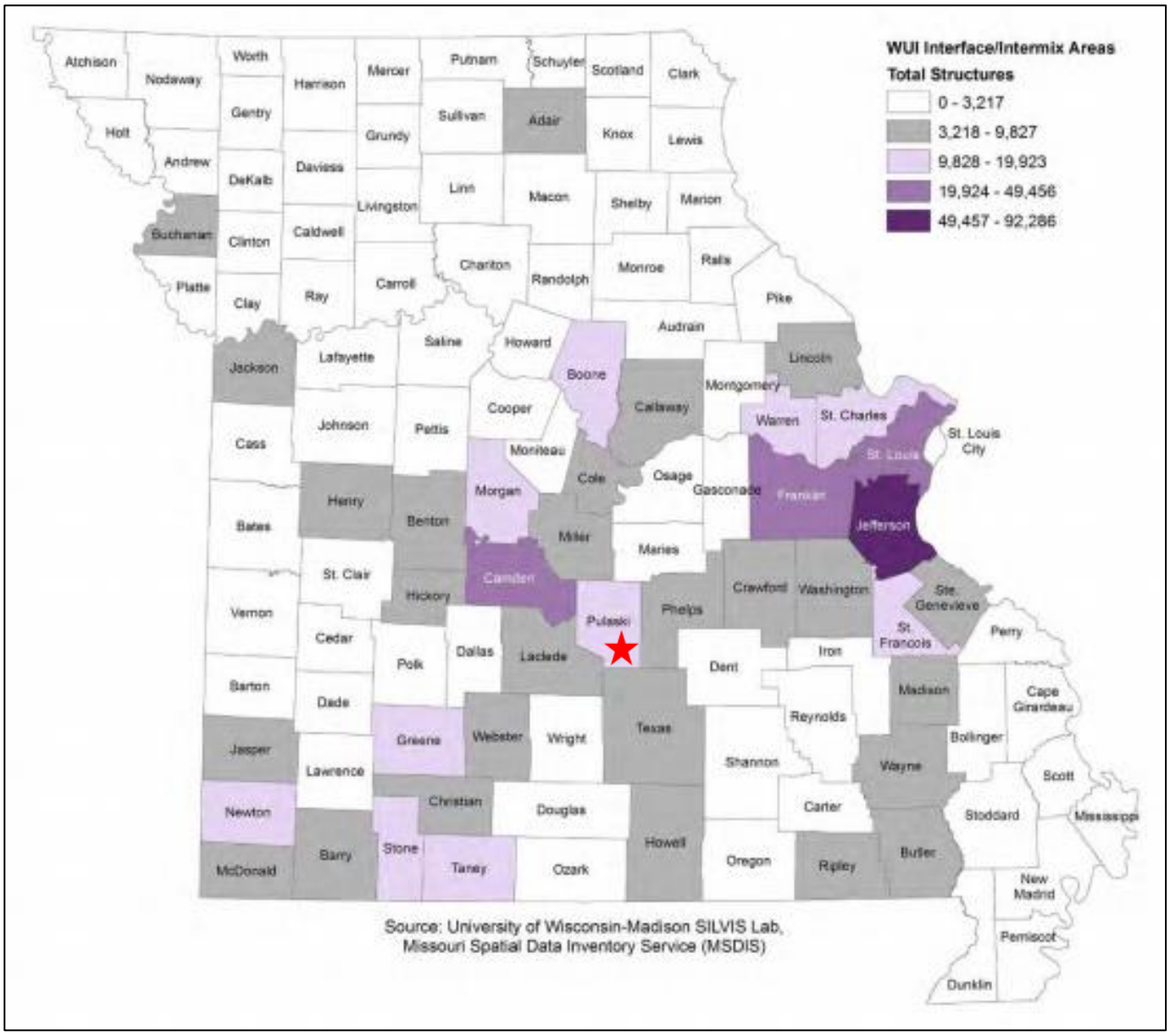
*Source: 2018 Missouri State Hazard Mitigation Plan, *Red star indicates Pulaski County,*

Table 3.38. Estimated Numbers and Values of Structures and Population Vulnerable to Wildfire in Pulaski County

Pulaski County	Number of Structures	Value of Structures	Population
Agriculture	666	$133,293,474	
Commercial	357	$228,206,195	
Education	25	$29,989,773	
Government	2,065	$1,945,023,500	
Industrial	32	$16,595,380	
Residential	10,443	$3,007,417,775	
Totals	**13,588**	**$5,360,526,096**	**28,614**

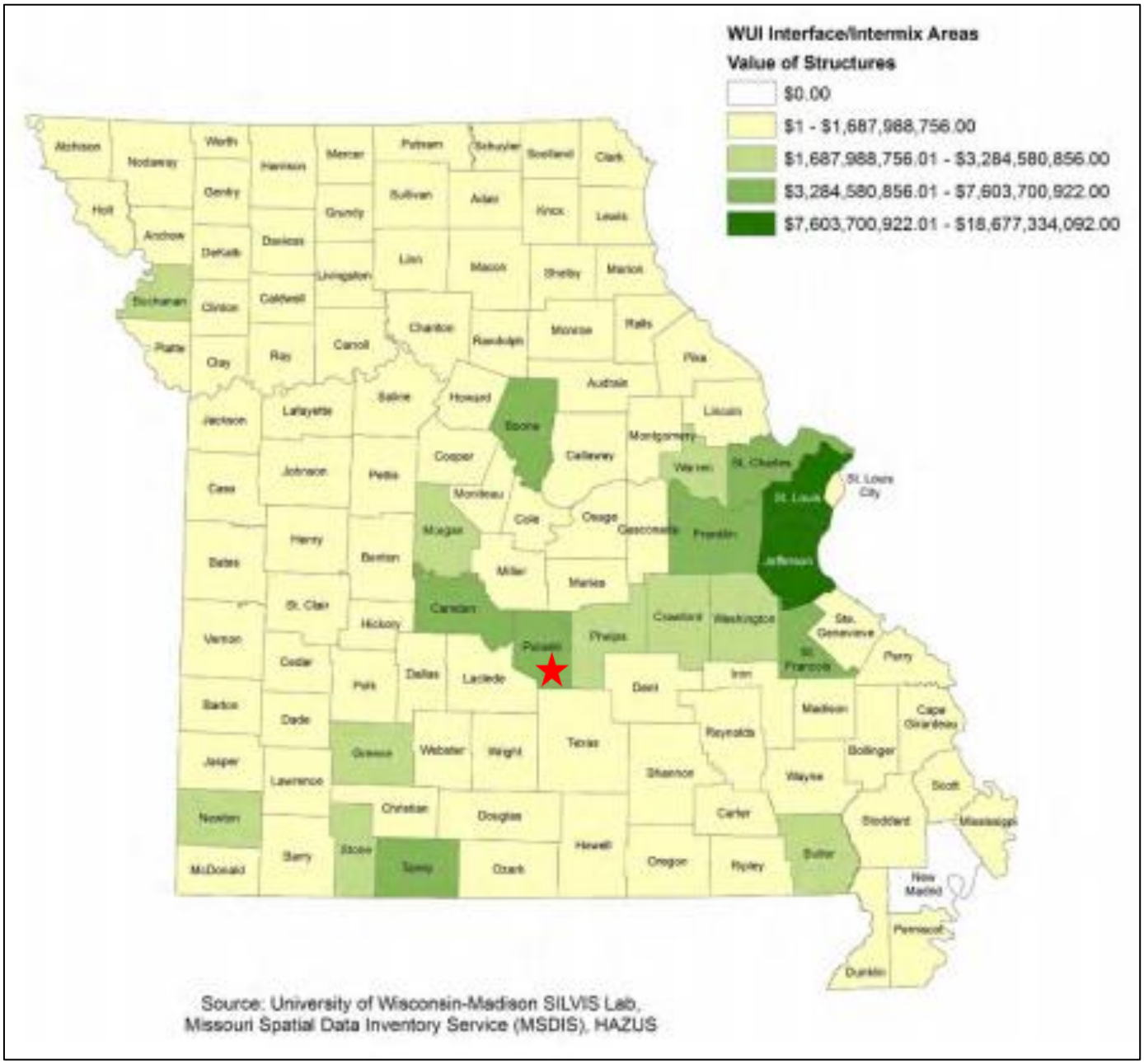
Source: 2018 Missouri State Hazard Mitigation Plan

Figure 3.33. Number of Structures in WUI Interface and Intermix Areas



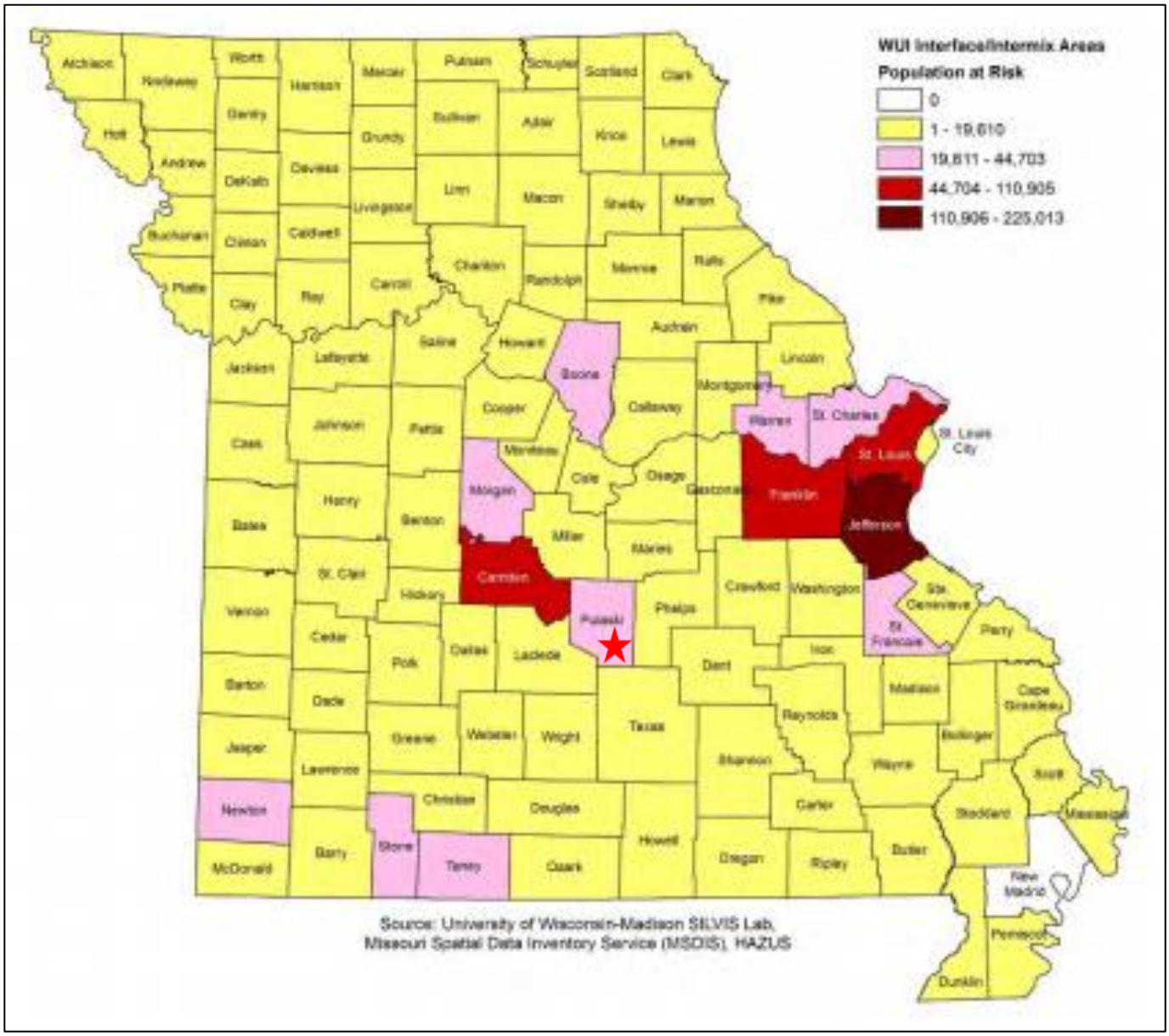
*Source: 2018 Missouri Hazard Mitigation Plan, *Red star indicates Pulaski County,*

Figure 3.34. Value of Structures in the WUI Interface and Intermix Areas



Source: 2018 Missouri Hazard Mitigation Plan, *Red star indicates Pulaski County

Figure 3.35. Population at Risk to Wildfire in WUI Interface and Intermix Areas



*Source: 2018 Missouri Hazard Mitigation Plan, *Red star indicates Pulaski County*

Potential Losses to Existing Development

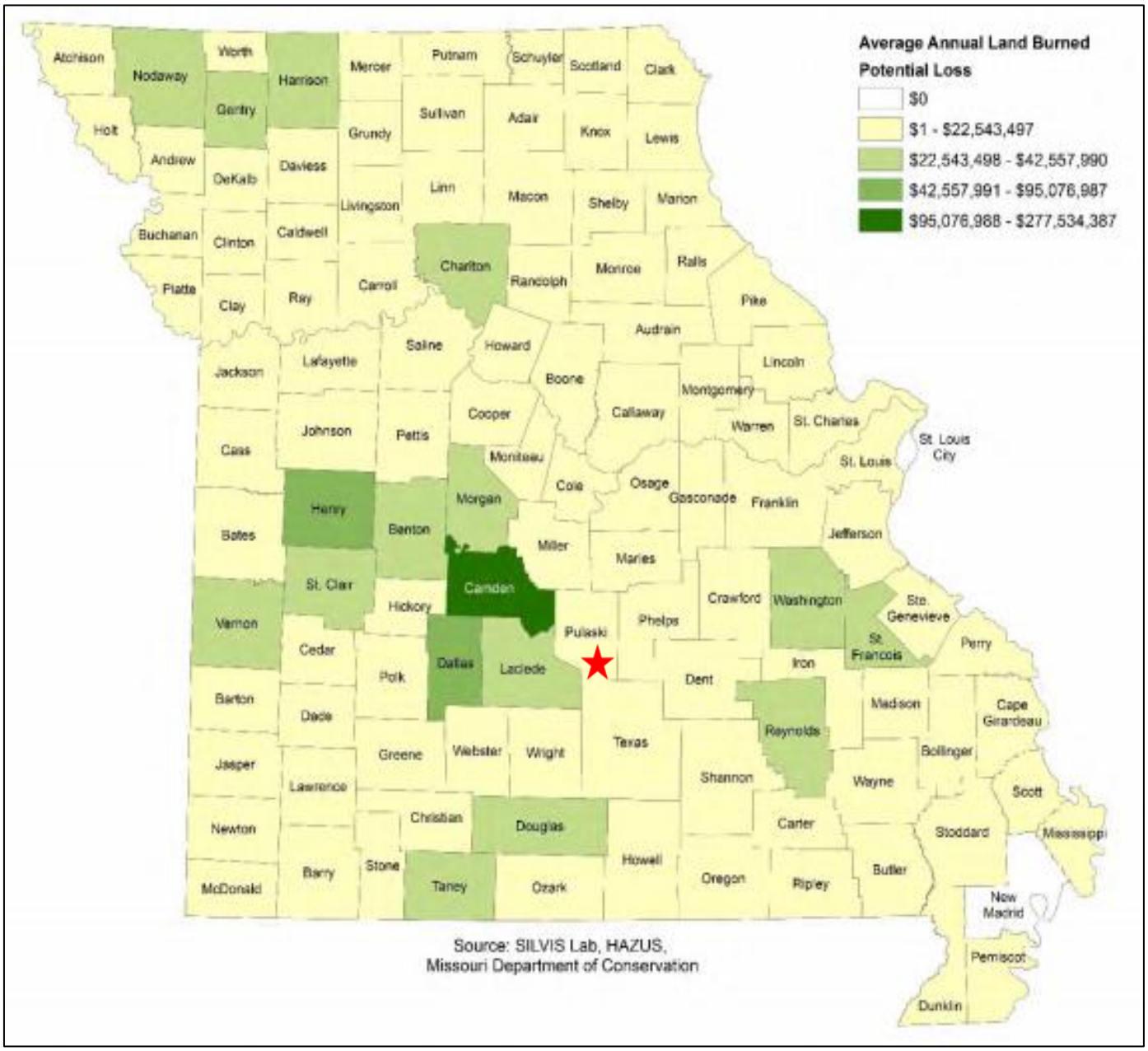
As there was not data available on Pulaski County specific losses, data was used from the 2018 Missouri State Hazard Mitigation Plan. The factors considered for estimating potential losses due to wildfires were average acreage burned each year per county and the average value of structures per acre in the WU-Interface/Intermix areas. **Table 3.39** and **Figure 3.36** that follows provide the potential loss figures for Pulaski County based on this methodology.

Table 3.39. Wildfire Potential Loss Estimates for Pulaski County

Total WUI Acreage	Total Structure Value Within WUI	Average Value/Acre within WUI	Average Annual Acreage Burned	Potential Loss
92,929.66	$5,360,526,096	$57,684	270	$15,574,598

Source: 2018 Missouri Hazard Mitigation Plan

Figure 3.36. Annualized Wildfire Damages



*Source: 2018 Missouri Hazard Mitigation Plan, *Red star indicates Pulaski County*

Impact of Future Development

Few future developments are anticipated in WUI areas, however due to lack of data, it is difficult to enumerate. Additionally, as previously mentioned, each jurisdiction within the county resides in a WUI area. This increases the risk of fire hazards for future development.

Hazard Summary by Jurisdiction

As long as drought conditions are not severe, future wildfires in Pulaski County should have a negligible adverse impact on the community, as it would affect a small percentage of the population. Nonetheless, homes, businesses, and schools located in unincorporated areas are at higher risk from wildfires due to proximity to woodland and more importantly, distance from fire services. Both cities and school districts are in WUI areas, but are closer to fire services.

Problem Statement

An estimated 13,588 structures and 28,614 people are vulnerable to wildfires in Pulaski County. Wildfires are expected to occur on an annual basis. To mitigate adverse impacts a comprehensive community awareness and educational campaign on wildfire danger should be designed and implemented. This campaign should include the development of capabilities, systems, and procedures for pre-deploying fire-fighting resources during times of high wildfire hazards; training of local fire departments for wildfire scenarios; encouraging the development and dissemination of maps relating to the fire hazards (WUI areas) to help educate and assist builders and homeowners in being engaged in wildfire mitigation activities; and guidance of emergency services during response. Residents should be educated on the dangers of wildfires and what steps they can take to mitigate their vulnerability. This could include landscaping and water supply.

3.4.6 Flooding (Flash and River)

Some specific sources for this hazard are:

- 2018 Missouri State Hazard Mitigation Plan, Chapter 3, Section 3.3.1, Page 3.80 https://sema.dps.mo.gov/docs/programs/LRMF/mitigation/MO_Hazard_Mitigation_Plan2018.pdf
- Watershed map, Environmental Protection Agency, https://mywaterway.epa.gov/
- FEMA Map Service Center, Digital Flood Insurance Rate Maps (DFIRM) for all jurisdictions, if available, msc.fema.gov/portal
- Flood Insurance Administration—Repetitive Loss List (this must be requested from the State Floodplain Management agency or FEMA)
- National Centers for Environmental Information, Storm Events Database, http://www.ncdc.noaa.gov/stormevents/
- USDA Risk Management Agency, Insurance Claims, http://www.rma.usda.gov/data/cause.htm
- FEMA Data Visualization Tool, https://www.fema.gov/data-visualization-floods-data-visualization
- Missouri Hazard Mitigation Viewer
  http://bit.ly/MoHazardMitigationPlanViewer2018 - Website
  https://drive.google.com/file/d/1bPkc0jgF9ofwQLnTL9N0u-oPFWi9hkst/view - User Guide
  - Risk MAP, DFIRM, and Hazus based depth grids used in Hazus Analysis
  - Flood losses by County 1978-2018
  - Number of flood insurance claims by County
  - Total building exposure to flooding (1% annual chance) by County
  - Buildings impacted by flooding (1% annual chance) by County
  - Flood insurance coverage by County
  - Number of flood insurance policies by County
  - NFIP participation status by County
  - Number of state facilities impacted by flooding (1% annual chance) by County
  - Critical facilities impacted by flooding (1% annual chance) by County

Hazard Profile

Hazard Description

A flood is partial or complete inundation of normally dry land areas. Riverine flooding is defined as the overflow of rivers, streams, drains, and lakes due to excessive rainfall, rapid snowmelt, or ice. There are several types of riverine floods, including headwater, backwater, interior drainage, and flash flooding. Riverine flooding is defined as the overflow of rivers, streams, drains, and lakes due to excessive rainfall, rapid snowmelt or ice melt. The areas adjacent to rivers and stream banks that carry excess floodwater during rapid runoff are called floodplains. A floodplain is defined as the lowland and relatively flat area adjoining a river or stream. The terms “base flood” and “100- year flood” refer to the area in the floodplain that is subject to a one percent or greater chance of flooding in any given year. Floodplains are part of a larger entity called a basin, which is defined as all the land drained by a river and its branches.

Flooding caused by dam failure is discussed in **Section 3.4.1.** It will not be addressed in this section.

A flash flood occurs when water levels rise at an extremely fast rate as a result of intense rainfall over a brief period, sometimes combined with rapid snowmelt, ice jam release, frozen ground, saturated soil, or impermeable surfaces. Flash flooding can happen in Special Flood Hazard Areas (SFHAs) as delineated by the National Flood Insurance Program (NFIP), and can also happen in areas not

associated with floodplains.

Ice jam flooding is a form of flash flooding that occurs when ice breaks up in moving waterways, and then stacks on itself where channels narrow. This creates a natural dam, often causing flooding within minutes of the dam formation.

In some cases, flooding may not be directly attributable to a river, stream, or lake overflowing its banks. Rather, it may simply be the combination of excessive rainfall or snowmelt, saturated ground, and inadequate drainage. With no place to go, the water will find the lowest elevations – areas that are often not in a floodplain. This type of flooding, often referred to as sheet flooding, is becoming increasingly prevalent as development outstrips the ability of the drainage infrastructure to properly carry and disburse the water flow.

Most flash flooding is caused by slow-moving thunderstorms or thunderstorms repeatedly moving over the same area. Flash flooding is a dangerous form of flooding which can reach full peak in only a few minutes. Rapid onset allows little or no time for protective measures. Flash flood waters move at very fast speeds and can move boulders, tear out trees, scour channels, destroy buildings, and obliterate bridges. Flash flooding can result in higher loss of life, both human and animal, than slower developing river and stream flooding.

In certain areas, aging storm sewer systems are not designed to carry the capacity currently needed to handle the increased storm runoff. Typically, the result is water backing into basements, which damages mechanical systems and can create serious public health and safety concerns. This combined with rainfall trends and rainfall extremes all demonstrate the high probability, yet generally unpredictable nature of flash flooding in the planning area.

Although flash floods are somewhat unpredictable, there are factors that can point to the likelihood of flash floods occurring. Weather surveillance radar is being used to improve monitoring capabilities of intense rainfall. This, along with knowledge of the watershed characteristics, modeling techniques, monitoring, and advanced warning systems has increased the warning time for flash floods.

Geographic Location

Riverine flooding is most likely to occur in Special Flood Hazard Areas (SFHA). Below are FIRMs for the cities of Crocker, Dixon, Richland, St. Robert and Waynesville (**Figure 3.37** through **Figure 3.41**). **Table 3.40** shows Pulaski County NCEI flood events by location between 1999 and 2019.

Figure 3.37. City of Crocker, Missouri Special Flood Hazard Areas (SFHAs)

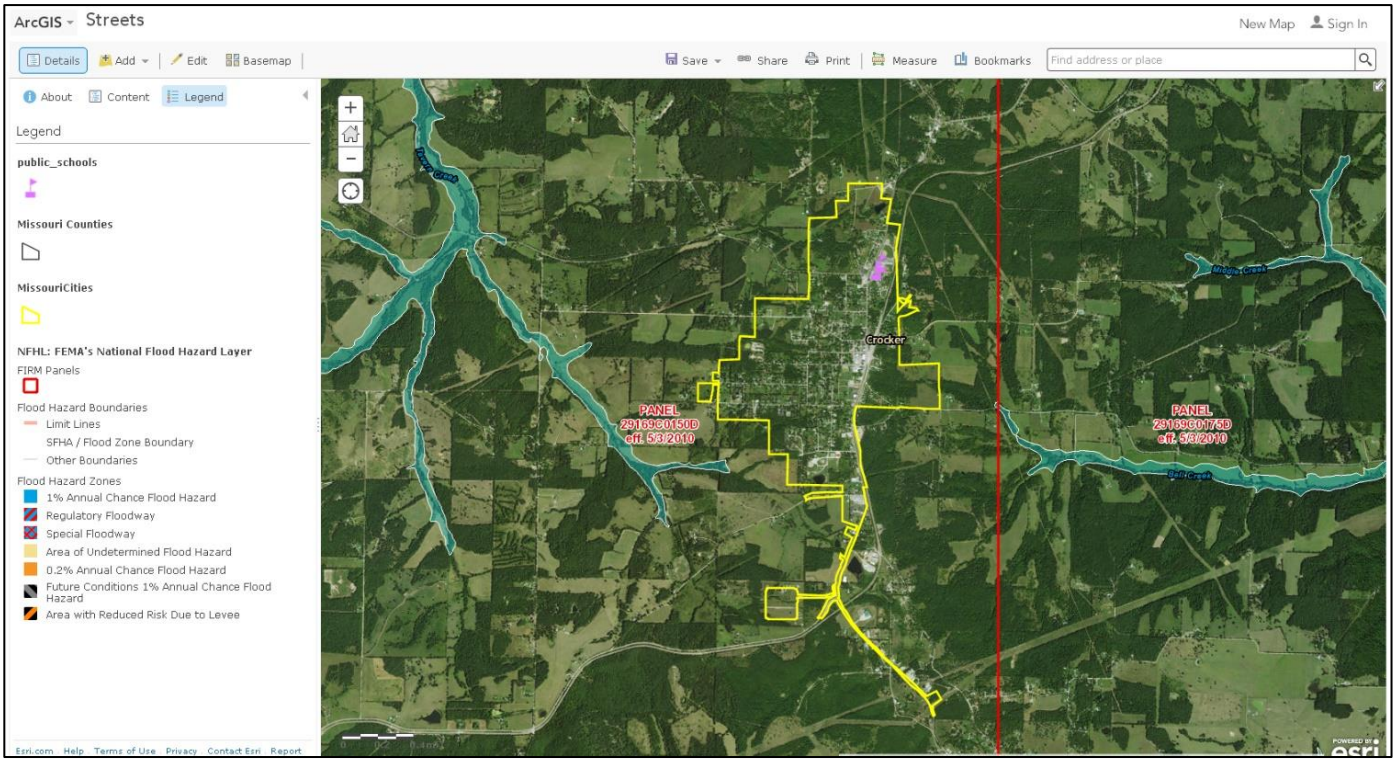


Figure 3.38. City of Dixon, Missouri Special Flood Hazard Areas (SFHAs)

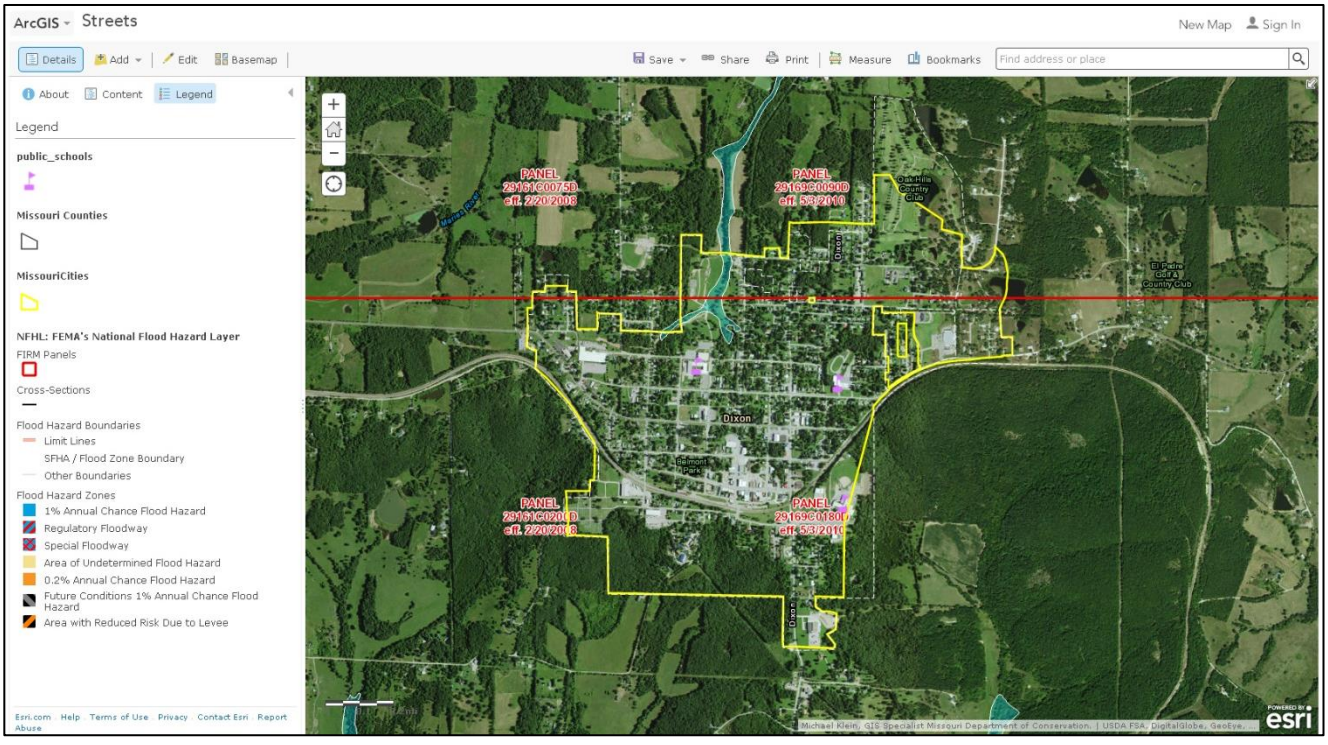


Figure 3.39. City of Richland, Missouri Special Flood Hazard Areas (SFHAs)

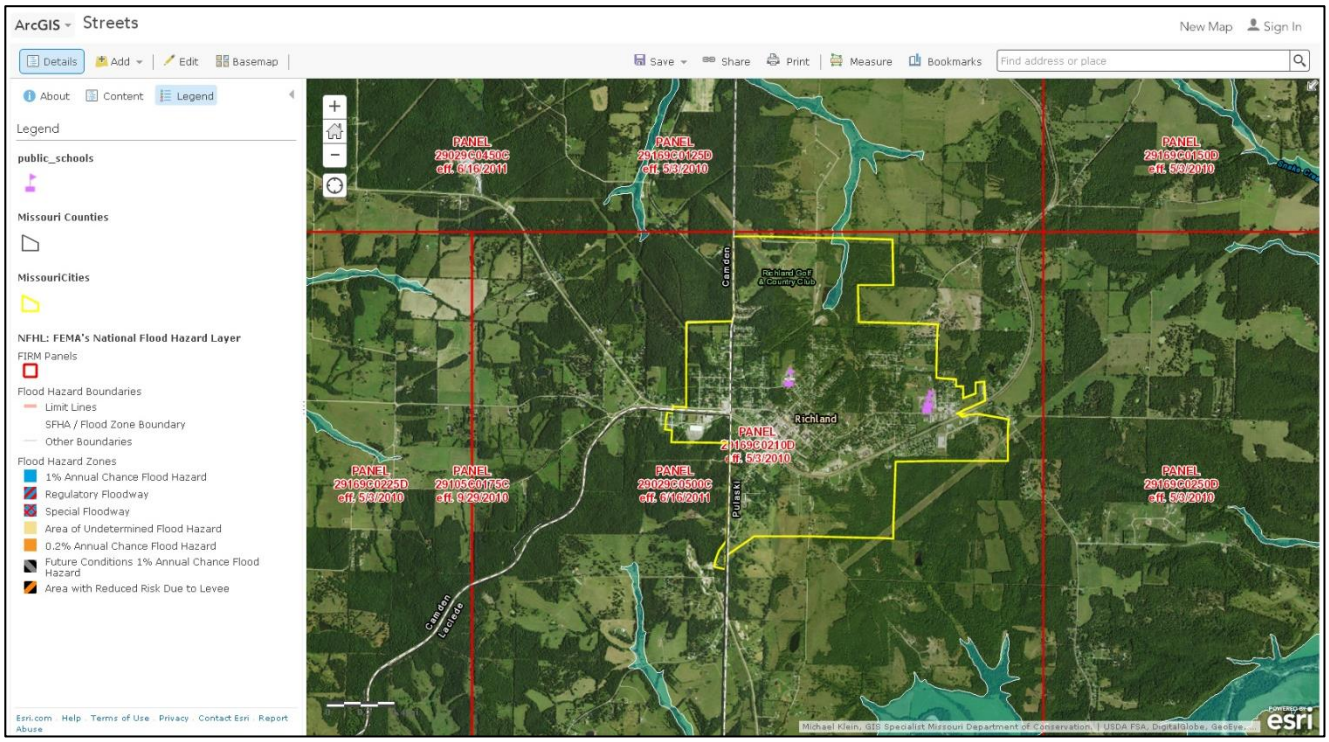


Figure 3.40. City of St. Robert, Missouri Special Flood Hazard Areas (SFHAs)

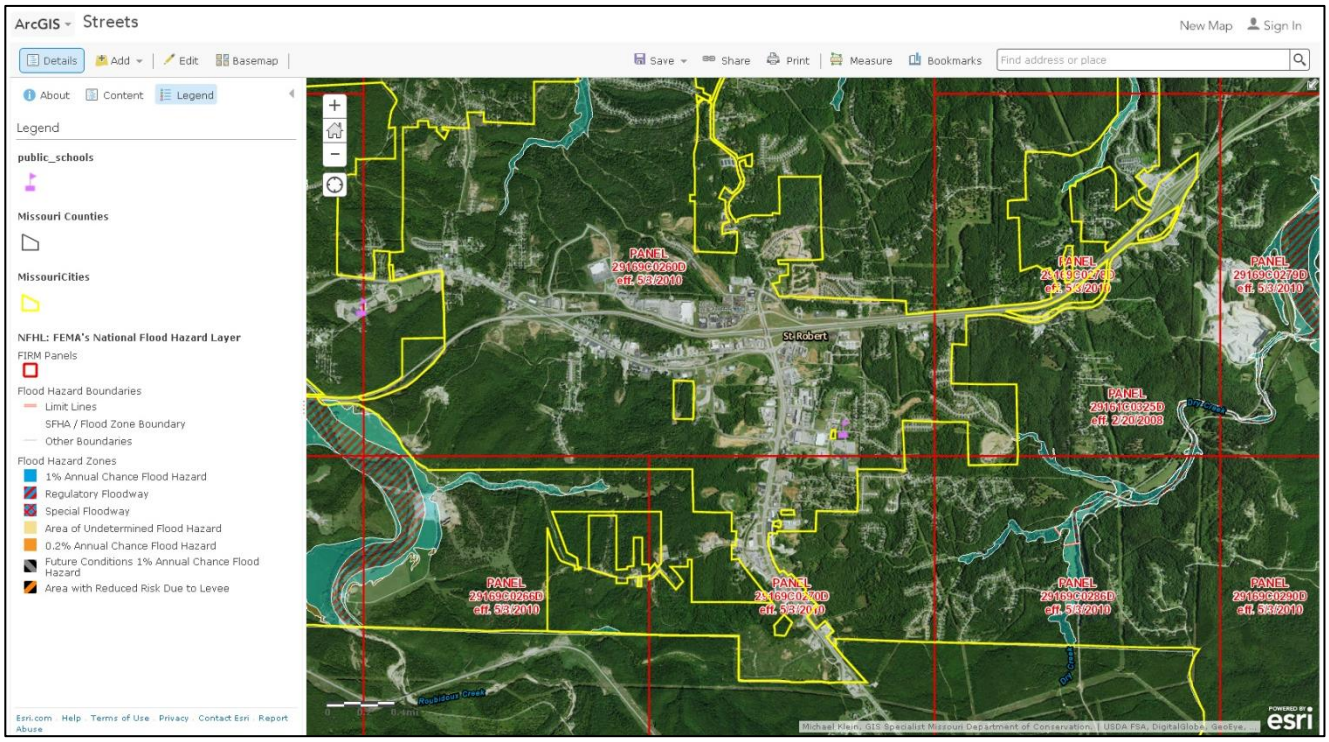


Figure 3.41. City of Waynesville, Missouri Special Flood Hazard Areas (SFHAs)

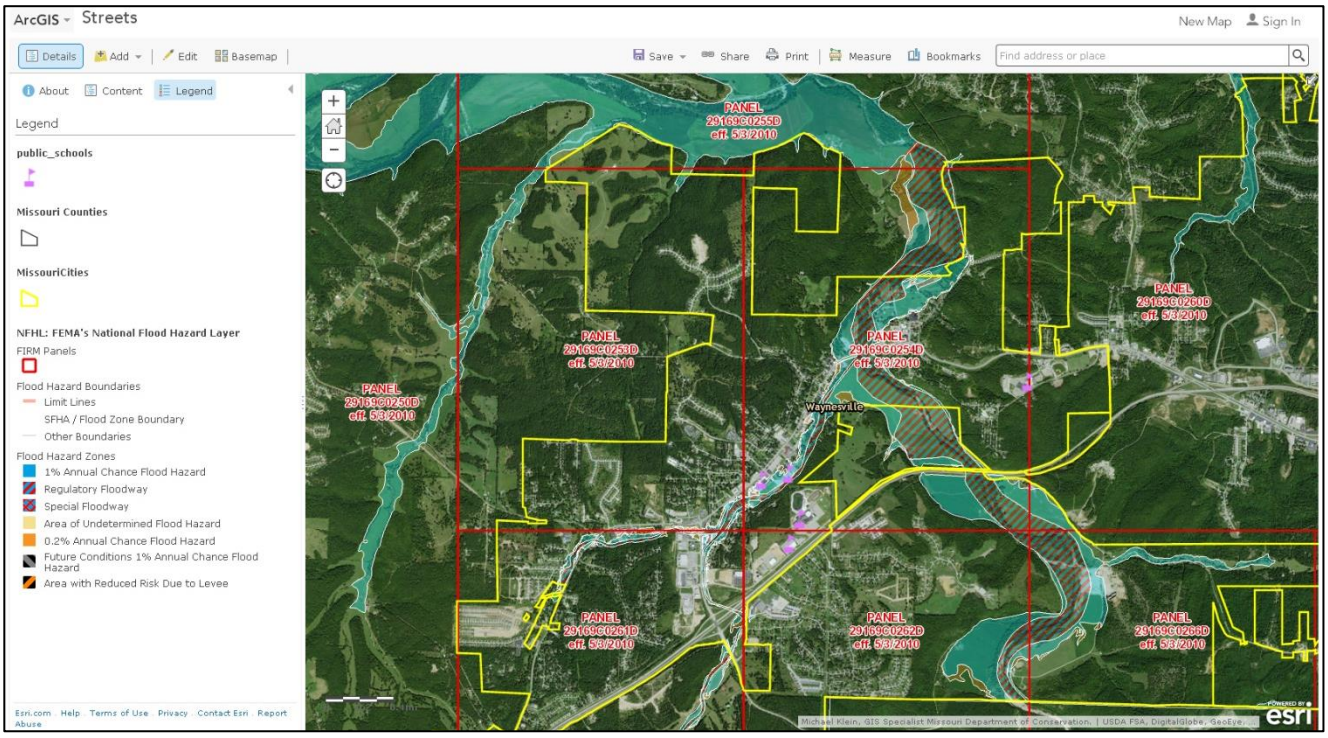


Table 3.40. Summary of Pulaski County NCEI Flood Events by Location, 1999-2019

Location	# of Events
Pulaski County	8
Crocker	2
Gospel Ridge	2
Helm	6
Waynesville	3

Source: National Centers for Environmental Information Storm Events Database

Flash flooding occurs in SFHAs and locations in the planning area that are low-lying. They also occur in areas without adequate drainage to carry away the amount of water that falls during intense rainfall events. After review of NCEI data, Crocker and Dixon are the communities most prone to flash flooding events. Helm is an unincorporated area of the county, but this community also has a high rate of flash flood events. **Table 3.41** provides information in regards to flash flood events between 1999 and 2019.

Table 3.41. Pulaski County NCEI Flash Flood Events by Location, 1999-2019

Location	# of Events
Pulaski County - Countywide	1
Big Piney	1
Bloodland	1
Buckhorn	1
Crocker	9
Devils Elbow	1
Dixon	9
Fort Leonard Wood	1

Location	# of Events
Franks	2
Hancock	1
Hanna	1
Hawkeye	2
Helm	5
Laquey	1
Richland	2
St. Robert	3
Swedeborg	1
Turkey Ridge	3

Source: National Centers for Environmental Information

Severity/Magnitude/Extent

Missouri has a long and active history of flooding over the past century, according to the 2018 State Hazard Mitigation Plan. Flooding along Missouri's major rivers generally results in slow-moving disasters. River crest levels are forecast several days in advance, allowing communities downstream sufficient time to take protective measures, such as sandbagging and evacuations. Nevertheless, floods exact a heavy toll in terms of human suffering and losses to public and private property. By contrast, flash flood events in recent years have caused a higher number of deaths and major property damage in many areas of Missouri.

Flooding presents a danger to life and property, often resulting in injuries, and in some cases, fatalities. Floodwaters themselves can interact with hazardous materials. Hazardous materials stored in large containers could break loose or puncture as a result of flood activity. Examples are bulk propane tanks. When this happens, evacuation of citizens is necessary.

Public health concerns may result from flooding, requiring disease and injury surveillance. Community sanitation to evaluate flood-affected food supplies may also be necessary. Private water and sewage sanitation could be impacted, and vector control (for mosquitoes and other entomology concerns) may be necessary.

When roads and bridges are inundated by water, damage can occur as the water scours materials around bridge abutments and gravel roads. Floodwaters can also cause erosion undermining road beds. In some instances, steep slopes that are saturated with water may cause mud or rock slides onto roadways. These damages can cause costly repairs for state, county, and city road and bridge maintenance departments. When sewer back-up occurs, this can result in costly clean-up for home and business owners as well as present a health hazard. Further information regarding scour critical bridges can be found in **Section 3.2.2**.

Between 1999 and 2019, there were 8 recorded flood-related crop insurance claims with total losses of $482,033 due to flooding within Pulaski County[32]. **Table 3.42** shows crop losses for the period 1999 through 2019 (years with no losses are not shown).

[32] http://www.rma.usda.gov/data/cause.html

Table 3.42. Recorded USDA Crop Insurance Losses (Flood) for Pulaski County 1998 – 2018

2007	2008	2009	2013	2015
$8,089	$13,876	$3,456	$292,580	$16,032

Source: USDA \ Risk Management Agency, Insurance Claims, http://www.rma.usda.gov/data/cause.htm

National Flood Insurance Program (NFIP) Participation

Table 3.43 depicts jurisdictions within the planning area that participate in NFIP. In addition, **Table 3.44** provides the number of policies in force, amount of insurance in force, number of closed losses, and total payments for Pulaski County and cities.

Table 3.43. NFIP Participation in Pulaski County

Community ID #	Community Name	NFIP Participant (Y/N)	Current Effective Map Date	Regular-Emergency Program Entry Date
290826	Pulaski County	Y	05/03/2010	04/17/1985
290656	Richland	Y	-	09/10/1984
290662	St. Robert	Y	05/03/2010(M)	11/30/2004
290300	Waynesville	Y	05/03/2010	10/06/1976

Source: NFIP Community Status Book, 5/18/18; BureauNet, https://www.fema.gov/flood-insurance/work-with-nfip/community-status-book; M= No elevation determined – all Zone A, C, and X: NSFHA = No Special Flood Hazard Area; E=Emergency Program;

Table 3.44. NFIP Policy and Claim Statistics as of 08/12/2020

Community Name	Policies in Force	Insurance in Force	Closed Losses	Total Payments
Pulaski County	51	$12,640,800	152	$4,687,290
Richland	1	$280,000	-	-
St. Robert	13	$2,887,900	-	-
Waynesville	45	$8,066,300	117	$1,605,577.69

Source: NFIP Community Status Book, [09/02/2020]; SEMA
**Closed Losses are those flood insurance claims that resulted in payment.*

Pulaski County has the highest number of policies, losses and total payments with $4,687,290.00 compared to Waynesville's $1,605,577.69.

RiskMAP

Risk mapping, assessment, and planning is a FEMA program which provides communities with flood information and tools to enhance their mitigation plan and take action to better protect their citizens. The Discovery meeting for RiskMAP in Pulaski County was held in February 2020. Project Initiation is anticipated to be conducted in the fall of 2020 with hydrologic and hydraulic modeling to begin in the winter. Draft models are anticipated to be available in the summer of 2021.

Repetitive Loss/Severe Repetitive Loss Properties

Repetitive Loss Properties (RL) are those properties with at least two flood insurance payments of $1,000 or more in a 10-year period.

Severe Repetitive Loss (SRL): A SRL property is defined it as a single family property (consisting of one-to-four residences) that is covered under flood insurance by the NFIP; and has (1) incurred flood-related damage for which four or more separate claims payments have been paid under flood insurance coverage with the amount of each claim payment exceeding $5,000 and with cumulative amounts of such claims payments exceeding $20,000; or (2) for which at least two separate claims payments have been made with the cumulative amount of such claims exceeding the reported value of the property.

According to SEMA, as of 08/12/2020, there are 31 repetitive loss properties unincorporated Pulaski County. There have been 82 losses to those properties with total payments of $3,510.984. The city of Waynesville has ten repetitive loss properties which have had 25 losses with total payments of $609.99. **Due to Federal restrictions on data sharing, the state was unable to provide full Repetitive Loss data or current Severe Repetitive Loss data. The Property Type was not available for Repetitive Loss properties and the Severe Repetitive Loss data, which was obtained from the 2018 MO State Hazard Mitigation Plan, does not specify if the properties are mitigated or non-mitigated.*

Table 3.45. Severe Repetitive Loss Data for Pulaski County

Number of SRL Properties	Number of Paid NFIP Claims	Total Paid Losses	Average Payment
3	12	$430,859.20	$35,904.93

Previous Occurrences

Table 3.46 provides information regarding Presidential Flooding Disaster Declarations between 1999 and 2019 for Pulaski County.

Table 3.46. Pulaski County Presidential Flooding Disaster Declarations 1999 to 2019

Declaration No.	Date	State	Incident Description
DR-1463	05/06/2003	Missouri	Missouri Severe Storms, Tornadoes, Flooding
DR-1676	01/12/2007	Missouri	Missouri Severe Winter Storms and Flooding
DR-1749	03/17/2008	Missouri	Missouri Severe Storms and Flooding
DR-1847	05/08/2009	Missouri	Missouri Severe Storms, Tornadoes, and Flooding
DR-1980	05/09/2011	Missouri	Missouri Severe Storms, Tornadoes, and Flooding
DR-4144	10/08/2013	Missouri	Missouri Severe Storms, Straight-line Winds, and Flooding

EM-3374	01/02/2016	Missouri	Missouri Severe Storms, Tornadoes, Straight-Line Winds, and Flooding
DR-4250	01/21/2016	Missouri	Heavy Rains, Widespread Flash Flooding, and Flooding
DR-4317	06/02/17	Missouri	Missouri Severe Storms, Tornadoes, Straight-line Winds, and Flooding

Source: FEMA, Disaster Declarations for Missouri, Flooding

Data was obtained from the NCEI regarding flash and river flooding over the last 20 years. **Table 3.47** and **Table 3.48** provide this information. Additionally, narratives available for each event are included.

Table 3.47. NCEI Pulaski County Riverine Flood Events Summary, 1999 to 2019

Year	# of Events	# of Deaths	# of Injuries	Property Damages ($)	Crop Damages ($)
2002	6	0	0	200K	0
2005	2	0	0	0	0
2008	2	0	0	0	0
2010	2	0	0	0	0
2011	2	0	0	500K	0
2015	1	0	0	200K	0
2017	1	0	0	0	0
2018	3	0	0	0	0
2019	2	0	0	0	0
Total	**21**	**0**	**0**	**900K**	**0**

Source: NCEI, data accessed [8/12/2020]

Narratives on flood events:

1. **1/31/2002:** Hardest hit areas were in Pulaski and Shannon Counties where Cave, Spring, and Creek roadways along the Big Piney River, and Highway H between 16 and 106, were closed for nearly 24 hours.

2. **05/08/2002:** After several inches of rain, residents of Waynesville along the Roubidoux River were evacuated because of high water. The high water also covered Spring Street and the RV Park which caused campers to evacuate to higher ground.

3. **01/05/2005:** Numerous roads and low lying areas were inundated and impassable by motorists countywide. Some locations that were affected by flooding include, Highway O near Dixon, areas near Jones Creek, a section of Texas Road, and a section of Cave Road near St. Robert.

4. **1/13/2005:** The primary areas that flooded were low water crossings and low lying areas.

5. **03/19/2008:** This flooding is a continuation of the flash flooding. Poor drainage areas continued to flood roadways and lowlands near rivers and creeks.

6. **09/03/2008:** A few locations within Pulaski County flooded from rainfall amounts that ranged from four to six inches. These locations included a section of Highway O at its intersection with Jones Creek, a section of Canyon Road at its intersection with Mill Creek, and a section of Highway O southwest of Dixon.

7. **04/02/2010:** A portion of State Route H was closed due to high water.

8. **05/15/2010:** Multiple low water crossings were closed due to flooding across the county.

9. **04/25/2011:** Numerous low water crossings and rural roads were flooded in the county. The most intense flooding was in the southern portion of the County. The total cost estimate for flooding damages for Pulaski County for this entire episode has been included. This includes roads, bridges, and structures which were affected.

10. **05/19/2011:** Route O was closed due to flooding.

11. **07/07/2015:** Superior Road was closed due to flooding. Numerous roads, bridges, and low water crossings were heavily damaged.

12. **05/03/2017:** State Highway O was closed due to flooding.

13. **02/20/2018:** State Highway DD in Pulaski County had some water over it.

14. **02/24/2018:** State Highway O was closed due to flooding.

15. **12/31/2018:** The low water crossing at State Highway O had nearly a foot of running water over the roadway and was impassable.

16. **03/09/2019:** The low-water crossing at Highway O where it crosses Jones Creek was flooded and impassable for several hours.

17. **05/21/2019:** Superior Road in the river side park along the Gasconade River was closed due to flooding. This also closed the RV Park.

Table 3.48. NCEI Pulaski County Flash Flood Events Summary, 1999 to 2019

Year	# of Events	# of Deaths	# of Injuries	Property Damages ($)	Crop Damages ($)
2002	3	0	0	500K	0
2005	7	0	0	25K	0
2006	1	0	0	0	0
2007	4	0	0	2K	0
2008	7	0	0	1,000K	0
2009	5	0	0	20K	0
2010	1	0	0	0	0
2012	3	0	0	0	0
2013	14	0	0	5,100K	0
2014	1	0	0	0	0
2015	7	7	0	20K	0
2016	1	0	0	0	0
2017	2	1	0	5,410K	0
2018	1	0	0	0	0
2019	1	0	0	0	0
Total	**58**	**1**	**0**	**$12,077K**	**0**

Source: NCEI, data accessed [8/10/2020]

Narratives on flash flood events:

1. **04/20/2005:** Numerous roads and low lying areas were inundated with flash flooding. Several areas were impassable to motorists.

2. **06/09/2005:** Heavy thunderstorms caused flash flooding in the community of Richland. Several homes and businesses were flooded.

3. **06/10/2005:** Heavy thunderstorms cause flash flooding in a few buildings in downtown Dixon.

4. **08/22/2005:** Thunderstorms with heavy rain cause flash flooding to occur over several sections of Missouri Avenue on the south side of St. Robert.

5. **05/29/2006:** Excessive rainfall caused flash flooding on several streets in the city of Waynesville.

6. **03/30/2007:** Heavy thunderstorms produce flooding rains in the Laquey area. A low water crossing on Red Oak Road was flooding and impassable. County road crews were called out to repair several roads that were washed out as a result of the heavy rainfall and flooding across the county.

7. **05/10/2007:** Excessive rainfall created flooding in areas of Pulaski County. Jones Creek was flooding over Highway O causing impassable conditions to motorists.

8. **08/20/2007:** The Gasconade River rapidly flooded areas near the Gasconade Hills Resort from excessive rainfall associated with Tropical Storm Erin. A section of Route H two miles south of Interstate 44 was affected.

9. **09/07/2007:** Thunderstorms with excessive rainfall caused creeks and streams near Dixon to experience minor flooding.

10. **01/07/2008:** Excessive rainfall caused Jones Creek to flood areas near the intersection of Highway O and Creek Road.

11. **03/18/2008:** Rainfall amounts ranged from five to nine inches over Pulaski County. Southern sections of the county experienced the greatest rainfall, though all areas that typically experiences flooding during periods of excessive rain were affected. Damage was reported on county roads and bridges.

12. **03/31/2008:** Saturated antecedent conditions existed prior to this period of excessive rainfall. Some regional locations experienced record rainfall totals from February and March. One to three inches of rain fell across the county causing widespread flash flooding of low water crossings, county roads, and low lying areas near creeks and rivers. Ultimately, all locations that typically flood during periods of excessive rainfall were flooded.

13. **04/10/2008:** One to two inches of rain fell over Pulaski County. All low areas that typically flood during periods of excessive rainfall were flooded. One specific location that flooded included a section of Highway O approximately one and a half miles west of Highway 28.

14. **05/07/2008:** A few roads across the county were flooded. The area that appeared to be impacted the greatest was near Fort Leonard Wood.

15. **05/25/2008:** The Roubidoux River flooded a section of Dyer Street.

16. **09/14/2008:** Three to five inches of rain fell over Pulaski County resulting in flooding of small streams, creeks, and two rivers. The Gasconade and Big Piney rivers appeared to be impacted the greatest as they flooded numerous roads and low lying areas. Low water crossings countywide were impassable to motorists. Also, a section of Highway 133 at Fox Crossing was closed due to flooding, while numerous city streets in Dixon were flooded. A section of Highway O at its intersection with Jones Creek was flooded.

17. **05/08/2009:** Two to four inches of rain caused flash flooding over sections of Fort Leonard Wood.

18. **06/10/2009:** Excessive rain caused flooding along a section of Smokey Road just south of its intersection with Highway AB. This stream that flooded was a tributary of the Gasconade River.

19. **06/15/2009:** Two to five inches of rain fell over central and northern Pulaski County. Flash flooding resulted over several locations including a section of Texas Road, a section of Highway O, and a section of Highway U. The section of Texas Road that flooded was completely washed out.

20. **06/16/2009:** Excessive rain caused Tavern Creek to flood a section of Highway U west of Crocker.

21. **10/29/2009:** Route O near Jones Creek was closed due to flooding.

22. **07/08/2010:** State Highway Y, near the intersection of Lydia Lane was water covered.

23. **03/15/2012:** A portion of Highway 28 south of Dixon was flooded.

24. **04/14/2012:** A foot of water was reported flowing over Highway O along Jones Creek.

25. **05/29/2012:** Two feet of water was reported over the road near the intersection of Highway O and Creek Road.

26. **08/06/2013:** Mitchell Creek flooded residential and business areas of Waynesville.
    a. Several roadways at Fort Leonard Wood were under water and impassable due to flash flooding.
    b. There were reports from social media of severe flooding near downtown Waynesville and water entering numerous homes.
    c. This storm report will be a summary of the total damage for the Waynesville area and Pulaski County for this flooding event. Approximately 90 percent of the roads in the county were damaged with 65 percent of the roads had major damage. There were 25 low water crossings that were totally washed out and numerous more needed repairs. There were up to 100 homes and businesses that were inundated by flood waters. Numerous cars were flooded or washed away. Most of the homes flooded were along Mitchell Creek and Roubidoux River near downtown Waynesville. Over 100 people were rescued from swift and high water. There were two flash flood fatalities which occurred near downtown Waynesville.
    d. A rescue boat with several personnel capsized in high water and was later rescued.
    e. Interstate 44 was closed due to high water.
    f. Highway 7 just north of Interstate 44 was closed due to high water.

g. Route N near Springfield Road was closed due to high water.
h. Route N near Stockton Road was closed due to high water.
i. Two sheriff deputies were stranded near Highway 7 and the Gasconade River by high water.
j. Route U near Tavern Creek was closed due to flooding.
k. Pulaski County Sheriff reported at least 100 hundred homes and businesses were flooded.

27. **08/07/2013:** Widespread flooding was reported around the Dixon area from the Maries River. Several homes had water in them and numerous streets were impassable.
    a. Numerous roads were closed due to flood waters. Several water rescues were performed across the county. No injuries were reported from the water rescues. The Emergency Operations Center reported around three inches of rain during the overnight hours.

28. **04/03/2014:** Mitchel Creek overflowed with 2 feet of water over Dyer Road.

29. **07/07/2015:** Walnut Road near the Big Piney River was flooded and impassable.

30. **12/26/2015:** There were five international soldiers stationed at Fort Leonard Wood in a car which was swept off of Highway U at Tavern Creek because of flash flooding. All five victims from the car drowned. Several vehicles were washed off of roadways in two separate incidents around Crocker. One occurred along the headwaters of Tavern Creek. The other incident was near the Gasconade River. Two people drowned when their car was swept off of Highway O near Dixon. Route DD was closed due to flooding. Route HH was closed due to flooding at Bell Creek. Nearly all low water crossings across the county were flooded. There were several rural and county roads that sustained damage from flooding. There were a few homes and businesses that had flood damage as well. Route U was closed due to flooding. Water was over the road at Tavern Creek. Route O was closed due to flooding near the intersection of Highway 28.

31. **09/16/2016:** Highway O at Jones Creek was flooded and impassable.

32. **04/30/2017:** An 18 year old male drowned after his vehicle entered a flooded area on Buffalo Road west of Crocker. Several homes and businesses sustained flood damage across the county. Numerous roads and bridges were severely damaged or washed away across the county. There was some infrastructure damage to Fort Leonard Wood base, including damage to Water Pump Station, roads, bridge, golf course, and the East Gate Access Control Point.

33. **09/07/2018:** High water flooded over two low water crossings on Highway U along Tavern Creek.

34. **06/04/2019:** Nearly a foot of water was reported over several roads in Dixon.

Probability of Future Occurrence

From the data obtained from the NCEI [33], there were 21 riverine flood events (**Table 3.47)** over a period of 21 years. This information was utilized to determine the annual average percent probability of riverine flooding (**Table 3.49**). The probability of riverine flooding in Pulaski County per year is 100 percent (21

[33] http://www.ncdc.noaa.gov/stormevents/choosedates.jsp?statefips=29%2CMISSOURI

events/21 years x 100) with an average of 1 events per year. Furthermore, data was obtained for flash flooding within the county. Pulaski County endured 58 flash flooding events (**Table 3.48**) over a 21 year period. The probability of flash flooding in Pulaski County per year is 100% (58 events/21 years x 100) with an average of 2.8 events per year (**Table 3.50**).

Table 3.49. Annual Average % Probability of Riverine Flooding in Pulaski County

Location	Annual Avg. % P	Avg. Number of Events
Pulaski County	100%	1

*P = probability; see page 3.24 for definition.

Table 3.50. Annual Average % Probability of Flash Flooding in Pulaski County

Location	Annual Avg. % P	Avg. Number of Events
Pulaski County	100%	2.8

*P = probability; see page 3.24 for definition.

Vulnerability

Vulnerability Overview

Flooding presents a danger to life and property, often resulting in injuries and in some cases, fatalities. Floodwaters themselves can interact with hazardous materials. Hazardous materials stored in large containers can break loose or sustain a puncture as a result of flooding. Examples are bulk propane tanks. When this happens, evacuation of citizens is necessary.

Public health concerns may result from flooding, requiring disease and injury surveillance. Community sanitation to evaluate flood-affected flood supplies may also be necessary. Private water and sewage sanitation could be impacted and vector control (for mosquitoes and other entomology concerns) may be necessary.

When roads and bridges are inundated by water, damage can occur as the water scours materials around bridge abutments and gravel roads. Additional information on scour bridges can be found on page 3.14. Floodwaters can also cause erosion undermining road beds. In some instances, steep slopes that are saturated with water may cause mud or rock slides onto roadways. These damages can cause costly repairs for state, county and city road and bridge maintenance departments. When sewer back-up occurs, this can result in costly clean-up for home and business owners a well as present a health hazard.

For the vulnerability analysis of flooding for Pulaski County, data was obtained from the 2018 Missouri State Hazard Mitigation Plan. The 2018 Plan used the most recent release of Hazus, version 4.0, to model flood vulnerability and estimate flood losses due to the depth of flooding. Additional hazard data inputs were utilized, as available, to perform Hazus Level 2 analyses. This included the extensive use of the FEMA special flood hazard area data and RiskMAP flood risk datasets.

For the Hazus analysis, the flood hazard area and depth of flooding was determined for each county using one of three methods – depending on the data available for that county. Pulaski County does have digital FIRMS, the regulatory special flood hazard area was utilized. Next, depth grids were generated using cross sections from the FIRM database and/or hydraulic models in combination with the terrain elevation data from which the DFIRM was derived.

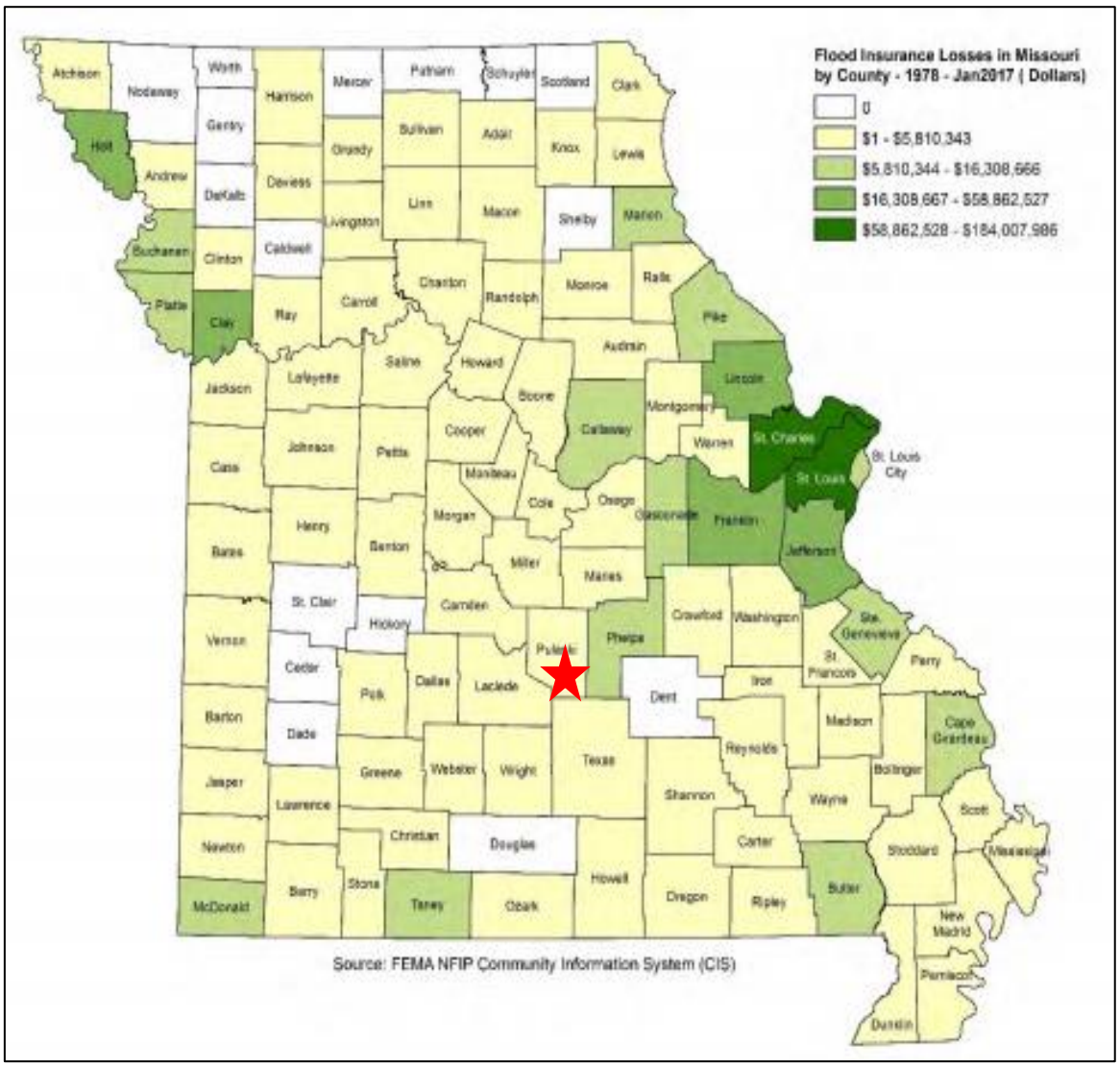
This method was preferred of the three methods, along with RiskMAP flood risk datasets.

In addition to the DFIRM, SEMA analyzed National Flood Insurance Program (NFIP) flood-loss data to determine areas of Missouri with the greatest flood risk. Missouri flood-loss information was obtained from BureauNet which documents losses from 1978 to the present (November 30, 2017 for the State Plan). With this flood-loss data there are limitations noted, including:

- Only losses to participating NFIP communities are represented
- Communities joined the NFIP at various times since 1978
- The number of flood insurance policies in effect may not include all structures at risk to flooding
- Some of the historic loss areas have been mitigated with property buyouts. Two buyouts of repetitive loss properties has occurred in the city of Waynesville and one in unincorporated Pulaski County.

Figure 3.42 depicts the amount of flood insurance losses in Missouri by county for the period 1978-January 2017. Pulaski County falls in the $1 – $5,810,343 range of payments.

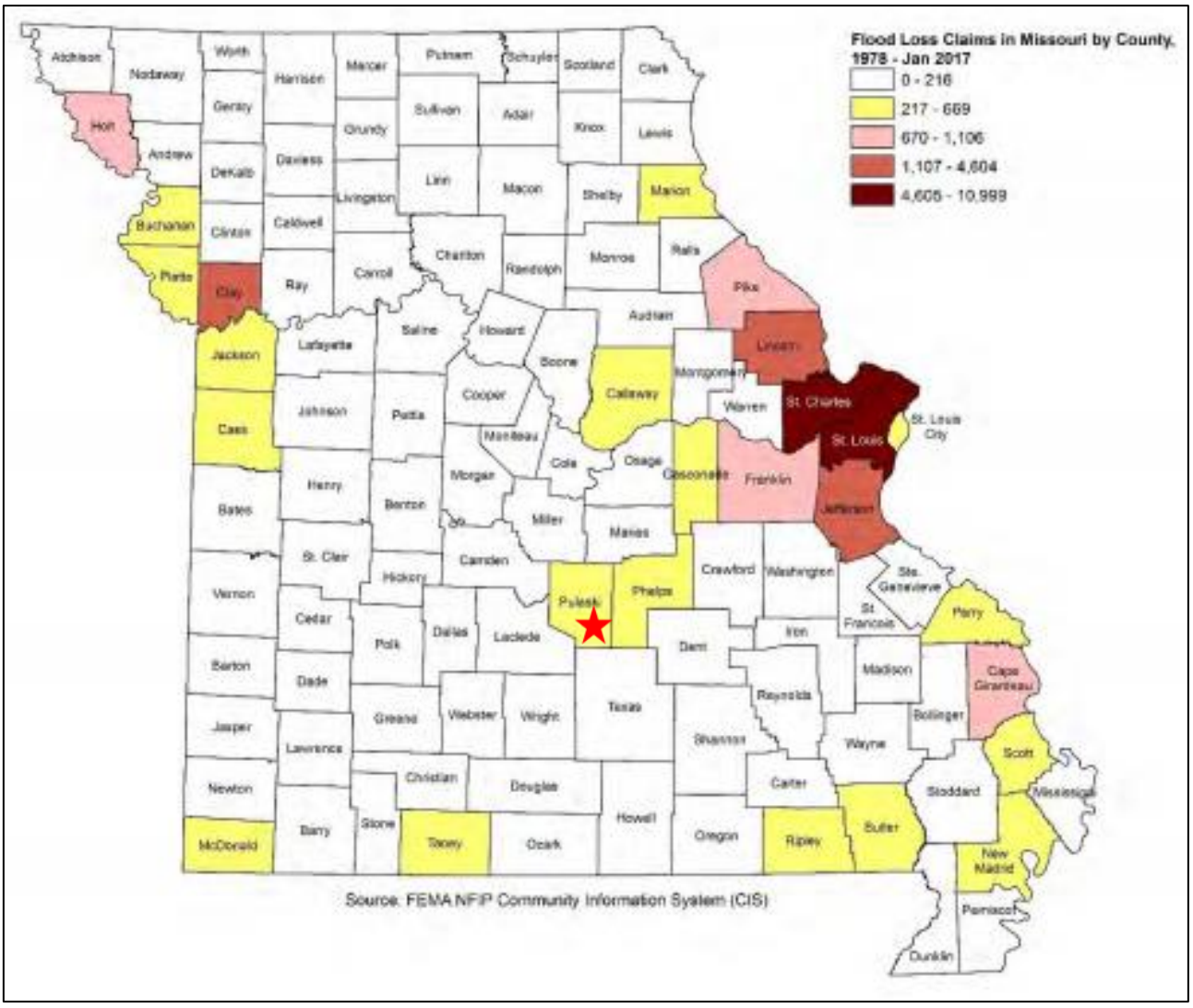
Figure 3.42. Map of Funds Paid Historically for Flood Insurance Losses in Missouri by County 1978 - January 2017



*Source: 2018 Missouri State Hazard Mitigation Plan, *Red star indicates Pulaski County*

Figure 3.43 illustrates the number of flood loss claims made in Missouri during the same time period. Pulaski County had 217 – 669 claims during that timeframe.

Figure 3.43. Flood Loss Claims in Missouri by County, 1978 – January 2017



*Source: 2018 Missouri State Hazard Mitigation Plan, *Red star indicates Pulaski County*

Furthermore, the state analyzed potential loss estimates to flooding. The purpose of the analysis is to determine where flood losses can occur and the degree of severity using consistent methodology. These results were generated from DFIRM data and Hazus floodplain data. **Table 3.51** provides information regarding total direct building loss and income loss to Pulaski County. **Table 3.52** provides information on exposure of buildings. According to the Missouri Spatial Data Information Service (MSDIS) there are 202 residential structures at risk of flood. Hazus shows the number of building exposed to flood damage at 260, with 137 potentially substantially damaged in a one percent annual chance of a flood.

Table 3.51. Total Direct Building Loss and Income Loss to Pulaski County

County-wide Building Loss	Structural Damage	Contents Loss	Inventory Loss	Total Direct Loss	Total Income Loss	Total Direct and Income Loss	Calc. Loss Ratio
$5,334,660,000	$79,599,000	$48,555,000	$545,000	$128,699,000	$187,000	$128,886,000	1.49

Source: 2018 Missouri State Hazard Mitigation Plan

Table 3.52. Pulaski County Structures Exposure

# MSDIS Residential Structures Exposed	# Hazus Buildings Exposed	# Substantially Damaged
202	260	137

Source: 2018 Missouri State Hazard Mitigation Plan

This same analysis indicates that 2,051 people would be displaced in Pulaski County and 1,314 would need to be sheltered in the event of a major flood.

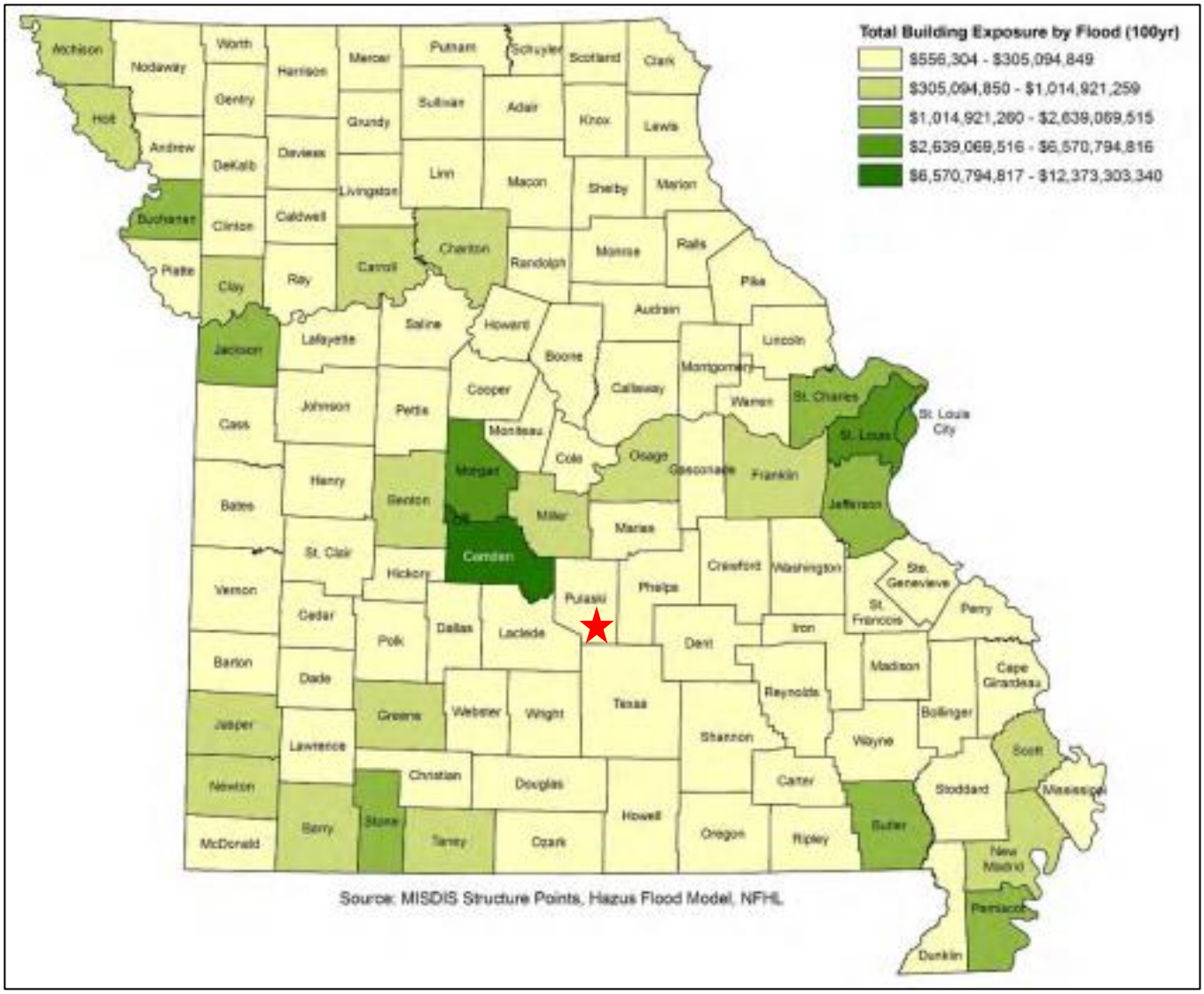
Table 3.53 presents the results of the primary indicators for Pulaski County – residential, agricultural, commercial, education, government and industrial. This table illustrates the number of affected structures and estimated losses. **Figure 3.44** shows the building exposure for the Hazus Base-Flood Scenario. Figure 3.50 illustrates the building impacted ratio for a 100-year flood.

Table 3.53. Pulaski County Total Building Loss and Income Loss

# Residential Structures	Total $$ of Loss	# Agriculture Structures	Total $$ of Loss	# Commercial Structures	Total $$ of Loss	# of Education Structures	Total $$ of Loss	# of Government Structures	Total $$ of Loss	# of Industrial Structures	Total $$ of Loss	Total # Population Affected	Total Loss – Hazus Layer
202	$287,984	132	$200,140	13	$639,233	4	$1,199,591	0	$0	2	$51,606	574	$2,845,554

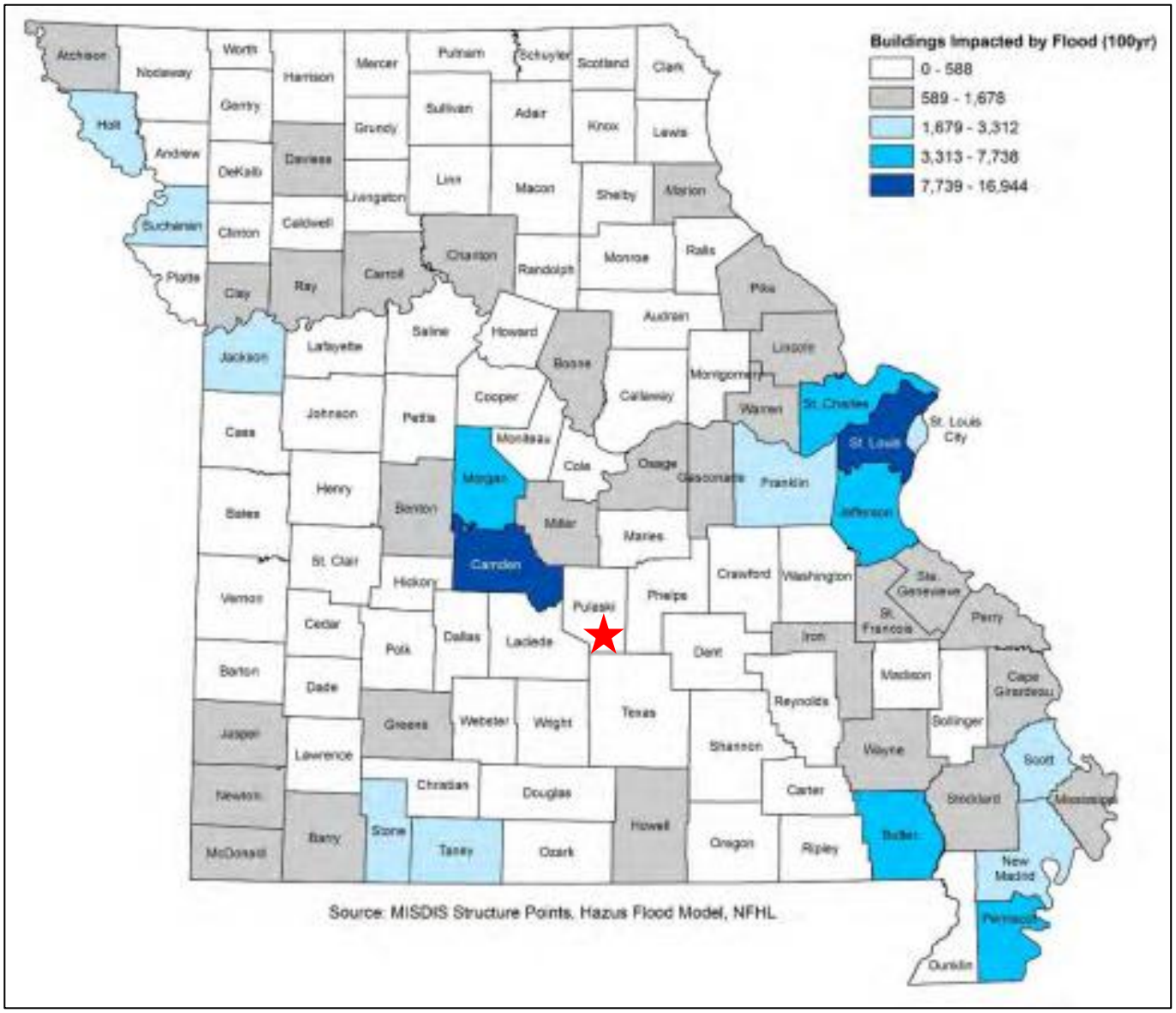
Source: 2018 Missouri State Hazard Mitigation Plan

Figure 3.44. Hazus Countywide Base-Flood Scenarios: Building Exposure



*Source: 2018 Missouri State Hazard Mitigation Plan, *Red star indicates Pulaski County*

Figure 3.45. Hazus Countywide Base-Flood Scenarios: Building Impacted Ratio



*Source: 2018 Missouri State Hazard Mitigation Plan, *Red star indicates Pulaski County*

Lastly, the State determined the estimated number of displaced households and need for shelters within Pulaski County in the event of a 100 year flood. **Table 3.54** illustrates this information.

Table 3.54. Estimated Displaced People and Shelter Needs for Pulaski County

County	Displaced People	Displaced Population Requiring Shelter
Pulaski	2,051	1,314

Source: 2018 Missouri State Hazard Mitigation Plan

Potential Losses to Existing Development

Although the Hazus model indicates that the next flash flood in Pulaski County will likely have minimal impact on the day-to-day activities of the county overall, the unprecedented flooding in 2015 suggests that future flood events could cause significant disruption in the county. The December 2015 flash flood caused significant damage to Waynesville and Pulaski County and resulted in seven deaths. The following roads and low water crossings will be threatened in future floods and include Highway O, Highway U, Route DD, Route HH, Highway 133, Cave Road, Texas Road, Creek Road, Canyon Road, Smokey Road, Tavern Creek, and Dyer Street in Waynesville. Sections of Waynesville lie on and near the Roubidoux River which increases the vulnerability to flooding. In addition, according to the Data Questionnaire, the Waynesville R-VI School District has two district facilities within the floodplain; 6th GC and the Middle School. Furthermore, Richland R-IV has district facilities in the floodplain, but was not specified. So although these two school districts may be affected during flooding, overall, few buildings lie in the floodplain.

Impact of Future Development

Impact of future development is correlated to floodplain management and regulations set forth by the county and jurisdictions[34]. Future development within low-lying areas near rivers and streams, or where interior drainage systems are not adequate to provide drainage during heavy rainfall events should be avoided. Additionally, future development would also increase impervious surface causing additional water run-off and drainage problems during heavy rainfall events.

Hazard Summary by Jurisdiction

Vulnerability to flooding varies slightly across the planning area. The jurisdictions most vulnerable to flooding include Unincorporated Pulaski County, Richland, and Waynesville. The City of Crocker and area of Helm have the most recorded NCEI flood events. Since 1999 there have been 79 incidents of flooding or flash flooding in Pulaski County; 11 incidents in Crocker and Helm (**Table 3.47**, **Table 3.478**). The city of Waynesville has 10 repetitive loss properties, whereas the county has 31 repetitive loss properties.

Those areas at greatest risk to riverine flooding are those populated areas along the Roubidoux Creek and Gasconade River and their tributaries.

A small portion of the cities of Dixon, Richland, St. Robert, and significant portions of Waynesville reside in a SFHA. One educational building in the Waynesville R-VI School District is in the SFHA. No other critical facilities within the county are in the SFHA.

The city of Crocker is not a member of the NFIP and does not have any identified floodplain areas within the city boundaries. But the community is still vulnerable to flash floods and affected by closures to roads around the city.

Problem Statement

The county has already adopted a Floodplain Management Ordinance concerning construction in the floodplain. The county should consider buyouts of properties that are flood prone and have had repetitive losses to mitigate future disasters. Local governments should make a strong effort to further improve warning systems to insure that future deaths and injuries do not occur. Local governments should consider making improvements to roads and low water crossings that consistently flood by

[34] 2015 Boone County Hazard Mitigation Plan

placing them on a hazard mitigation projects list, and actively seek funding to successful complete the projects.

3.4.7 Land Subsidence/Sinkholes

Some specific sources for this hazard are:

- 2018 Missouri State Hazard Mitigation Plan, Chapter 3, Section 3.3.5, Page 3.218 https://sema.dps.mo.gov/docs/programs/LRMF/mitigation/MO_Hazard_Mitigation_Plan2018.pdf
- http://www.dnr.mo.gov/geology/geosrv/envgeo/sinkholes.htm http://strangesounds.org/2013/07/us-sinkhole-map-these-maps-show-that-around-40-of-the-u-s-lies-in-areas-prone-to-sinkholes.html
- http://www.businessinsider.com/where-youll-be-swallowed-by-a-sinkhole-2013-3
- http://water.usgs.gov/edu/sinkholes.html
- http://pubs.usgs.gov/fs/2007/3060/
- Missouri hazard Mitigation Viewer
  http://bit.ly/MoHazardMitigationPlanViewer2018 - Website
  http://drive.google.com/file/d/1bPkc0jgF9ofwQLnTL9NOu-oPFWi9hkst/view - User Guide
    - Total number of sinkholes by County
    - Vulnerability to sinkholes by County
    - Total number of mines by County
    - Vulnerability to mines by County
    - Total value of structures impacted by sinkholes by County
    - Total population impacted by sinkholes by County

Hazard Profile

Hazard Description

Sinkholes are common where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that naturally can be dissolved by ground water circulating through them. As the rock dissolves, spaces and caverns develop underground. The sudden collapse of the land surface above them can be dramatic and range in size from broad, regional lowering of the land surface to localized collapse. However, the primary causes of most subsidence are human activities: underground mining of coal, groundwater or petroleum withdrawal, and drainage of organic soils. In addition, sinkholes can develop as a result of subsurface void spaces created over time due to the erosion of subsurface limestone (karst).

Land subsidence occurs slowly and continuously over time, as a general rule. On occasion, it can occur abruptly, as in the sudden formation of sinkholes. Sinkhole formation can be aggravated by flooding.

In the case of sinkholes, the rock below the surface is rock that has been dissolving by circulating groundwater. As the rock dissolves, spaces and caverns form, and ultimately the land above the spaces collapse. In Missouri, sinkhole problems are usually a result of surface materials above openings into bedrock caves eroding and collapsing into the cave opening. These collapses are called “cover collapses” and geologic information can be applied to predict the general regions where collapse will occur. Sinkholes range in size from several square yards to hundreds of acres and may be quite shallow or hundreds of feet deep.

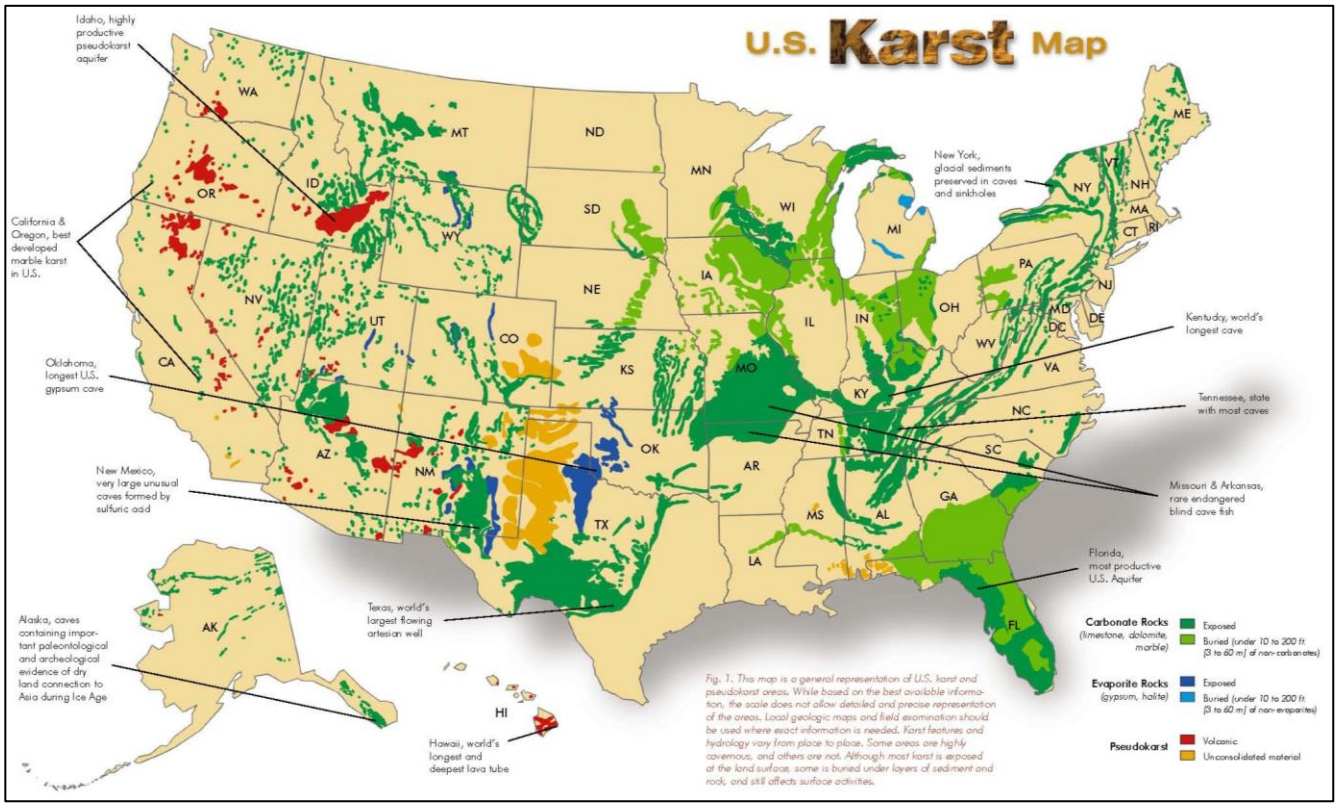
According to the U.S. Geological Survey (USGS), the most damage from sinkholes tends to occur in Florida, Texas, Alabama, Missouri, Kentucky, Tennessee, and Pennsylvania. Fifty-nine percent of Missouri is underlain by thick, carbonate rock that makes Missouri vulnerable to sinkholes. Sinkholes occur in Missouri on a fairly frequent basis. Most of Missouri‘s sinkholes occur naturally in the State‘s

karst regions (areas with soluble bedrock). They are a common geologic hazard in southern Missouri, but also occur in the central and northeastern parts of the State. Missouri sinkholes have varied from a few feet to hundreds of acres and from less than one to more than 100 feet deep. The largest known sinkhole in Missouri encompasses about 700 acres in western Boone County southeast of where Interstate 70 crosses the Missouri River. Sinkholes can also vary in shape like shallow bowls or saucers whereas other have vertical walls. Some hold water and form natural ponds.

Geographic Location

Figure 3.46 depicts karst topography across the United States. Missouri's karst topography is comprised of carbonate rocks such as limestone, dolomite, and marble. Variability in areas prone to sinkholes does not differ greatly across the county. According to the 2018 Missouri State Hazard Mitigation Plan there are 94 sinkholes that have been recorded within Pulaski County (**Figure 3.47 and Figure 3.48**). In addition, the Plan states that there are 86 mines in Pulaski County - as shown in **Figure 3.49**. According to the Missouri Department of Natural Resources, Pulaski County primarily produces refractory clay but has deposits of barite with lead, sedimentary limonite and hematite. Activities such as mining or drilling are known to be responsible for the formation of sinkholes.

Figure 3.46. U.S. Karst Map



Source: http://www.northeastern.edu/protect/wp-content/uploads/US_KarstMap.jpg

Figure 3.47. Pulaski County Watersheds and Sinkholes

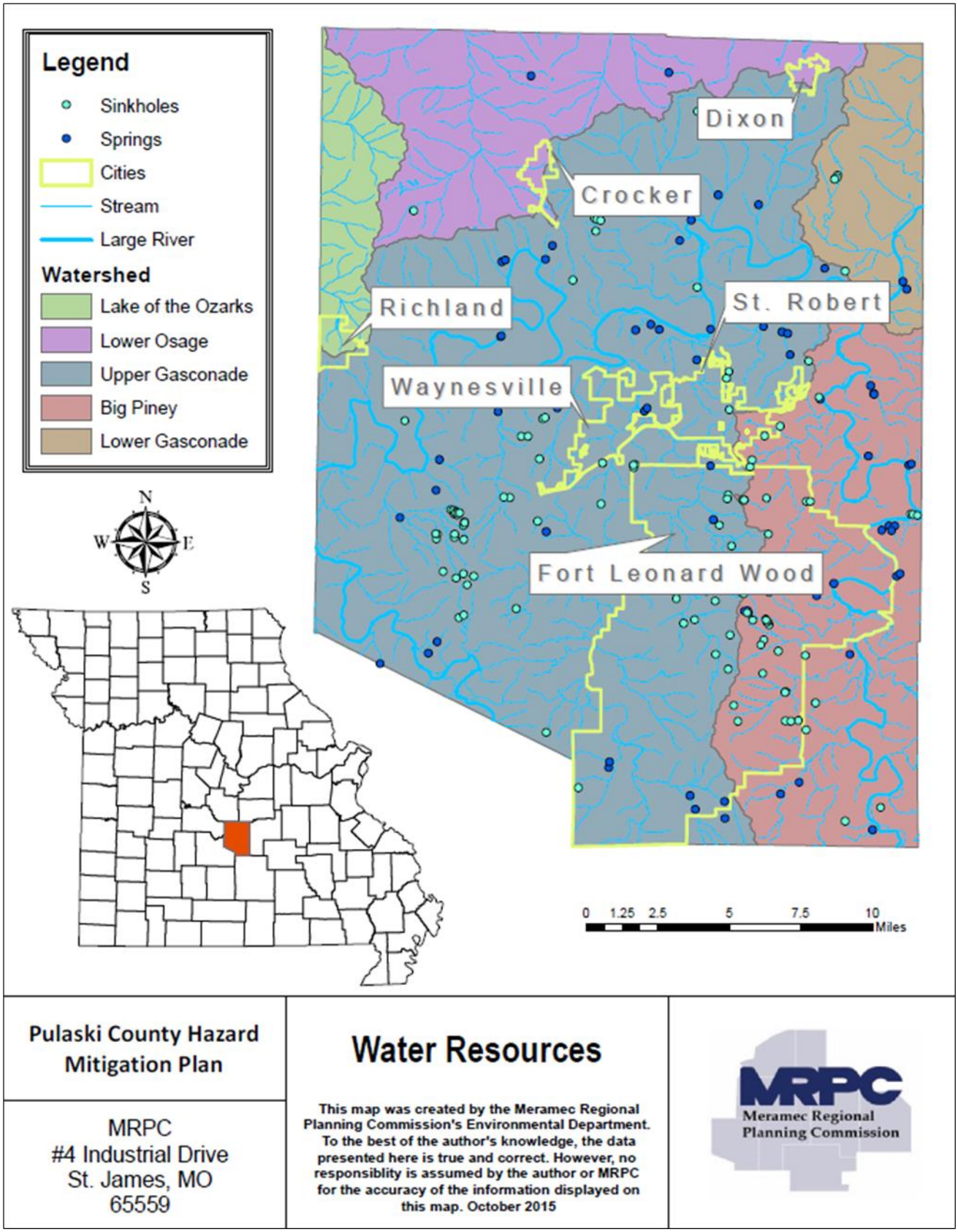
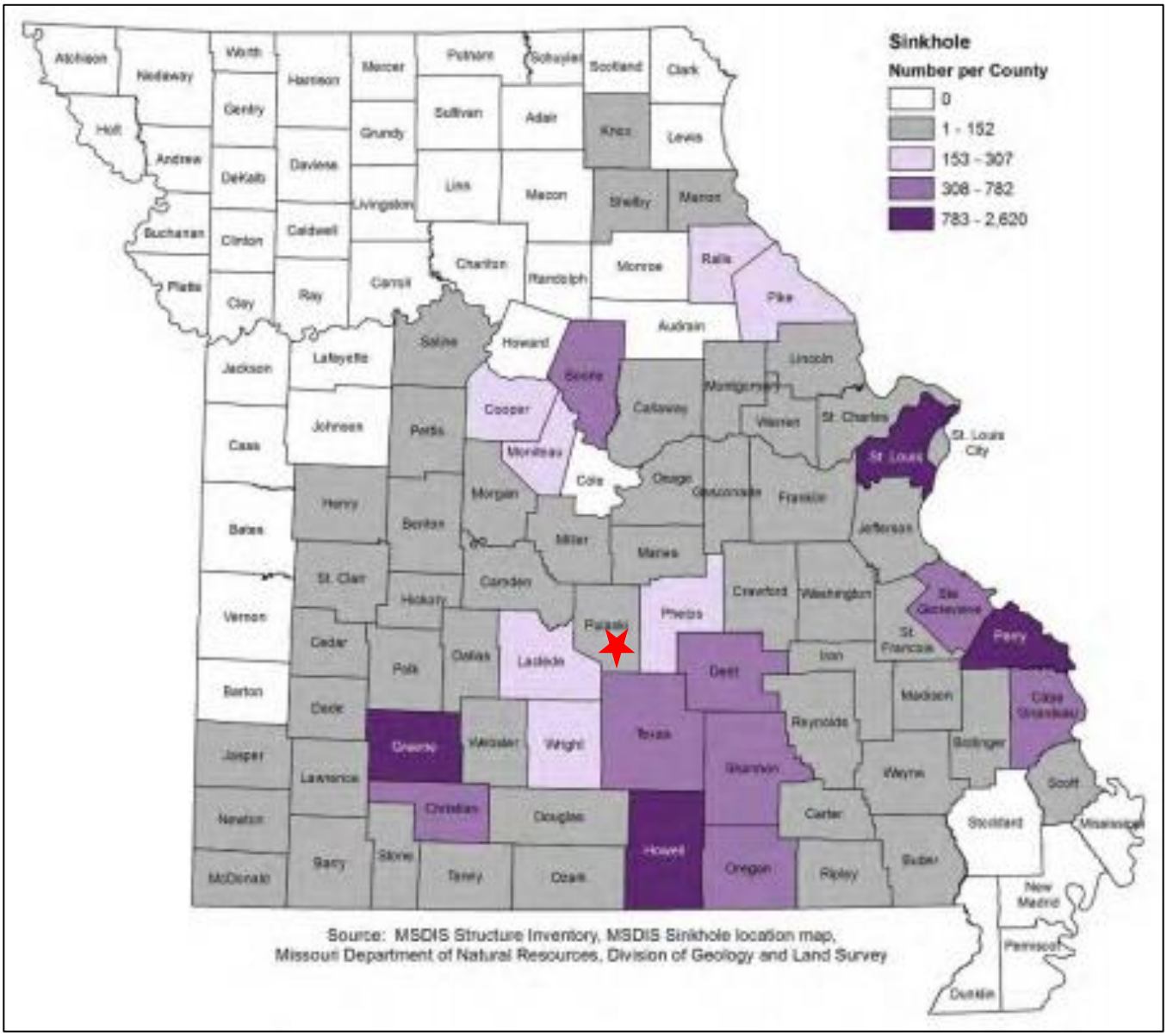
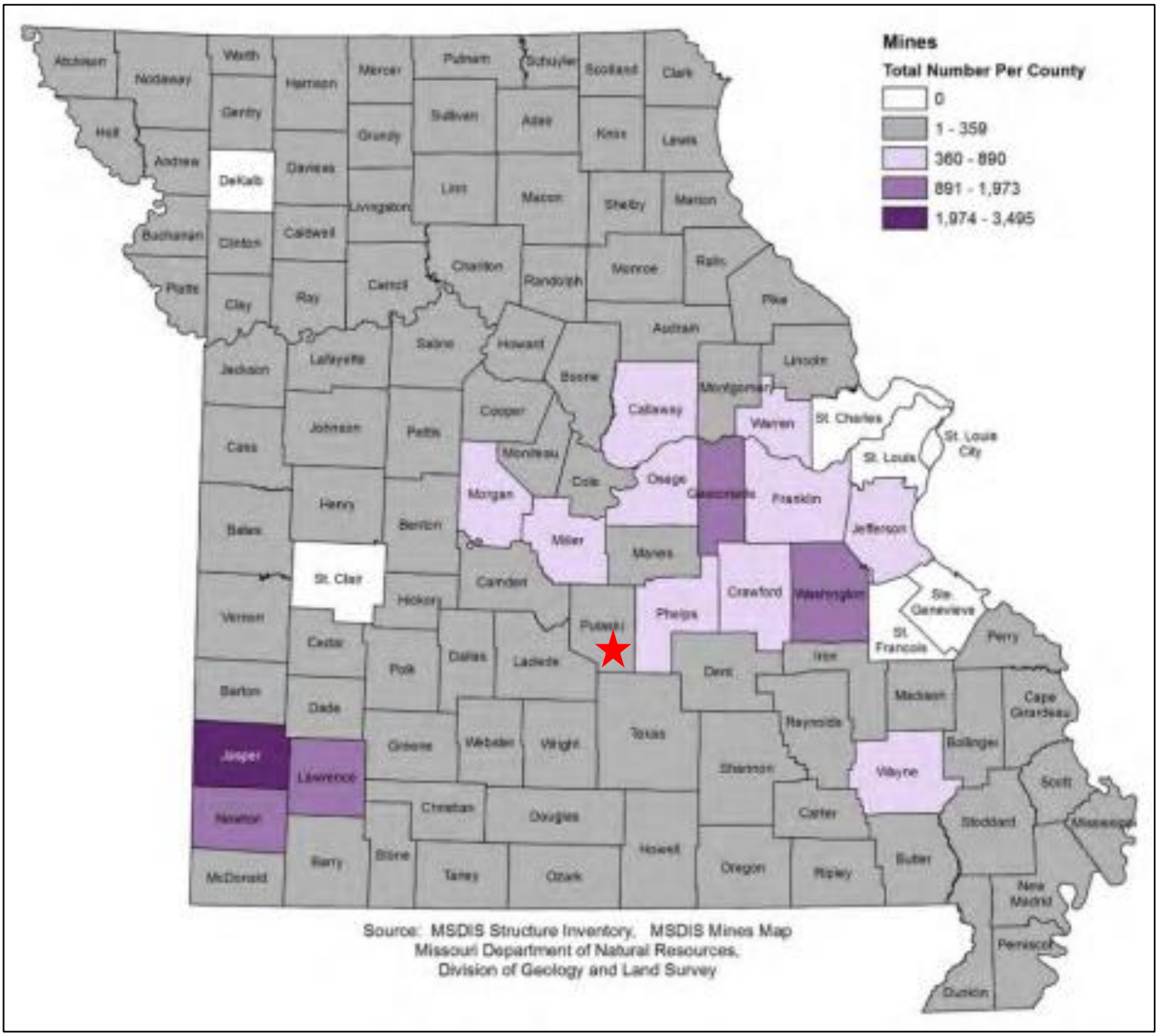


Figure 3.48. Sinkholes Counts per County



*Source: 2018 Missouri Hazard Mitigation Plan; *Red star indicates Pulaski County*

Figure 3.49. Mines Counts Per County



*Source: 2018 Missouri Hazard Mitigation Plan; *Red star indicates Pulaski County*

Severity/Magnitude/Extent

Unlike earthquakes or other geologic hazards, there currently is no scale for measuring or determining the severity of sinkholes. However, geological and mining parameters can affect the magnitude and extent of sinkhole subsidence. As previously noted, natural sinkholes develop in areas where the rock below the surface is limestone, carbonate rock, salt beds or any type of rock that can naturally be dissolved by groundwater circulating through it. Artificial sinkholes form due to groundwater pumping, water main and sewer collapses and mine collapses.[35]

[35] 2018 Missouri Hazard Mitigation Plan

Sinkholes vary in size and location, and these variances will determine the impact of the hazard. A sinkhole could result in the loss of a personal vehicle, a building collapse, or damage to infrastructure such as roads, water, or sewer lines. Groundwater contamination is also possible from a sinkhole. Because of the relationship of sinkholes to groundwater, pollutants captured or dumped in sinkholes could affect a community's groundwater system. Sinkhole collapse could be triggered by large earthquakes. Sinkholes located in floodplains can absorb floodwaters but make detailed flood hazard studies difficult to model.

The 2018 State Plan mentions 18 documented sinkhole "notable events". The plan stated that sinkholes are common to Missouri and the probability is high that they will occur in the future. To date, Missouri sinkholes have rarely had major impacts on development nor have they caused serious damage.

Previous Occurrences

Although there are numerous sinkholes and sinkhole areas in Pulaski County, and incidents have occurred in other counties in southern Missouri, there has been one recorded incident of death due to sinkholes in the County. On Monday, September 16, 2013, while returning home from deer hunting, a 31-year old male fell into a 70-foot deep sinkhole and died. Based on the map of sinkholes in Pulaski County, some of the communities may be more vulnerable to this hazard than the unincorporated parts of the county due to population density and the likelihood of future development. St. Robert has sinkholes within its boundaries and there are several known sinkholes near, but not within the borders of Waynesville. Crocker, Dixon and Richland appear to lie further outside the zone of sinkhole occurrences.

Probability of Future Occurrence

Due to the lack of data for previous sinkhole events in Pulaski County, a probability could not be calculated.

Vulnerability

Vulnerability Overview

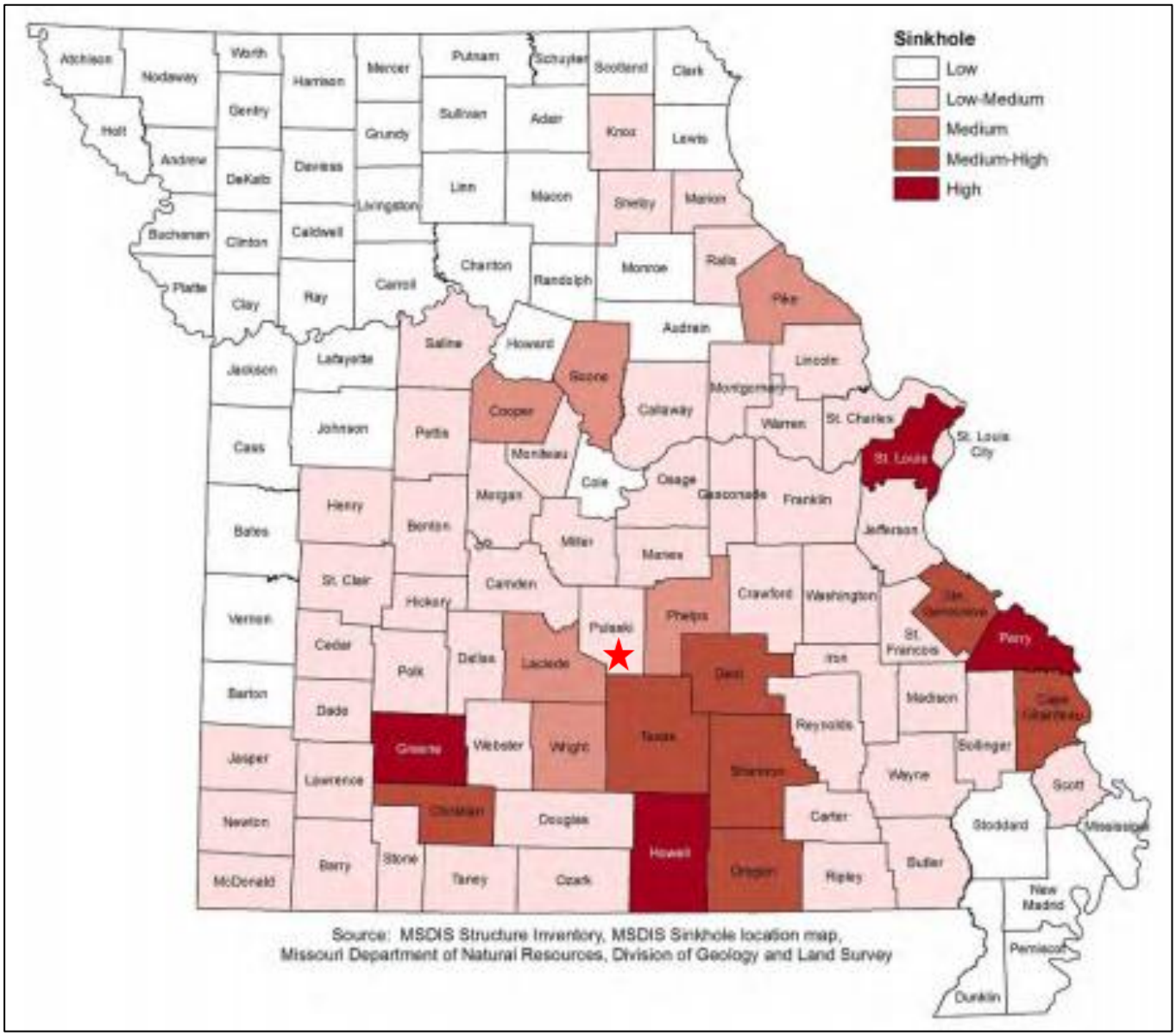
Unfortunately, no statistics are available for the number of subsurface locations that may potentially collapse in the future, forming a sinkhole. According to the state plan, if a county has fewer than 200 sinkholes, the risk is considered 2 - low-medium. For mines, the state plan calculates that Pulaski County's risk is also rated as 1 – low. See **Table 3.55**. **Figure 3.50** and **Figure 3.51** further illustrate the sinkhole and mining rating values respectively.

Table 3.55. Sinkhole/Mine Rating Values for Pulaski County

Factor	1 (Low)	2 (Low-medium)	3(Medium)	4 (Medium-high)	5 (High)
Sinkholes per county	0	1-200	201-400	401-800	801+
Mines per county	0-100	101-250	251-500	501-750	751+

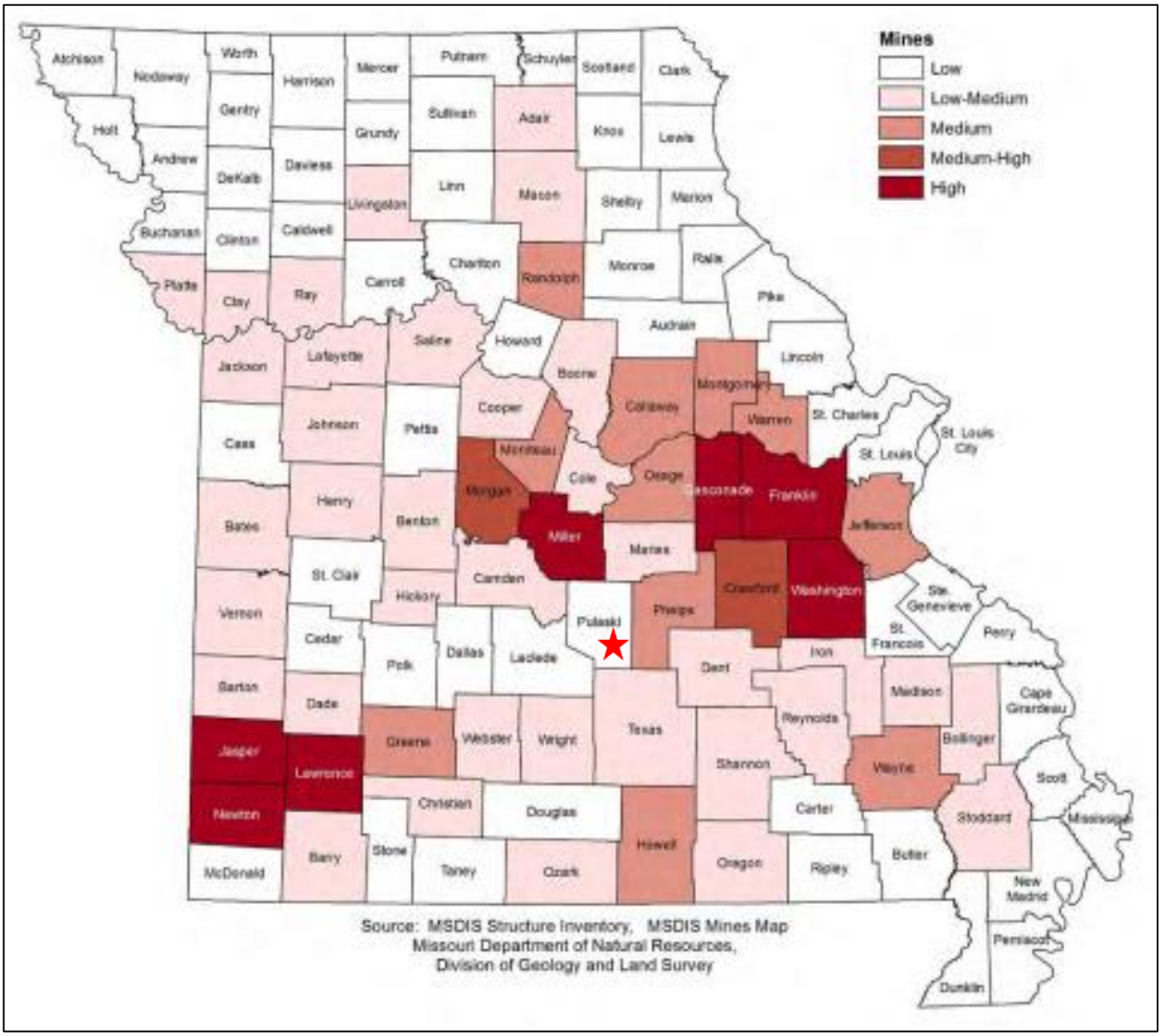
Source: 2018 Missouri Hazard Mitigation Plan, Yellow highlight shows values for Pulaski County

Figure 3.50. Sinkhole Rating Value by County



*Source: 2018 Missouri Hazard Mitigation Plan, *Red star indicates Pulaski County*

Figure 3.51. Mine Rating Value By County



*Source: 2018 Missouri Hazard Mitigation Plan, *Red star indicates Pulaski County*

Potential Losses to Existing Development

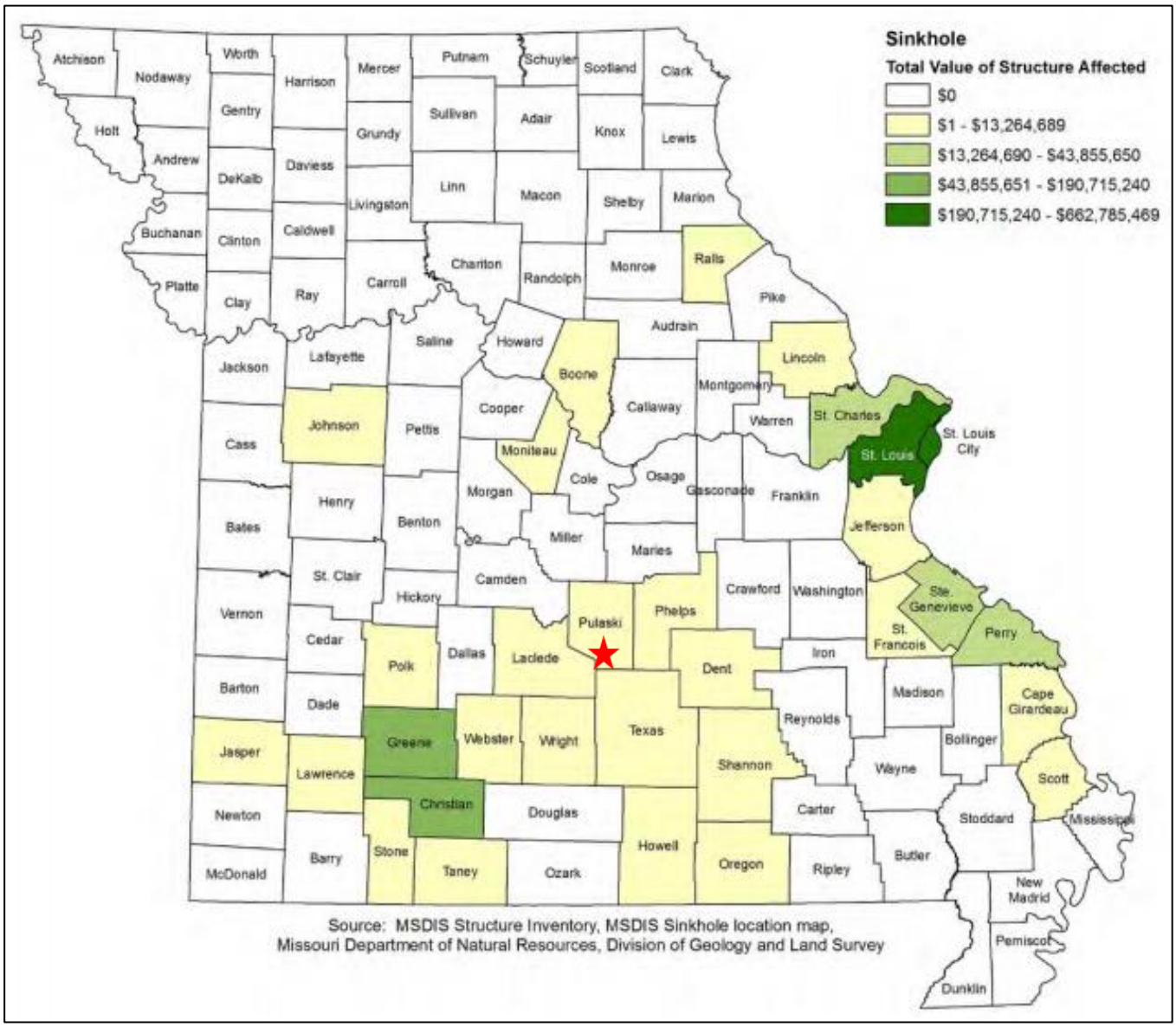
The most likely type of damage to occur in conjunction with a sinkhole collapse is property damage related to foundation disturbance. Signs include cracks in interior and exterior walls; doors and windows that no longer sit square or open and close properly; depressions forming in the yard; cracks in the street, sidewalk, foundation or driveway; and turbidity in local well water. All of these can be early indicators that a sinkhole is forming in the vicinity[36]. In the event of a sudden collapse, an open sinkhole can form in a matter of minutes and swallow lawns, automobiles, and homes. This has occurred in some parts of Missouri, particularly in the southwest part of the state, but there have been no dramatic incidents like this in Pulaski County.

The 2018 Missouri Hazard Mitigation Plan devised a method of estimating potential losses using GIS

[36] https://ufonline.ufl.edu/infographics/how-to-spot-a-sinkhole/

data. **Figure 3.52** shows the ranking of structures that could potentially be impacted by sinkholes by county. This map shows that Pulaski County has $1-$13,264,689 total value of structures affected.

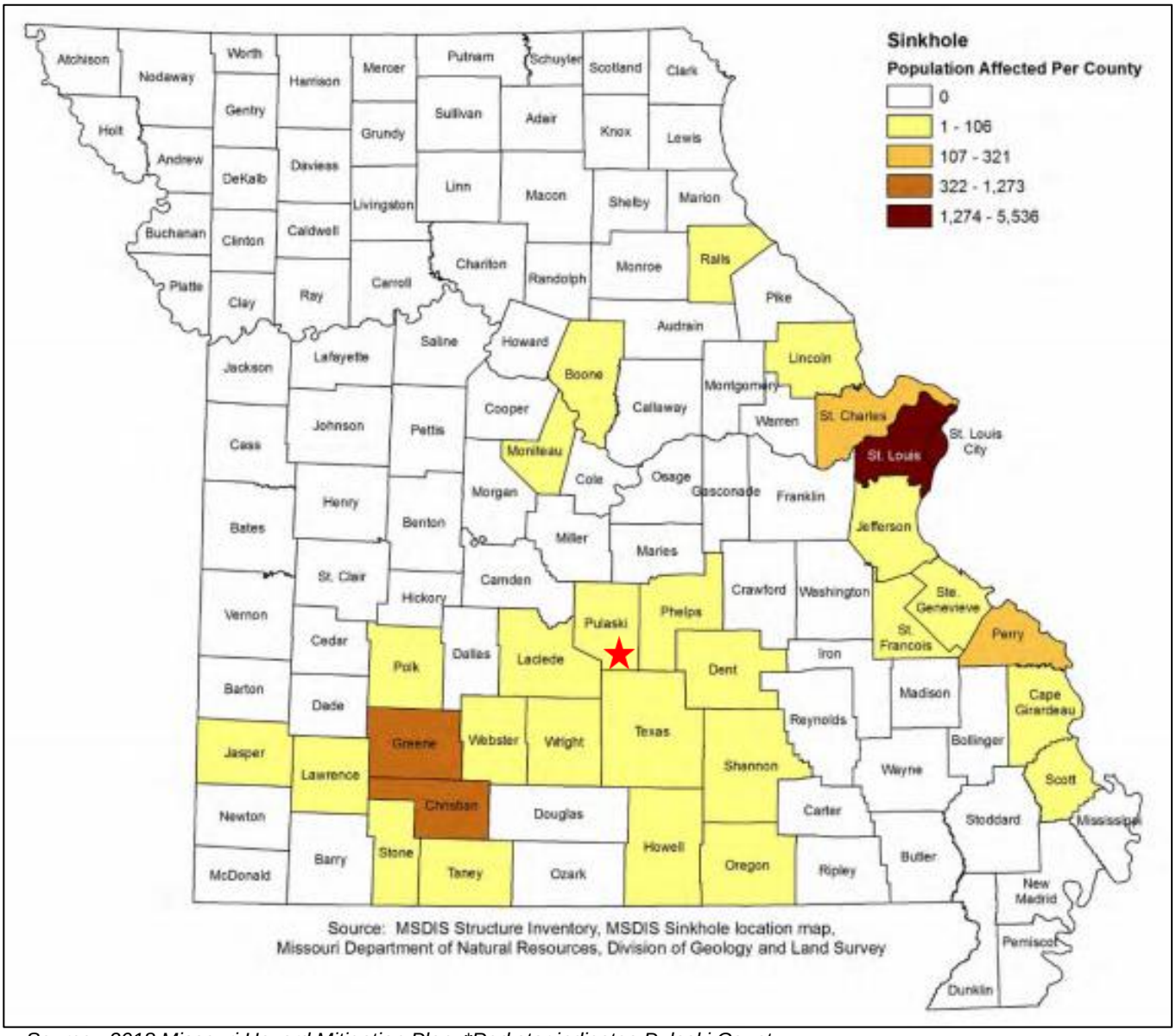
Figure 3.52. Ranking of Structures Potentially Impacted by Sinkholes by County



*Source: 2018 Missouri Hazard Mitigation Plan, *Red star indicates Pulaski County*

Figure 3.53 shows the population potentially impacted by sinkholes; Pulaski County shows that 1 -106 of the county population could be affected by sinkholes.

Figure 3.53. Ranking of Population Potentially Impacted by Sinkholes by County



*Source: 2018 Missouri Hazard Mitigation Plan, *Red star indicates Pulaski County*

Impact of Future Development

Future development over or near abandoned mines and in locations at risk of sinkhole formation will increase the hazard vulnerability. Information regarding regulations limiting construction near sinkholes is very limited. According to the state plan, Pulaski County's risk in regards to these hazards is moderately low.

Hazard Summary by Jurisdiction

According to the state plan, Pulaski County's risk is low to moderate. Based on the location of known sinkholes, the jurisdictions most likely to be impacted by sinkholes are St. Robert and Waynesville and the Waynesville R-VI School District. As evidenced by the map of sinkholes in Pulaski County (**Figure 3.47**), there is at least one known sinkhole in the city limits of St. Robert and several in close proximity

to the city of Waynesville. There are also a number of sinkholes in the northern portion of Fort Leonard Wood where the housing areas and elementary schools are located. The other jurisdictions, both cities and school districts, are located in areas of the county where the concentration of sinkholes is much lower.

Problem Statement

Sinkholes and sinkhole/mining areas are well documented by both the US Geological Survey and the Missouri Department of Natural Resources Geologic Resources Section. The risk of sinkhole collapse can be lessened by avoiding the construction of structures in these areas and avoiding those activities that significantly alter the local hydrology, such as drilling and mining. In addition, communities should avoid leaking water and sewer lines through appropriate maintenance and monitoring. Local residents should be educated on the risks associated with sinkholes and mines and advised to avoid placing themselves and their property in danger by building in sinkhole/mining areas. Communities with building codes should include prohibitions on building in known sinkhole/mining areas.

3.4.8 Thunderstorm/High Winds/Lightning/Hail

Some Specific Sources for this hazard are:

- 2018 Missouri State Hazard Mitigation Plan, Chapter 3, Section 3.3.8, Page 3.280 https://sema.dps.mo.gov/docs/programs/LRMF/mitigation/MO_Hazard_Mitigation_Plan2018.pdf
- FEMA 320, Taking Shelter from the Storm, 3rd edition, http://www.weather.gov/media/bis/FEMA_SafeRoom.pdf
- Lightning Map, National Weather Service, http://www.lightningsafety.noaa.gov/stats/08_Vaisala_NLDN_Poster.pdf
- Death and injury statistics from lightning strikes, National Weather Service.
- Wind Zones in the U.S. map, FEMA, http://www.fema.gov/plan/prevent/saferoom/tsfs02_wind_zones.shtm;
- Annual Windstorm Probability (65+knots) map U.S. 1980-1994, NSSL, http://www.nssl.noaa.gov/users/brooks/public_html/bigwind.gif
- Hailstorm intensity scale, The Tornado and Storm Research Organization (TORRO), http://www.torro.org.uk/site/hscale.php;
- NCEI data;
- USDA Risk Management Agency, Insurance Claims, http://www.rma.usda.gov/data/cause.htm
- National Severe Storms Laboratory – hail map, http://www.nssl.noaa.gov/users/brooks/public_html/bighail.gif
- Missouri Hazard Mitigation Viewer
  http://bit.ly/MoHazardMitigationPlanViewer2018 - Website
  http://drive.google.com/file/d/1bPkc0jgF9ofwQLnTL9N0u-oPFWi9hkst/view - User Guide
  - Average annual high wind events by County
  - Average annual hail events by County
  - Average annual lightning events by County
  - Vulnerability to severe thunderstorm event by County
  - Annualized property loss for high wind events by County
  - Annualized property loss for lightning events by County
  - Annualized property loss ratio for high wind events by County
  - Annualized property loss ratio for hail events by County
  - Annualized property loss ratio for lightning events by County

Hazard Profile

Hazard Description

Thunderstorms

A thunderstorm is defined as a storm that contains lightning and thunder which is caused by unstable atmospheric conditions. When cold upper air sinks and warm moist air rises, storm clouds or 'thunderheads' develop resulting in thunderstorms. This can occur singularly, as well as in clusters or lines. The National Weather Service defines a thunderstorm as "severe" if it includes hail that is one inch or more, or wind gusts that are at 58 miles per hour or higher. At any given moment across the world, there are about 1,800 thunderstorms occurring. Severe thunderstorms most often occur in Missouri in the spring and summer, during the afternoon and evenings, but can occur at any time. Other

hazards associated with thunderstorms are heavy rains resulting in flooding (**Section 3.4.6**) and tornadoes (**Section 3.4.9**)

High Winds

A severe thunderstorm can produce winds causing as much damage as a weak tornado. The damaging winds of thunderstorms include downbursts, microbursts, and straight-line winds. Downbursts are localized currents of air blasting down from a thunderstorm, which induce an outward burst of damaging wind on or near the ground. Microbursts are minimized downbursts covering an area of less than 2.5 miles across. They include a strong wind shear (a rapid change in the direction of wind over a short distance) near the surface. Microbursts may or may not include precipitation and can produce winds at speeds of more than 150 miles per hour. Damaging straight-line winds are high winds across a wide area that can reach speeds of 140 miles per hour.

Lightning

All thunderstorms produce lightning which can strike outside of the area where it is raining and has been known to fall more than 10 miles away from the rainfall area. Thunder is simply the sound that lightning makes. Lightning is a huge discharge of electricity that shoots through the air causing vibrations and creating the sound of thunder.

Hail

According to the National Oceanic and Atmospheric Administration (NOAA), hail is precipitation that is formed when thunderstorm updrafts carry raindrops upward into extremely cold atmosphere causing them to freeze. The raindrops form into small frozen droplets. They continue to grow as they come into contact with super-cooled water which will freeze on contact with the frozen rain droplet. This frozen droplet can continue to grow and form hail. As long as the updraft forces can support or suspend the weight of the hailstone, hail can continue to grow before it hits the earth.

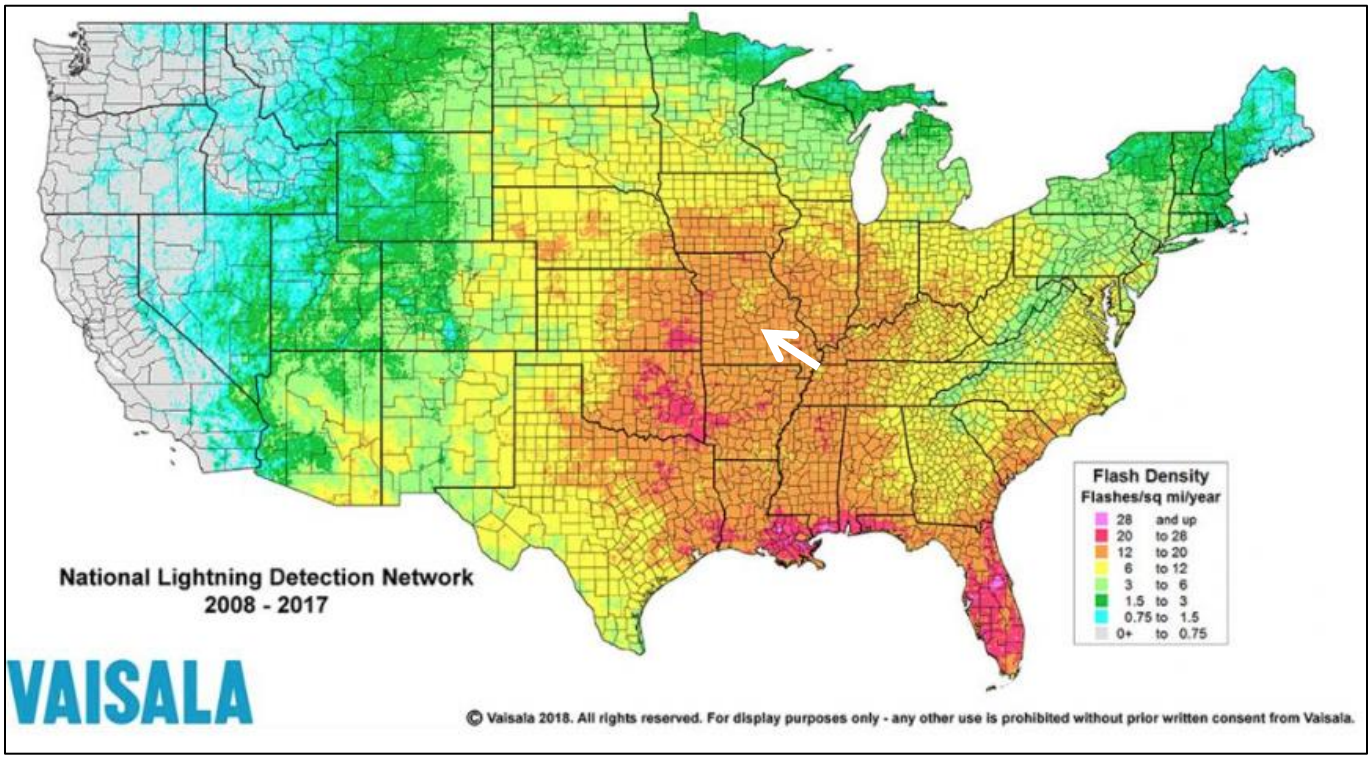
At the time when the updraft can no longer support the hailstone, it will fall down to the earth. For example, a ¼" diameter or pea sized hail requires updrafts of 24 miles per hour, while a 2 ¾" diameter or baseball sized hail requires an updraft of 81 miles per hour. According to the NOAA, the largest hailstone in diameter recorded in the United States was found in Vivian, South Dakota on July 23, 2010. It was eight inches in diameter, almost the size of a soccer ball. Soccer-ball-sized hail is the exception, but even small pea-sized hail can do damage.

Geographic Location

Thunderstorms, high winds, hail, and lightning events are an area-wide hazard that can take place anywhere across the United States. Furthermore, these events do not vary greatly across the planning area; they are more frequently reported in urbanized areas. Additionally, densely developed urban areas are more likely to experience damaging events.

Figure 3.54 depicts the location and frequency of lightning in Missouri. Additionally, the map indicates that the flash density of Pulaski County ranges between 12 and 20 flashes per square kilometer per year.

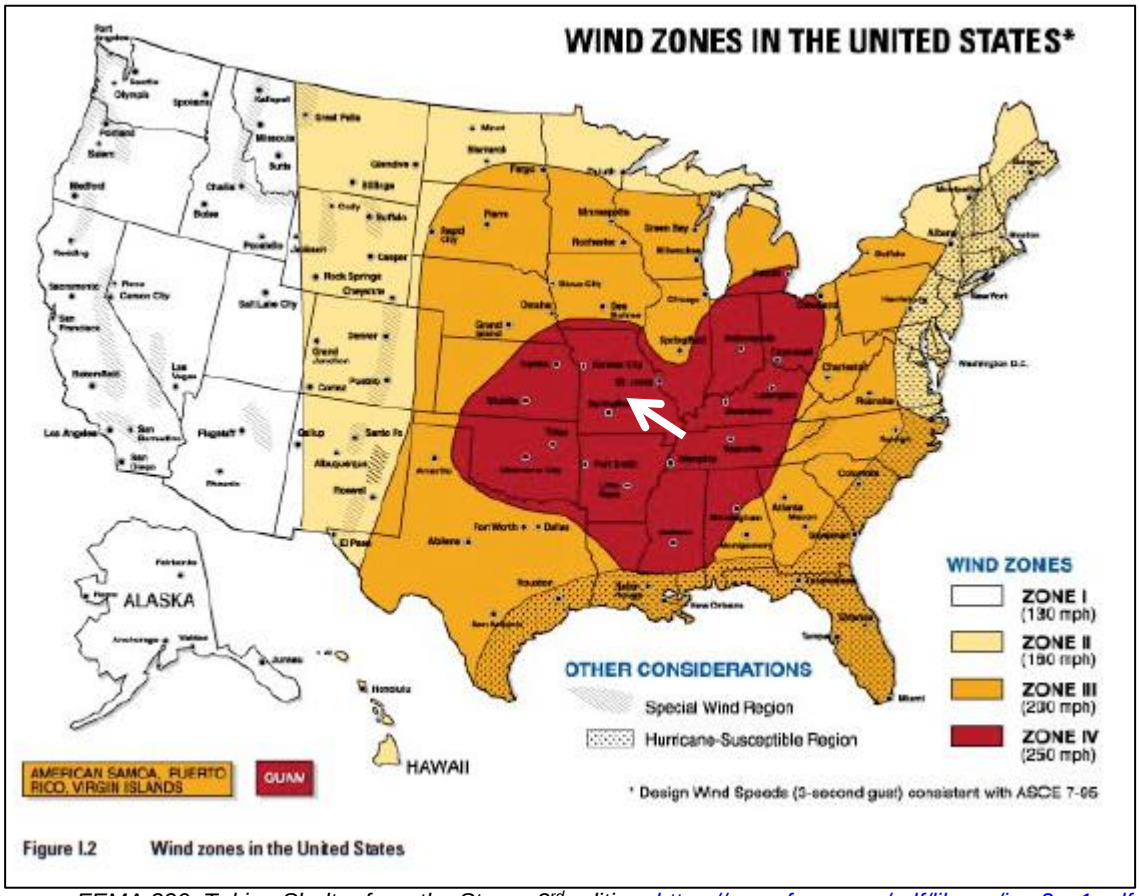
Figure 3.54. Location and Frequency of Lightning in Missouri



Source: National Weather Service,
http://www.vaisala.com/en/products/thunderstormandlightningdetectionsystems/Pages/NLDN .aspx
** Pulaski County is indicated by a white arrow.*

There are four wind zones that are characterized across the United States. These zones range from Zone I to Zone IV. All of Missouri as well as most of the Midwest fall within Zone IV. Within Zone IV, winds can reach up to 250 mph (**Figure 3.55**).

Figure 3.55. Wind Zones in the United States



Source: FEMA 320, Taking Shelter from the Storm, 3rd edition, https://www.fema.gov/pdf/library/ism2_s1.pdf
**Pulaski County is indicated by a white arrow.*

Severity/Magnitude/Extent

Severe thunderstorm losses are usually attributed to the associated hazards of hail, downburst winds, lightning and heavy rains. Losses due to hail and high wind are typically insured losses that are localized and do not result in presidential disaster declarations. However, in some cases, impacts are severe and widespread and assistance outside state capabilities is necessary. Hail and wind also can have devastating impacts on crops. Severe thunderstorms/heavy rains that lead to flooding are discussed in the flooding hazard profile. Hailstorms cause damage to property, crops, and the environment, and can injure and even kill livestock. In the United States, hail causes more than $1 billion in damage to property and crops each year. Even relatively small hail can shred plants to ribbons in a matter of minutes. Vehicles, roofs of buildings and homes, and landscaping are also commonly damaged by hail. Hail has been known to cause injury to humans, occasionally fatal injury.

In general, assets in the county vulnerable to thunderstorms with lightning, high winds, and hail include people, crops, vehicles, and built structures. Although this hazard results in high annual losses, private property insurance and crop insurance usually cover the majority of losses. Considering insurance coverage as a recovery capability, the overall impact on jurisdictions is reduced.
Most lightning damages occur to electronic equipment located inside buildings. But structural damage can also occur when a lightning strike causes a building fire. In addition, lightning strikes can cause damages to crops if fields or forested lands are set on fire. Communications equipment and warning transmitters and receivers can also be knocked out by lightning strikes.

Based on information provided by the Tornado and Storm Research Organization (TORRO), **Table 3.56** below describes typical damage impacts of the various sizes of hail.

Table 3.56. Tornado and Storm Research Organization Hailstorm Intensity Scale

Intensity Category	Diameter (mm)	Diameter (inches)	Size Description	Typical Damage Impacts
Hard Hail	5 - 9	0.2 - 0.4	Pea	No damage
Potentially Damaging	10 - 15	0.4 - 0.6	Mothball	Slight general damage to plants, crops
Significant	16 - 20	0.6 - 0.8	Marble, grape	Significant damage to fruit, crops, vegetation
Severe	21 - 30	0.8 - 1.2	Walnut	Severe damage to fruit and crops, damage to glass, plastic structures, paint and wood scored
Severe	31 - 40	1.2 – 1.6	Pigeon's egg > squash ball	Widespread glass damage, vehicle bodywork damage
Destructive	41 – 50	1.6 – 2.0	Golf ball > pullet's egg	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
Destructive	51 - 60	2.0 - 2.4	Hen's egg	Bodywork of grounded aircraft dented, brick walls pitted
Destructive	61 – 75	2.4 – 3.0	Tennis ball > cricket ball	Severe roof damage, risk of serious injuries
Destructive	76 – 90	3.0 – 3.5	Large orange > soft ball	Severe damage to aircraft bodywork
Super Hailstorms	91 – 100	3.6 – 3.9	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open.
Super Hailstorms	>100	4.0+	Melon	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open.

Source: Tornado and Storm Research Organization (TORRO), Department of Geography, Oxford Brookes University
Notes: In addition to hail diameter, factors including number and density of hailstones, hail fall speed and surface wind speeds affect severity. http://www.torro.org.uk/site/hscale.php

Straight-line winds are defined as any thunderstorm wind that is not associated with rotation (i.e., is not a tornado). It is these winds, which can exceed 100 miles per hour, which represent the most common type of severe weather. They are responsible for most wind damage related to thunderstorms. Since thunderstorms do not have narrow tracks like tornadoes, the associated wind damage can be extensive and affect entire (and multiple) counties. Objects like trees, barns, outbuildings, high-profile vehicles, and power lines/poles can be toppled or destroyed, and roofs, windows, and homes can be damaged as wind speeds increase.

Between 1999 and 2019, there was 1 recorded crop insurance claim for Thunderstorms, lightning, high wind, and hail in Pulaski County.

The onset of thunderstorms with lightning, high wind, and hail is generally rapid. Duration is less than six hours and warning time is generally six to twelve hours. Nationwide, lightning kills 75 to 100 people each year. Lightning strikes can also start structural and wildland fires, as well as damage electrical systems and equipment.

Previous Occurrences

Due to the lack of available parameters, heavy rain is utilized in the place of thunderstorms in **Table 3.57** for events between 2009 and 2019. Moreover, thunderstorm wind and strong wind was included with high winds. NCEI data was obtained for lightning, and hail events between 1999 and 2019 as well (**Table 3.58** and **Table 3.59).** However, limitations to the use of NCEI reported lightning events include the fact that only lightning events that result in fatality, injury and/or property and crop damage are in the NCEI.

Table 3.57. NCEI Pulaski County Heavy Rain Events Summary, 2009 to 2019

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Max Rainfall (Inch)
2009	1	0	0	0	3.15
2011	1	0	0	0	2.74
2012	2	0	0	0	3.59
2013	3	0	0	0	6.00
2015	3	0	0	0	10.28
2016	1	0	0	0	4.01
2017	2	0	0	0	6.37
2018	8	0	0	0	4.44
2019	3	0	0	0	2.95
TOTAL	**24**	**0**	**0**	**0**	**-**

Source: NCEI, data accessed [7/23/2020]

Table 3.58. NCEI Pulaski County High Wind Events Summary, 1999 to 2019 (Thunderstorm)

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Max Estimated Gust (kts.)
1999	1	0	0	0	62 kts.
2000	6	0	0	$57K	68 kts.
2001	2	0	0	0	57 kts.
2002	2	0	0	$10K	62 kts.
2003	6	0	0	0	70 kts.
2004	4	0	0	$100K	70 kts.

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Max Estimated Gust (kts.)
2005	8	0	0	0	55 kts.
2006	2	0	0	0	55 kts.
2007	1	0	0	0	50 kts.
2008	10	0	0	$15K	61 kts.
2009	5	0	0	$20.5K	70 kts.
2010	10	0	0	$14K	56 kts.
2011	3	0	0	$6K	52 kts.
2012	8	0	0	$11K	52 kts.
2013	6	0	0	$20K	61 kts.
2014	4	0	0	$5K	52 kts.
2015	3	0	0	0	52 kts.
2016	4	0	0	$5K	55 kts.
2017	10	0	0	$41K	67 kts.
2018	5	0	0	$5K	60 kts.
2019	11	0	0	$142K	55 kts.
TOTAL	**109**	**0**	**0**	**$4,515K**	**-**

Source: NCEI, data accessed [7/23/2020]

Table 3.59. NCEI Pulaski County Lightning Events Summary, 1999 to 2019

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damage
2011	1	1	0	0	0
2016	1	0	0	$25K	0
Total	**2**	**1**	**0**	**$25K**	**0**

Source: NCEI, data accessed [7/23/2020]

Table 3.60. NCEI Pulaski County Hail Events Summary, 1999 to 2019

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Max Hail Size (inch)
1999	1	0	0	0	1.75
2000	2	0	0	0	1.5
2001	8	0	0	$20K	1
2002	6	0	0	0	1.75
2003	20	0	0	0	2.75
2004	3	0	0	0	0.88
2005	11	0	0	0	0.88
2006	5	0	0	0	1.75
2007	7	0	0	0	1.5
2008	15	0	0	0	1.75
2009	2	0	0	0	1.25
2010	6	0	0	0	0.88
2011	8	0	0	0	1.75
2012	11	0	0	0	1.50
2013	2	0	0	0	1.75
2014	3	0	0	0	1.0
2015	2	0	0	0	1.0
2016	7	0	0	0	1.5
2017	7	0	0	0	1.5
2018	2	0	0	0	1
2019	2	0	0	$2K	1.25
Total	**93**	**0**	**0**	**$22K**	**-**

Source: NCEI, data accessed [7/23/2020]

Agriculture is an important piece of the economy for Pulaski County. The table below (**0**) summarize past crop damages as indicated by crop insurance claims. The tables illustrate the magnitude of the impact on the planning area's agricultural economy. It should be noted that the USDA Risk Management Agency data does not align directly with the breakdown of hazards listed here. The claims database only listed "Excessive Moisture/Precipitation/ Rain" and "Wind/Excessive Wind" as two causes of loss categories that align with this hazard. Between 1999 and 2019 a total of 65 insurance claims were paid out for damages due to excessive moisture, precipitation. The total claims paid for this cause were $463,824.50.

For the time period 1999-2019, there were no crop insurance claim made for wind and excessive wind damage.

Table 3.61. Crop Insurance Claims Paid In Pulaski County from Excessive Moisture/ Precipitation/Rain 1999-2019

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2002	All Other Crops	Excessive Moisture/Precipitation/Rain	$1,811.00
2003	All Other Crops	Excessive Moisture/Precipitation/Rain	$252.00
2008	All Other Crops	Excessive Moisture/Precipitation/Rain	$35,999.00
2010	All Other Crops	Excessive Moisture/Precipitation/Rain	$3,563.00
2013	All Other Crops	Excessive Moisture/Precipitation/Rain	$6,406.00
2014	All Other Crops	Excessive Moisture/Precipitation/Rain	$1,367.00
2015	Wheat All Other Crops	Excessive Moisture/Precipitation/Rain	$15,174.00 $28,477.00
2017	All Other Crops	Excessive Moisture/Precipitation/Rain	$3,659.00
2019	All Other Crops	Excessive Moisture/Precipitation/Rain	$11,928.00
Total	**65**	-	**$108,636.00**

*Source: USDA Risk Management Agency, Insurance Claims, **https://www.rma.usda.gov/data/cause***

Probability of Future Occurrence

From the data obtained from the NCEI [37], annual average percent probabilities were calculated for heavy rainfall, high winds, lightning, and hail. Heavy rainfall has a 100 percent annual average percent probability of occurrence (24 events/11 years x 100) (**Table 3.62**). Heavy rainfall events can be found in **Table 3.57**. The annual average percent probability for high winds within the county is 100 percent (109 events/21 years x 100) (**0).** High wind events can be found in **Table 3.58.**

Lightning events has a 9.5 percent annual average percent probability (2 events/21 years x 100). Lightning events can be found in **Table 3.59.**

Lastly, the annual average percent probability of hail occurrence is 100% (93 events/21 years) with an average of 4.4 events per year (**Table 3.65**). Hail events can be found in **0**.

Table 3.62. Annual Average % Probability of Heavy Rain in Pulaski County

Location	Annual Avg. % P
Pulaski County	100%

*P = probability; see page 3.24 for definition.

[37] http://www.ncdc.noaa.gov/stormevents/choosedates.jsp?statefips=29%2CMISSOURI

Table 3.63. Annual Average % Probability of High Winds in Pulaski County

Location	Annual Avg. % P	Avg. # of Events
Pulaski County	100%	5.19

*P = probability; see page 3.24 for definition.

Table 3.64. Annual Average % Probability of Lightning in Pulaski County

Location	Annual Avg. % P
Pulaski County	9.5%

*P = probability; see page 3.24 for definition.

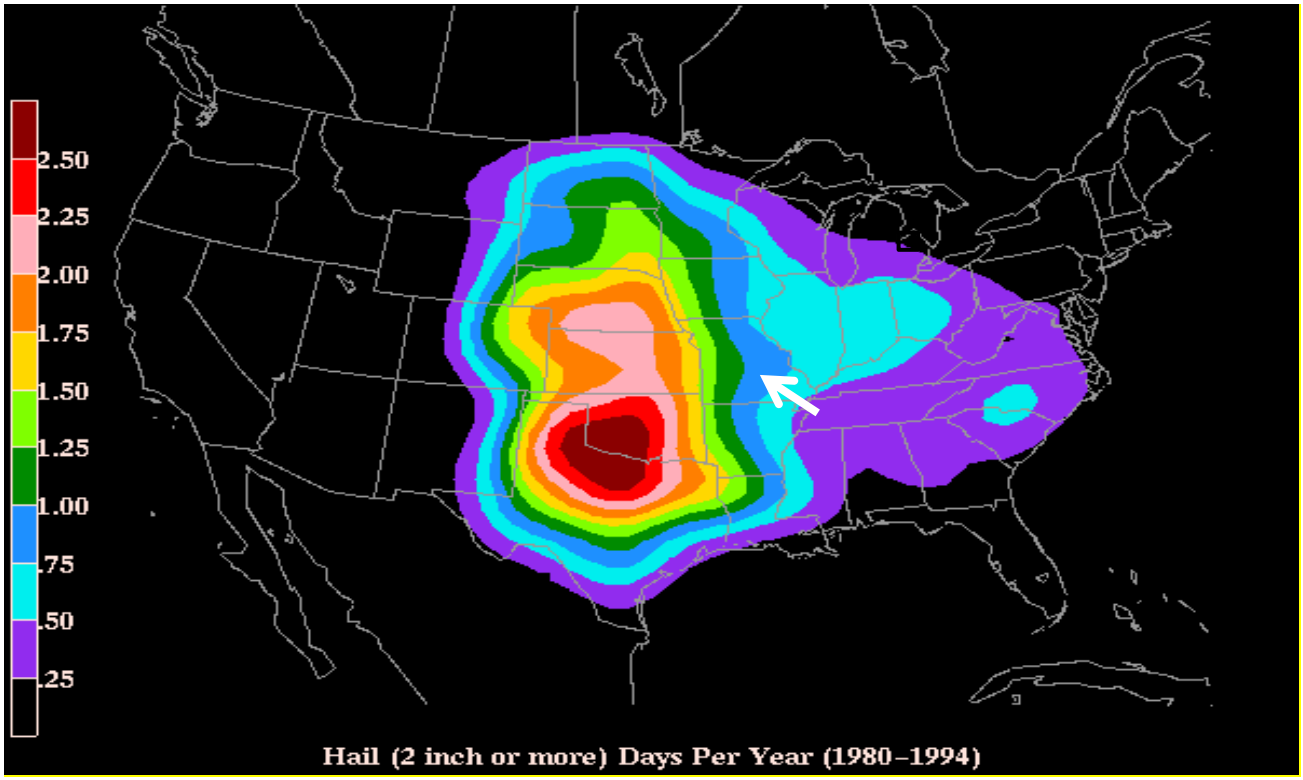
Table 3.65. Annual Average % Probability of Hail in Pulaski County

Location	Annual Avg. % P	Avg. # of Events
Pulaski County	100%	4.4

*P = probability; see page 3.24 for definition.

Figure 3.56 depicts a map based on hailstorm data from 1980-1994. It shows the probability of hailstorm occurrence (2" diameter or larger) based on number of days per year. The location of Pulaski County is identified with a white arrow.

Figure 3.56. Annual Hailstorm Probability (2'' diameter or larger), 1980 - 1994



Source: NSSL, http://www.nssl.noaa.gov/users/brooks/public_html/bighail.gif
** White arrow indicates Pulaski County*

Vulnerability

Vulnerability Overview

Severe thunderstorm losses are usually attributed to the associated hazards of hail, downburst winds, lightning and heavy rains. Losses due to hail and high wind are typically insured losses that are localized and do not result in presidential disaster declarations. However, in some cases, impacts are severe and widespread and assistance outside state capabilities is necessary. Hail and wind also can have devastating impacts on crops. Severe thunderstorms/heavy rains that lead to flooding are discussed in the flooding hazard profile.

Hailstorms cause damage to property, crops, and the environment, and can injure and even kill livestock. In the United States, hail causes more than $1 billion in damage to property and crops each year. Even relatively small hail can shred plants to ribbons in a matter of minutes. Vehicles, roofs of buildings and homes, and landscaping are also commonly damaged by hail. Hail has been known to cause injury to humans, occasionally fatal injury.

In general, assets in the County vulnerable to thunderstorms with lightning, high winds, and hail include people, crops, vehicles, and built structures. Although this hazard results in high annual losses, private property insurance and crop insurance usually cover the majority of losses. Considering insurance coverage as a recovery capability, the overall impact on jurisdictions is reduced.

Most lightning damages occur to electronic equipment located inside buildings. But structural damage

can also occur when a lightning strike causes a building fire. In addition, lightning strikes can cause damages to crops, if fields or forested lands are set on fire. Communications equipment and warning transmitters and receivers can also be knocked out by lightning strikes. [38]

Data was obtained from the 2018 Missouri State Hazard Mitigation Plan for vulnerability overview and analysis. Since severe thunderstorms occur frequently throughout Missouri, the method used to determine vulnerability to severe thunderstorms was statistical analysis of data from several sources including: National Centers for Environmental Information (NCEI) storm events data, HAZUS Building Exposure Value data, housing density and mobile home data from the U.S. Census (2018 ACS), and the calculated Social Vulnerability Index for Missouri Counties from the Hazards and Vulnerability Research Institute in the Department of Geography at the University of South Carolina.[39]

From the data collected, six factors were considered in determining vulnerability to lightning as follows: housing density, building exposure, percentage of mobile homes, social vulnerability, likelihood of occurrence and average annual property loss. A rating value of one through five was assigned to each factor. Rating values are as follows:

1) Low
2) Low-medium
3) Medium
4) Medium-high
5) High

Table 3.66 illustrates the factors considered and ranges for the rating values assigned.

Once the ranges were determined and applied to all factors considered in the analysis for wind, hail and lightning, they were rated individually and factored together to determine an overall vulnerability rating for thunderstorms. **Table 3.67** provides the calculated ranges applied to determine overall vulnerability of Missouri counties to severe thunderstorms.

[38] http://www.vaisala.com/en/products/thunderstormandlightningdetectionsystems/Pages/NLDN.aspx and http://www.lightningsafety.noaa.gov/ Potential Losses to Existing Development

[39] 2018 Missouri Hazard Mitigation Plan

Table 3.66. Ranges for Severe Thunderstorm Vulnerability Factor Ratings

Factors Considered	Low (1)	Low Medium (2)	Medium (3)	Medium High (4)	High (5)
Common Factors					
Housing Density (# per sq. mile)	4.11-44.23	44.24-134.91	134.92-259.98	259.99-862.69	862.70-2836.23
Building Exposure ($)	$269,532-$3,224,641	$3,224,642-$8,792,829	$8,792,830-$22,249,768	$22,249,769-$46,880,213	$46,880,214-$138,887,850
Percent Mobile Homes	0.2-4.5%	4.6-8.8%	8.9-14%	14.1-21.2%	21.3-33.2%
Social Vulnerability	1	2	3	4	5
Wind					
Likelihood of Occurrence (# of events/ yrs. of data)	0.90 - 2.90	2.91 - 4.57	4.58 - 7.00	7.01 - 12.05	12.06 - 20.86
Average Annual Property Loss (annual property loss/ yrs of data)	$0.00 – $81,047.62	$81,047.63 – $200,428.57	$200,428.58 – $363,500.00	$363,500.01 – $837,242.86	$837,242.87 – $2,481,809.52
Hail					
Likelihood of Occurrence (# of events/ yrs. of data)	1.19 - 2.76	2.77 - 4.86	4.87 - 7.81	7.82 - 12.38	12.39 - 18.10
Average Annual Property Loss (annual property loss/ yrs. of data)	$0.00 - $41,547.62	$41,547.63 – $171,980.95	$171,980.96 – $467,857.14	$467,857.15 – $9,714,523.81	$9,714,523.82 – $40,594,285.71
Lightning					
Likelihood of Occurrence (# of events/ yrs. of data)	0-.05	.06-0.14	0.15-0.29	0.30-0.43	0.44-0.67
Average Annual Property Loss (annual property loss/ yrs. Of data)	$0-$476.19	$476.20-$1,904.76	$1,904.77-$7,476.19	$7,476.20-$13,142.86	$13,142.87-$57,000

Source: 2018 Missouri Hazard Mitigation Plan

Table 3.67. Ranges for Severe Thunderstorm Combined Vulnerability Rating

	Low (1)	Low Medium (2)	Medium (3)	Medium High(4)	High (5)
Severe Thunderstorm Combined Vulnerability	12-16	17-19	20-23	24-29	30-36

Source: 2018 Missouri Hazard Mitigation Plan

According to the Hazus data included in the 2018 state plan, Pulaski County has total building exposure to severe thunderstorms of $5,334,660,000. **Table 3.68** shows housing density, building exposure, SOVI and mobile home data for Pulaski County. The county's building exposure and housing density rating is low, while the percent of mobile homes in the county is rated as low at 9.7 percent of the housing stock. **Table 3.69**, also pulled from the state plan, provides data on the number of events and likelihood of occurrence and occurrence rating for high wind, hail and lightning.

Table 3.68. Pulaski County Housing Density, Building Exposure, SOVI and Mobile Home Data

Total Building Exposure (Hazus)	Building Exposure Rating	Housing Density	Housing Density Rating	SOVI Ranking	SOVI Ranking Rating	Percent Mobile Homes	Percent Mobile Homes Rating
$5,334,660,000	2	33.60	1	Low	1	9.7	3

Source: 2018 Missouri Hazard Mitigation Plan

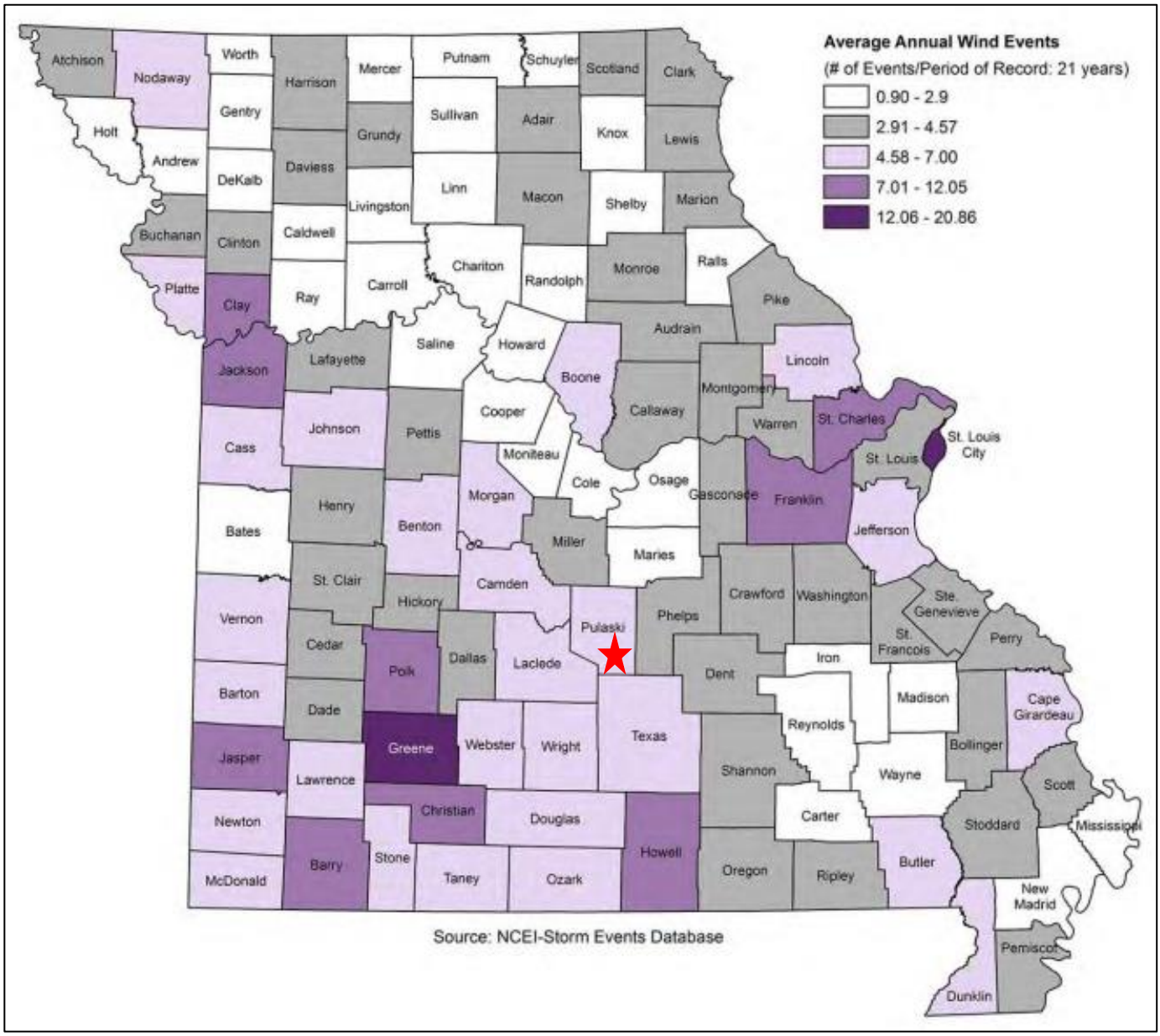
Table 3.69. Number of High Wind, Hail and Lightning Events, Likelihood of Occurrence and Associated Ratings for Pulaski County

High Wind			Hail			Lightning		
Total Number of Events	Likelihood of Occurrence	Likelihood of Occurrence Rating	Total Number of Events	Likelihood of Occurrence	Likelihood of Occurrence Rating	Total Number of Events	Likelihood of Occurrence	Likelihood of Occurrence Rating
101	4.810	3	140	6.667	3	2	0.095	2

Source: 2018 Missouri Hazard Mitigation Plan

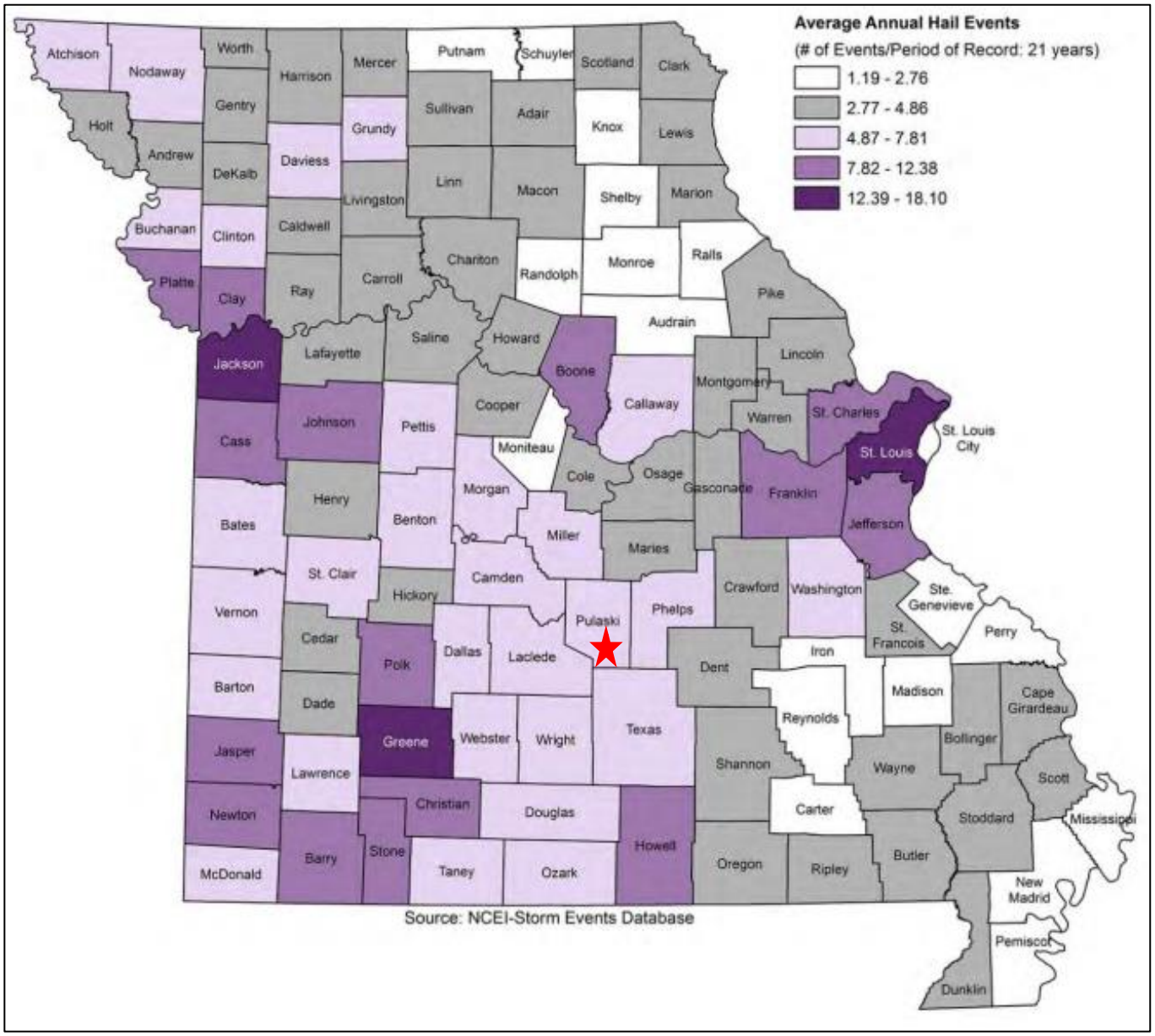
Figure 3.57 through **Figure 3.59** have been pulled from the 2018 Missouri Hazard Mitigation Plan and further depict the average annual likelihood of occurrence of high winds, hail, and lightning events in Missouri.

Figure 3.57. Average Annual High Wind Events (40 MPH and Higher)



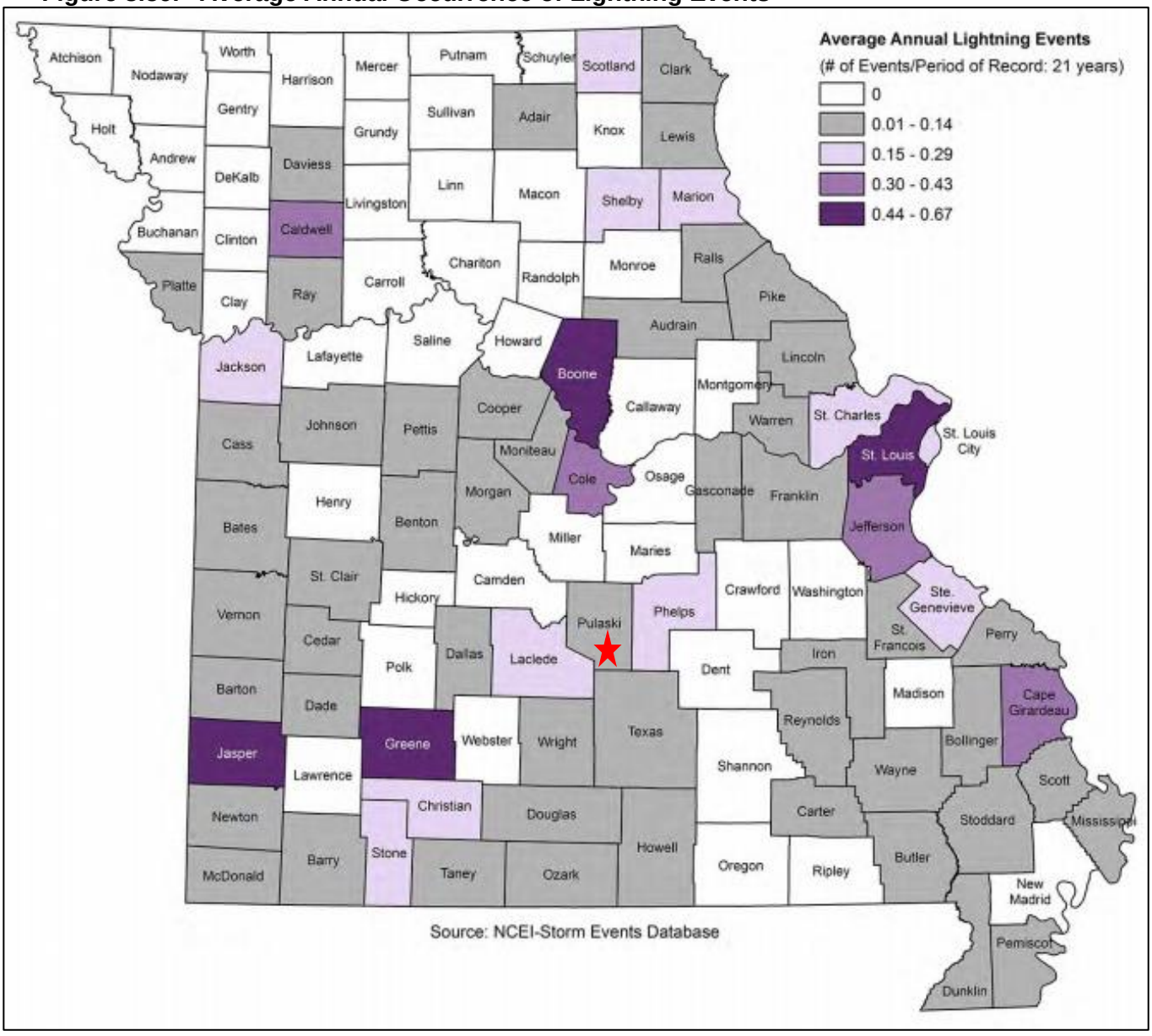
*Source: 2018 Missouri State Hazard Mitigation Plan, *Red star indicates Pulaski County*

Figure 3.58. Average Annual Occurrence of Damaging Hail Events



*Source: 2018 Missouri State Hazard Mitigation Plan, *Red star indicates Pulaski County*

Figure 3.59. Average Annual Occurrence of Lightning Events



*Source: 2018 Missouri State Hazard Mitigation Plan, *Red star indicates Pulaski County*

0 provides additional data obtained from the National Centers for Environmental Information for property loss to complete the overall vulnerability analysis.

Table 3.70. Annualized Property Loss and Associated Ratings for Pulaski County

High Wind		Hail		Lightning	
Total Annualized Property Loss	Total Annualized Property Loss Rating	Total Annualized Property Loss	Total Annualized Property Loss Rating	Total Annualized Property Loss	Total Annualized Property Loss Rating
$22,786	1	$1,429	1	$1,190	2

Source: 2018 Missouri State Hazard Mitigation Plan

After ranges were applied to all factors in the analysis for wind, hail, and lightning, they were weighted equally and factored together to determine an overall vulnerability rating. Following, a combined vulnerability rating was calculated. The calculated ranges applied to determine overall vulnerability of Missouri counties to severe thunderstorms can be found in **Table 3.67**. **Table 3.71** provides the calculated vulnerability rating for the severe thunderstorm hazard. **Figure 3.60** that follows provides the mapped results of this analysis by county[40].

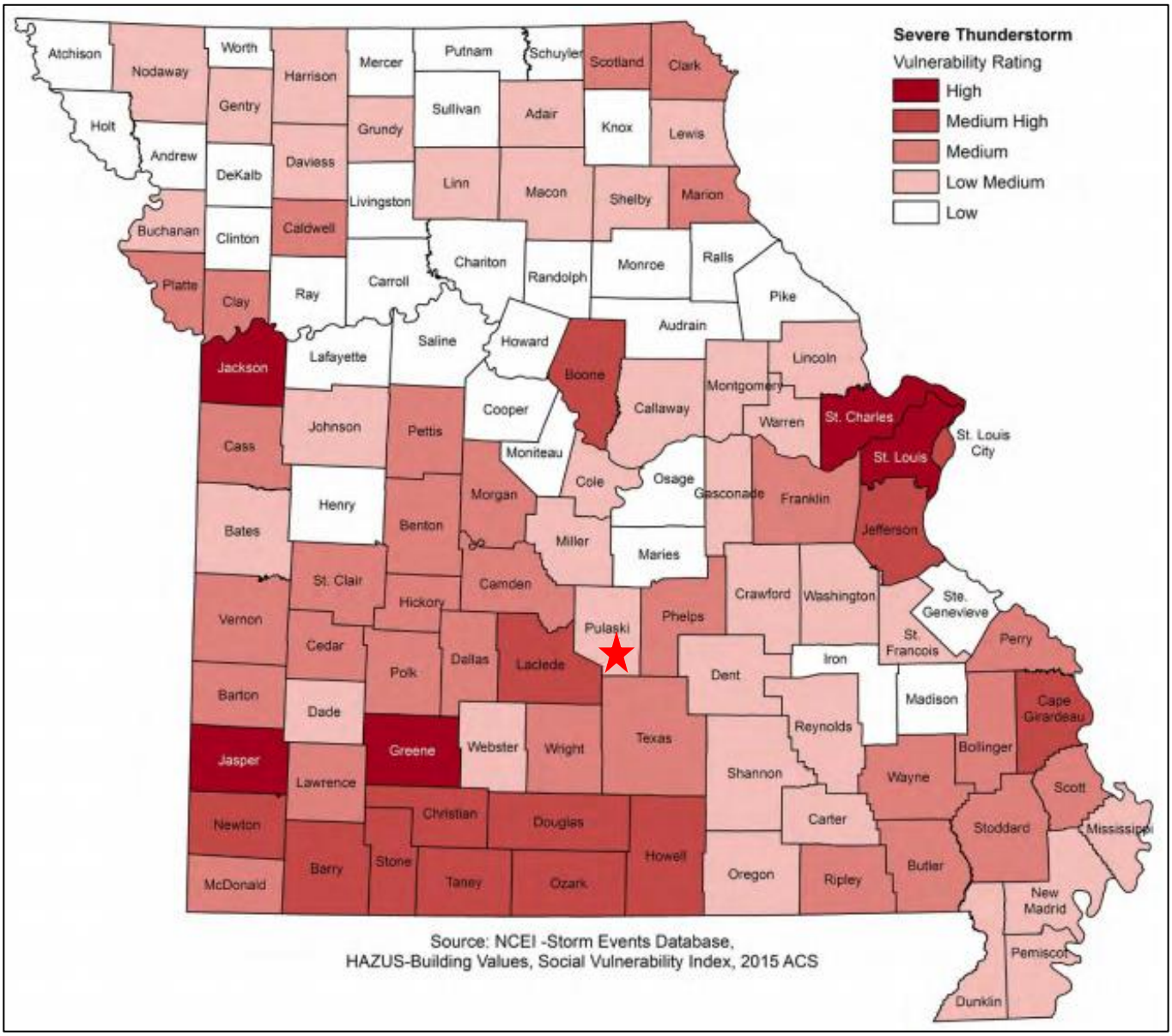
Table 3.71. Severe Thunderstorm Vulnerability Rating for Pulaski County

Total Sum of All Factor Ratings	Overall Vulnerability Rating for Thunderstorms	Overall Vulnerability Rating for Thunderstorms Description
19	2	Low Medium

Source: 2018 Missouri State Hazard Mitigation Plan

[40] 2018 Missouri State Hazard Mitigation Plan

Figure 3.60. Vulnerability Summary for Severe Thunderstorms



*Source: 2018 Missouri State Hazard Mitigation Plan, *Red star indicates Pulaski County*

Potential Losses to Existing Development

According to the NCEI Pulaski County experienced approximately $4,562,000 in property damages from severe thunderstorms between 1999 and 2019. This is an average of $217,238.10 in losses due to this hazard per year. Most of the property damage caused by storms is covered by private insurance and data is not available. In addition, most damage from severe thunderstorms occurs to vehicles, roofs, siding, and windows. However, there is a variety of impacts from severe thunderstorms. Moreover, secondary effects from hazards, falling trees and debris, can cause destruction within the planning area.

Previous and Future Development

Population trends from 2010 to 2018 for Pulaski County indicate that the population in unincorporated areas has fallen by an estimated 3.44 percent. The city of St. Robert's population has increased by a significant 32.8 percent. The city of Dixon, however, has fallen by 18.92 percent. Most communities had modest increases. So it is reasonable to assume that similar growth in the communities will continue and the population in unincorporated areas may fall slightly. It is difficult to determine future impacts, however, anticipated development in each jurisdiction will result in increased exposure. Likewise, increased development of residential structures will increase jurisdiction's vulnerability to damages from severe thunderstorms/ high winds/lightning/hail.

Hazard Summary by Jurisdiction

Although thunderstorms/high winds/lightning/hail events are area-wide, there are demographics indicating higher losses in one jurisdiction as compared to another. Jurisdictions with high percentages of housing built before 1939 are more prone to damages from severe thunderstorms. The jurisdiction with the highest percent of houses build before 1939 is the City of Dixon with 14.8 percent. Additionally, the city of Richland has a higher percentage of mobile homes and unsecured buildings, which are more prone to damages.

Problem Statement

The NCEI Storm Events Database notes over 228 thunderstorm and wind events in Pulaski County since 1999, with over $4,562,000.00 in property and crop damages reported. Early warnings are possibly the best hope for residents when severe weather strikes. Cities that do not already possess warning systems – whether that is storm sirens or automated email/text/phone call systems - should plan to invest in such a system. Additional public awareness also includes coverage by local media sources. Storm shelters are another important means of mitigating the effects of severe thunderstorms. A community-wide shelter program should be adopted for residents who may not have adequate shelter in their homes. Residents should also be encouraged to build their own storm shelters to prepare for emergencies. Local governments should encourage residents to purchase weather radios to ensure that everyone has sufficient access to information in times of severe weather.

3.4.9 Tornado

Some specific sources for this hazard are:

- 2018 Missouri State Hazard Mitigation Plan, Chapter 3, Section 3.3.10, Page 3.355 https://sema.dps.mo.gov/docs/programs/LRMF/mitigation/MO_Hazard_Mitigation_Plan2018.pdf
- NWS Enhanced F Scale for Tornado Damage including damage indicators and degrees of damage www.spc.noaa.gov/faq/tornado/ef-scale.html;
- Tornado Activity in the U.S. map (1950-2006), FEMA 320, Taking Shelter from the Storm, 3rd edition; https://www.fema.gov/fema-p-320-taking-shelter-storm-building-safe-room-yourhome-or-small-business
- Tornado Alley in the U.S. map, http://tornadochaser.com/education/tornado-alley/
- National Centers for Environmental Information, http://www.NCEI.noaa.gov/stormevents/
- Tornado History Project, map of tornado events, http://www.tornadohistoryproject.com/tornado/Missouri
- Missouri Hazard Mitigation Viewer
  http://bit.ly/MoHazardMitigationPlanViewer2018 - Website
  https://drive.google.com/file/d/1bPkc0jgF9ofwQLnTL9N0u-oPFWi9hkst/view - User Guide
  - Number of Tornadoes by County
  - Percentage of Mobile Homes in 2015 by County
  - Average annual tornado events by County
  - Vulnerability to tornado events by County
  - Annualized property loss for tornado events by County
  - Annualized property loss for tornado events by County

Hazard Profile

Hazard Description

The NWS defines a tornado as “a violently rotating column of air extending from a thunderstorm to the ground.” It is usually spawned by a thunderstorm and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. Often, vortices remain suspended in the atmosphere as funnel clouds. When the lower tip of a vortex touches the ground, it becomes a tornado.

High winds not associated with tornadoes are profiled separately in this document in **Section 0,** Thunderstorm/High Wind/Hail/Lightning.

Essentially, tornadoes are a vortex storm with two components of winds. The first is the rotational winds that can measure up to 500 miles per hour, and the second is an uplifting current of great strength. The dynamic strength of both these currents can cause vacuums that can overpressure structures from the inside.

Although tornadoes have been documented in all 50 states, most of them occur in the central United States due to its unique geography and presence of the jet stream. The jet stream is a high-velocity stream of air that separates the cold air of the north from the warm air of the south. During the winter, the jet stream flows west to east from Texas to the Carolina coast. As the sun moves north, so does the jet stream, which at summer solstice flows from Canada across Lake Superior to Maine. During its move northward in the spring and its recession south during the fall, the jet stream crosses Missouri, causing the large thunderstorms that breed tornadoes.

A typical tornado can be described as a funnel-shaped cloud in contact with the earth's surface that is "anchored" to a cloud, usually a cumulonimbus. This contact on average lasts 30 minutes and covers an average distance of 15 miles. The width of the tornado (and its path of destruction) is usually about 300 yards. However, tornadoes can stay on the ground for upward of 300 miles and can be up to a mile wide. The National Weather Service, in reviewing tornadoes occurring in Missouri between 1950 and 1996, calculated the mean path length at 2.27 miles and the mean path area at 0.14 square mile.

The average forward speed of a tornado is 30 miles per hour but may vary from nearly stationary to 70 miles per hour. The average tornado moves from southwest to northeast, but tornadoes have been known to move in any direction. Tornadoes are most likely to occur in the afternoon and evening, but have been known to occur at all hours of the day and night.

Geographic Location

In Missouri, tornadoes occur most frequently between April and June, with April and May usually producing the most tornadoes. However, tornadoes can arise at any time of the year. While tornadoes can happen at any time of the day or night, they are most likely to occur between 3 p.m. and 9 p.m. Furthermore, tornadoes can occur anywhere across the state of Missouri, including Pulaski County.

Severity/Magnitude/Extent

Tornadoes are the most violent of all atmospheric storms and are capable of tremendous destruction. Wind speeds can exceed 250 miles per hour and damage paths can be more than one mile wide and 50 miles long. Tornadoes have been known to lift and move objects weighing more than 300 tons a distance of 30 feet, toss homes more than 300 feet from their foundations, and siphon millions of tons of water from water bodies. Tornadoes also can generate a tremendous amount of flying debris or "missiles," which often become airborne shrapnel that causes additional damage. If wind speeds are high enough, missiles can be thrown at a building with enough force to penetrate windows, roofs, and walls. However, the less spectacular damage is much more common.

Tornado magnitude is classified according to the EF- Scale (or the Enhance Fujita Scale, based on the original Fujita Scale developed by Dr. Theodore Fujita, a renowned severe storm researcher). The EF-Scale (**Table 3.72**) attempts to rank tornadoes according to wind speed based on the damage caused. This update to the original F Scale was implemented in the U.S. on February 1, 2007.

Table 3.72. Enhanced F Scale for Tornado Damage

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

Source: The National Weather Service, www.spc.noaa.gov/faq/tornado/ef-scale.html

The wind speeds for the EF scale and damage descriptions are based on information on the NOAA

Storm Prediction Center as listed in **Table 3.73.** The damage descriptions are summaries. For the actual EF scale it is necessary to look up the damage indicator (type of structure damaged) and refer to the degrees of damage associated with that indicator.

Table 3.73. Enhanced Fujita Scale with Potential Damage

Enhanced Fujita Scale			
Scale	**Wind Speed (mph)**	**Relative Frequency**	**Potential Damage**
EF0	**65-85**	**53.5%**	Light. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e. those that remain in open fields) are always rated EF0).
EF1	**86-110**	**31.6%**	Moderate. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	**111-135**	**10.7%**	Considerable. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes complete destroyed; large trees snapped or uprooted; light object missiles generated; cars lifted off ground.
EF3	**136-165**	**3.4%**	Severe. Entire stores of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	**166-200**	**0.7%**	Devastating. Well-constructed houses and whole frame houses completely levelled; cars thrown and small missiles generated.
EF5	**>200**	**<0.1%**	Explosive. Strong frame houses levelled off foundations and swept away; automobile-sized missiles fly through the air in excess of 300 ft.; steel reinforced concrete structure badly damaged; high rise buildings have significant structural deformation; incredible phenomena will occur.

Source: NOAA Storm Prediction Center, http://www.spc.noaa.gov/efscale/ef-scale.html

Enhanced weather forecasting has provided the ability to predict severe weather likely to produce tornadoes days in advance. Tornado watches can be delivered to those in the path of these storms several hours in advance. Lead time for actual tornado warnings is about 30 minutes. Tornadoes have been known to change paths very rapidly, thus limiting the time in which to take shelter. Tornadoes may not be visible on the ground if they occur after sundown or due to blowing dust or driving rain and hail.

Previous Occurrences

Table 3.74 illustrates NCEI data reported for tornado events and damages from 1999 to 2019 in the planning area.

There are limitations to the use of NCEI tornado data that must be noted. For example, one tornado may contain multiple segments as it moves geographically. A tornado that crosses a county line or state

line is considered a separate segment for the purposes of reporting to the NCEI. Also, a tornado that lifts off the ground for less than 5 minutes or 2.5 miles is considered a separate segment. If the tornado lifts off the ground for greater than 5 minutes or 2.5 miles, it is considered a separate tornado. Tornadoes reported in Storm Data and the Storm Events Database are in segments.

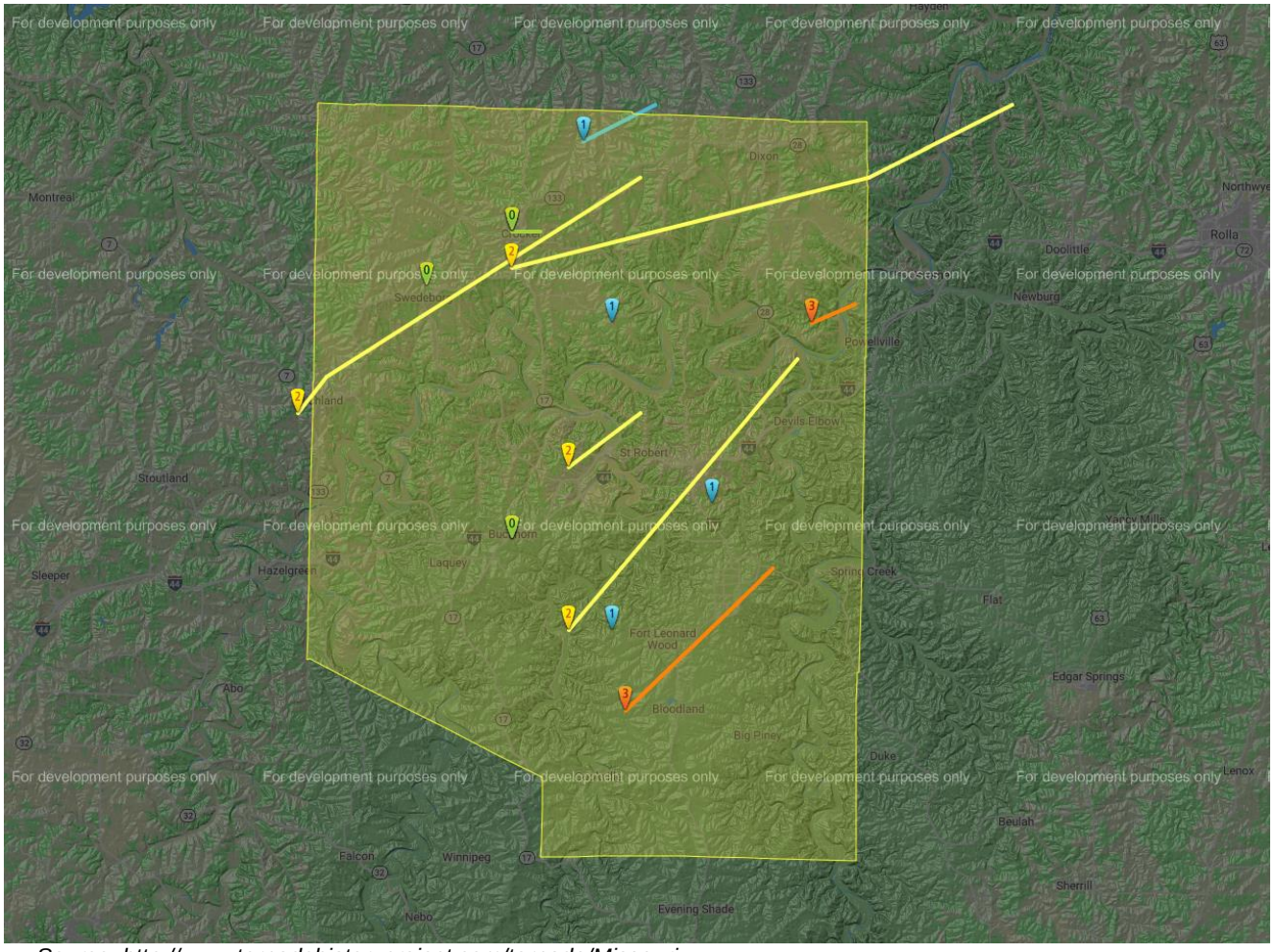
Table 3.74. Recorded Tornadoes in Pulaski County, 1999 – 2019

Date	Beginning Location	Ending Location	Length (miles)	Width (yards)	F/EF Rating	Death	Injury	Property Damage	Crop Damages
10/23/2001	-	Crocker	.5	75	F0	0	0	0	0
05/04/2003	-	Swedeborg	.2	20	F0	0	0	0	0
05/06/2003	5N Waynesville	5N Waynesville	1	100	F1	0	0	$500,000	0
01/07/2008	2NNW Hooker	3SSE Franks	1.77	400	EF3	0	3	$1,000,000	0
12/31/2010	2W Bloodland	3ENE (TBN) Ft. Leonard Wood	7.5	500	EF3	0	4	$90,000,000	0
05/23/2019	Laquey	Hanna	9.79	440	EF1	0	0	$155,000	
Total	**6**	**-**	**-**	**-**	**-**	**0**	**9**	**$91,735,000**	**0**

Source: National Centers for Environmental Information, http://www.ncdc.noaa.gov/stormevents/

Figure 3.61 depicts historic tornado paths across Pulaski County.

Figure 3.61. Pulaski County Map of Historic Tornado Paths (1950 – 2017)



Source: http://www.tornadohistoryproject.com/tornado/Missouri

According to the USDA Risk Management Agency's record, there were no insurance payments in Pulaski County for crop damages as a result of tornadoes between 1999 and 2019.

Probability of Future Occurrence

From the data obtained from the NCEI[41], an annual average percent probability was calculated for tornadoes within Pulaski County (**Table 3.75).** There is a 28 percent annual average probability of a tornado occurrence (6 events/21 years x 100). Tornado events can be found in **Table 3.74**. In addition, **Figure 3.62,** obtained from the 2018 Missouri State Hazard Mitigation Plan, also illustrates tornado probabilities across the United States and further shows Pulaski County's average probability of 30 percent.

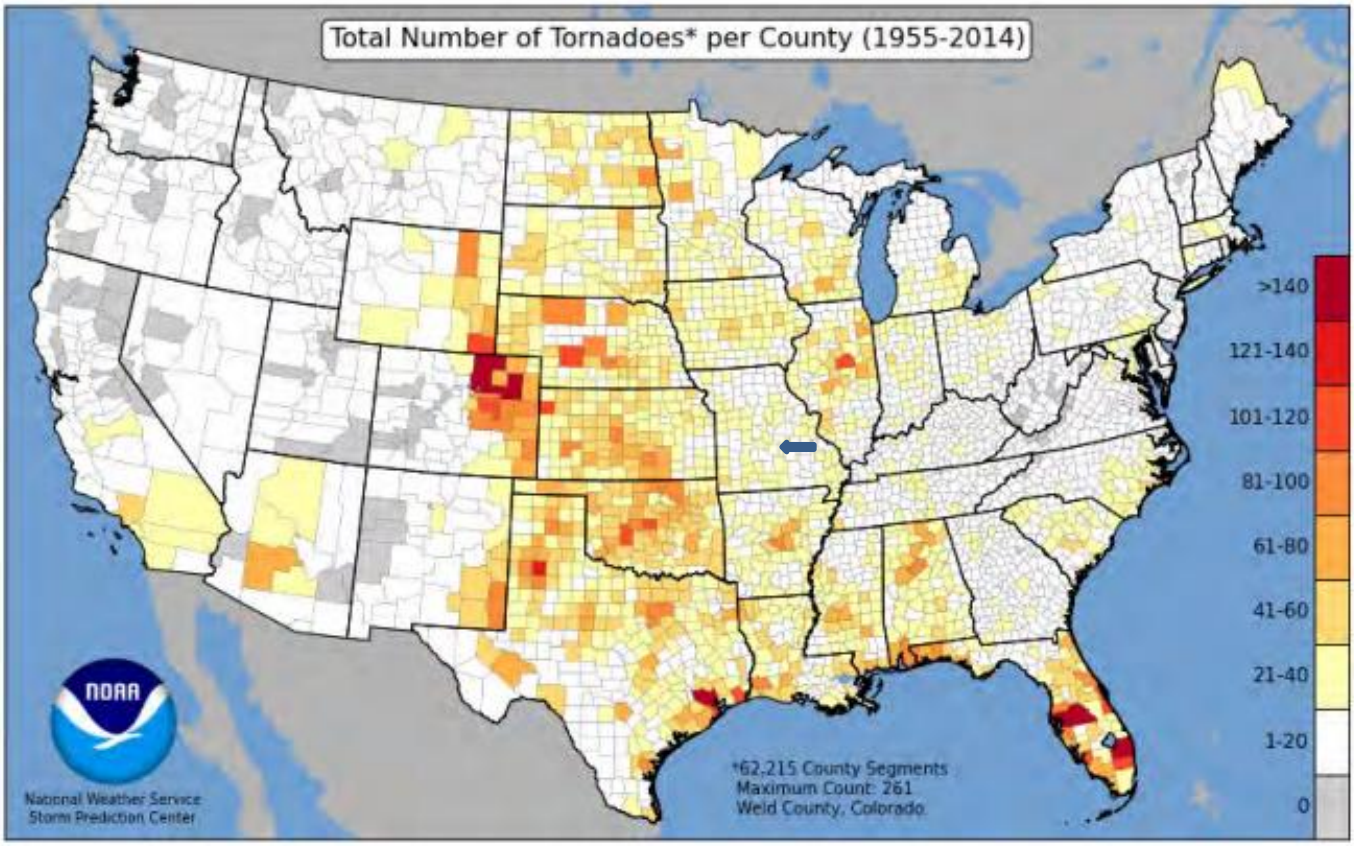
[41] http://www.ncdc.noaa.gov/stormevents/choosedates.jsp?statefips=29%2CMISSOURI

Table 3.75. Annual Average % Probability of Tornadoes in Pulaski County

Location	Annual Avg. % P
Pulaski County	30%

*P = probability; see page 3.24 for definition.

Figure 3.62. Tornado Activity in the United States



*Source: 2018 Missouri State Hazard Mitigation Plan, *Blue arrow indicates Pulaski County*

Vulnerability

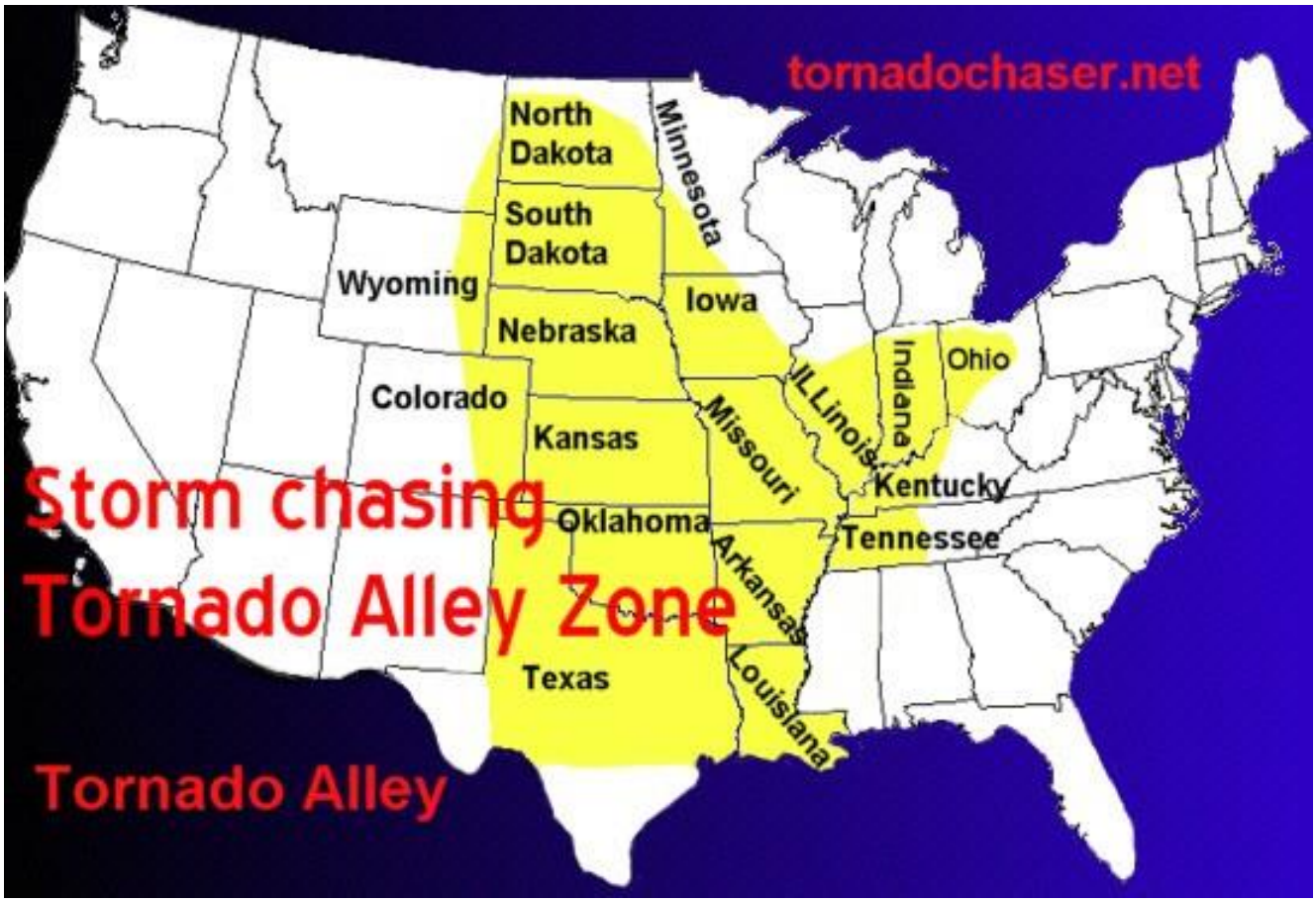
Vulnerability Overview

Many tornadoes are capable of great destruction and every tornado is a potential killer. Tornadoes can topple buildings, destroy mobile homes, uproot trees, hurl people and animals through the air for hundreds of yards and fill the air with lethal, windblown debris. Sticks, glass, roofing material and lawn furniture all become deadly missiles when driven by tornado winds.[42] Pulaski County resides in a region of the United States that has a high frequency of dangerous and destructive tornadoes. This region seen in **Figure 3.63** is referred to as "Tornado Alley".

[42] 2018 Missouri Hazard Mitigation Plan

The 2018 Missouri Hazard Mitigation Plan used statistical analysis of data from several sources to determine vulnerability to tornadoes across the state. HAZUS building exposure value data, population density and mobile home data from the U.S. Census (2018 ACS), the calculated Social Vulnerability Index for Missouri Counties from the Hazards and Vulnerability Research Institute in the Department of Geography at the University of South Carolina, and storm events data (1950 to December 31, 2016) from the National Centers for Environmental Information (NCEI). One limitation to the NCEI data is that many tornadoes that may have occurred in uninhabited areas and some in inhabited areas, may not have been reported. In addition, NOAA data cannot show a realistic frequency distribution of different Fujita scale tornado events, except for recent years. For these reasons a parametric model based on a combination of many physical aspects of the tornado to predict future expected losses was not used. The statistical model used for this analysis was probabilistic based purely on tornado frequency and historic losses.

Figure 3.63. Tornado Alley in the U.S.



Source: http://www.tornadochaser.net/tornalley.html

Six factors were considered in determining overall vulnerability to tornadoes as follows: building exposure, population density, social vulnerability, percentage of mobile homes, likelihood of occurrence and annual property loss. Based on natural breaks in the statistical data, a rating value of one through five was assigned to each factor. These rating values correspond to the following descriptive terms:

1) Low
2) Low-medium

3) Medium
4) Medium-high
5) High

Table 3.76 provides the factors used and ranges for the rating values assigned. Once the ranges were established and applied to all factors, the ratings were combined to determine overall vulnerability. **Table 3.77** illustrates the ranges for tornado combined vulnerability rating.

Table 3.76. Ranges for Tornado Vulnerability Factor Ratings

Factors Considered	Low (1)	Low-medium (2)	Medium (3)	Medium-High (4)	High (5)
Common Factors					
Building Exposure ($)	$269,532-$3,224,641	$3,224,642-$8,792,829	$8,792,830-$22,249,768	$22,249,769-$46,880,213	$46,880,214-$138,887,850
Population Density (#per sq. mile)	4.11-44.23	44.24-134.91	134.92-259.98	259.99-862.69	862.70-2,836.23
Social Vulnerability	1	2	3	4	5
Percent Mobile Homes	0.2-4.5%	4.51-8.8%	8.81-14%	14.01-21.2%	21.21-33.2%
Likelihood of Occurrence (# of events/ yrs. of data)	0.119 - 0.208	0.209 - 0.313	0.314 - 0.417	0.418 - 0.552	0.553 - 0.791
Total Annualized Property Loss ($ / yrs. of data)	$974 - $281,874	$281,875 - $991,825	$991,826 - $2,099,000	$2,099,001 - $5,047,474	$5,047,475 - $42,467,109

Source: 2018 Missouri Hazard Mitigation Plan

Table 3.77. Ranges for Tornado Combined vulnerability Rating

	Low (1)	Low-medium (2)	Medium (3)	Medium-High (4)	High (5)
Tornado Combined Vulnerability	7-10	11-12	13-14	15-16	17-21

Source: 2018 Missouri Hazard Mitigation Plan

Table 3.78 provides data on building exposure, population density, SOVI and mobile home data for Pulaski County that is used to determine overall vulnerability.

Table 3.78. Building Exposure, Population Density, SOVI and Mobile Home Data for Pulaski County

Total Building Exposure (Hazus)	Exposure Rating	Population Density	Population Rating	SOVI Ranking	SOVI Rating	Percent Mobile Homes	Mobile Home Rating
$5,334,660,000	2	97.28	1	Low	1	9.7	3

Source: 2018 Missouri Hazard Mitigation Plan

Table 3.79 provides additional data, obtained from the National Centers for Environmental Information to complete the overall vulnerability analysis and the total overall vulnerability rating for tornadoes.

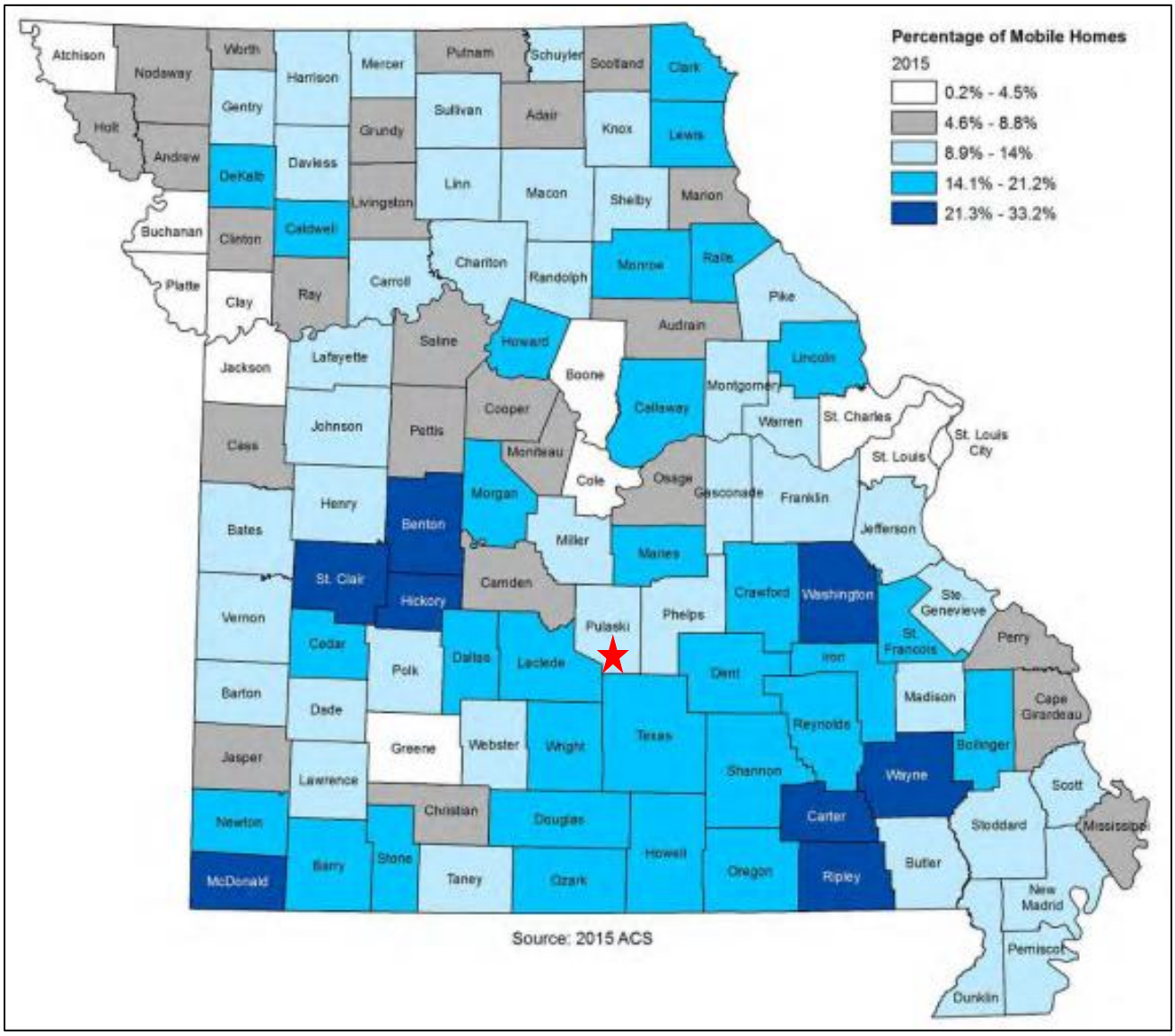
Figure 3.64 shows the percent of mobile homes per county throughout the state with Pulaski County determined to have medium high mobile home density at 8.9 percent to 14 percent. **Figure 3.65** provides the average annual occurrence of tornadoes in Missouri and illustrates that Pulaski County falls into the low medium quadrant for historical events – 20 to 30 percentile. Finally, **Figure 3.66** shows the county's overall vulnerability to tornadoes – Low – Medium.

Table 3.79. Likelihood of Occurrence, Annual Property Loss and Overall Vulnerability Rating for Tornadoes for Pulaski County

Total Number of Tornadoes	Likelihood of Occurrence	Likelihood of occurrence Rating	Total Annualized Property Loss	Total Annualized Property Loss Rating	Overall Vulnerability Rating	Overall Vulnerability Rating Description
16	0.239	2	$1,520,299	3	12	Low-Medium

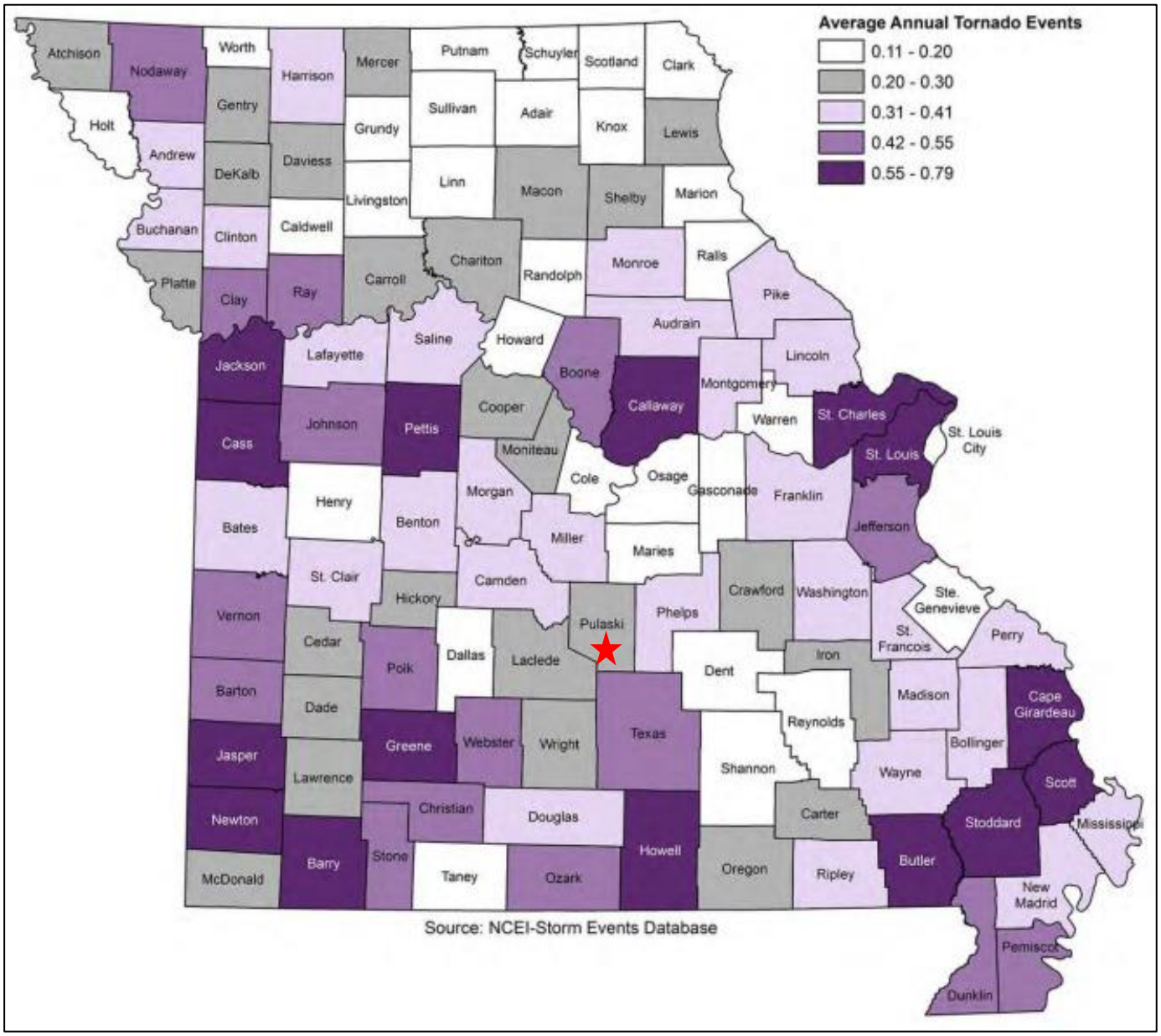
Source: 2018 Missouri Hazard Mitigation Plan

Figure 3.64. Missouri – Percent of Mobile Homes Per County



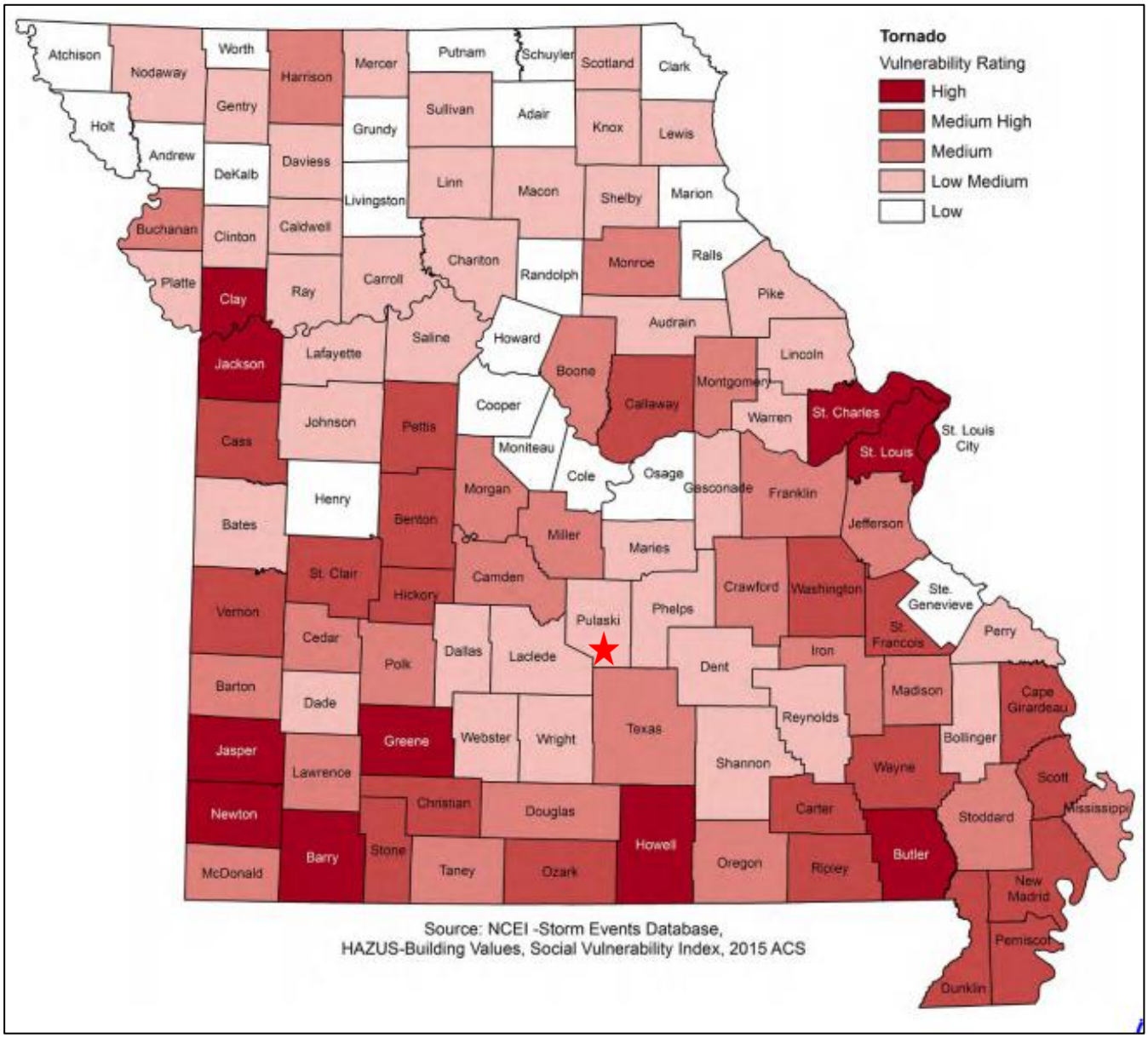
*Source: 2018 Missouri State Hazard Mitigation Plan, *Red star indicates Pulaski County*

Figure 3.65. Average Annual Occurrence for Tornadoes



*Source: 2018 Missouri State Hazard Mitigation Plan, *Red star indicates Pulaski County*

Figure 3.66. Overall Vulnerability to Tornadoes



*Source: 2018 Missouri State Hazard Mitigation Plan, *Red star indicates Pulaski County*

Potential Losses to Existing Development

There has been a total of $91,655,000 in damage due to tornadoes within Pulaski County in the previous 20 years. With this information we can estimate that each year there will be approximately $4,582,750 in loss to existing development. Additionally, the largest recorded tornado in the planning area has been an EF3. Utilizing this information we can infer that there is potential for another tornado of equivalence.

Future Development

As populations and development increases across the county, the vulnerability will increase as well. In

order to protect jurisdictions from increased tornado vulnerabilities future analysis, training, and implementation should be considered at the planning, engineering, and architectural design stages.

Hazard Summary by Jurisdiction

As previously stated, a tornado event could occur anywhere in the planning area. However, some jurisdictions would suffer heavier damages because of the age of housing or high concentration of mobile homes. See **Table 3.28** for jurisdictions most vulnerable to damage due to the age of the structure. Based on structure age, the city of Dixon would have higher vulnerability due to 14.8 percent of its housing stock being built prior to 1939. Furthermore, data was obtained from the U.S. Census Bureau for the number of mobile homes in Pulaski County and its jurisdictions. From the information provided in **Table 3.80,** the city of Richland, with 126 mobile homes – 14.0 percent of housing in the count, is most vulnerable to losses due to the number of mobile homes residing within the jurisdiction. Unincorporated Pulaski County has 1,241 or 11.0 percent of the occupied housing stock as mobile homes. The city of Crocker has 53 or 10.7 percent.

Table 3.80. Percentage of Mobile Homes in Pulaski County, 2018

Jurisdiction	Number of Mobile Homes	Percentage of Mobile Homes*
Unincorporated Pulaski County	1,241	11.0%
Crocker	53	10.7%
Dixon	56	9.4%
Richland	126	14.0%
St. Robert	325	9.8%
Waynesville	12	0.5%

Source: U.S. Census Bureau, 2014-2018 5-Year American Community Survey
**Number of mobile homes per jurisdiction/total occupied housing units per jurisdiction*
***Total housing units for all jurisdictions = 19,058*

Problem Statement

Early warnings are possibly the best hope for residents when severe weather strikes. While more than two hours warning is not possible for tornadoes, citizens must immediately be aware when a city will be facing a severe weather incident. Jurisdictions that do not already possess warning systems should plan to purchase a system. Storm shelters are another important means of mitigating the effects of tornadoes. Additional public awareness also includes coverage by local media sources. A community-wide shelter program should be adopted for residents who may not have adequate shelter in their homes. Residents should also be encouraged to build their own storm shelters to prepare for emergencies. Local governments should encourage residents to purchase weather radios to ensure that everyone has sufficient access to information in times of severe weather.

3.4.10 Winter Weather/Snow/Ice/Severe Cold

Some specific sources for this hazard are:

- 2018 Missouri State Hazard Mitigation Plan, Chapter 3, Section 3.3.9, Page 3.321 https://sema.dps.mo.gov/docs/programs/LRMF/mitigation/MO_Hazard_Mitigation_Plan2018.pdf
- Wind chill chart, National Weather Service, http://www.nws.noaa.gov/om/winter/windchill.shtml;
- Average Number of House per year with Freezing Rain, American Meteorological Society. "Freezing Rain Events in the United States." http://ams.confex.com/ams/pdfpapers/71872.pdf;
- USDA Risk Management Agency, Insurance Claims, http://www.rma.usda.gov/data/cause.htm
- Any local Road Department data on the cost of winter storm response efforts.
- National Centers for Environmental Information, Storm Events Database, http://www.ncdc.noaa.gov/stormevents/
- Missouri Hazard Mitigation Viewer
  http://bit.ly/MoHazardMitigationPlanViewer2018 - Website
  https://drive.google.com/file/d/1bPkc0jgF9ofwQLnTL9N0u-oPFWi9hkst/view - User Guide
  o Average annual severe winter weather events by County
  o Vulnerability to severe winter weather events by County
  o Annualized property loss for severe winter weather events by County
  o Annualized property loss for severe winter weather events by County

Hazard Profile

Hazard Description

A major winter storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall, and cold temperatures. The National Weather Service describes different types of winter storm events as follows.

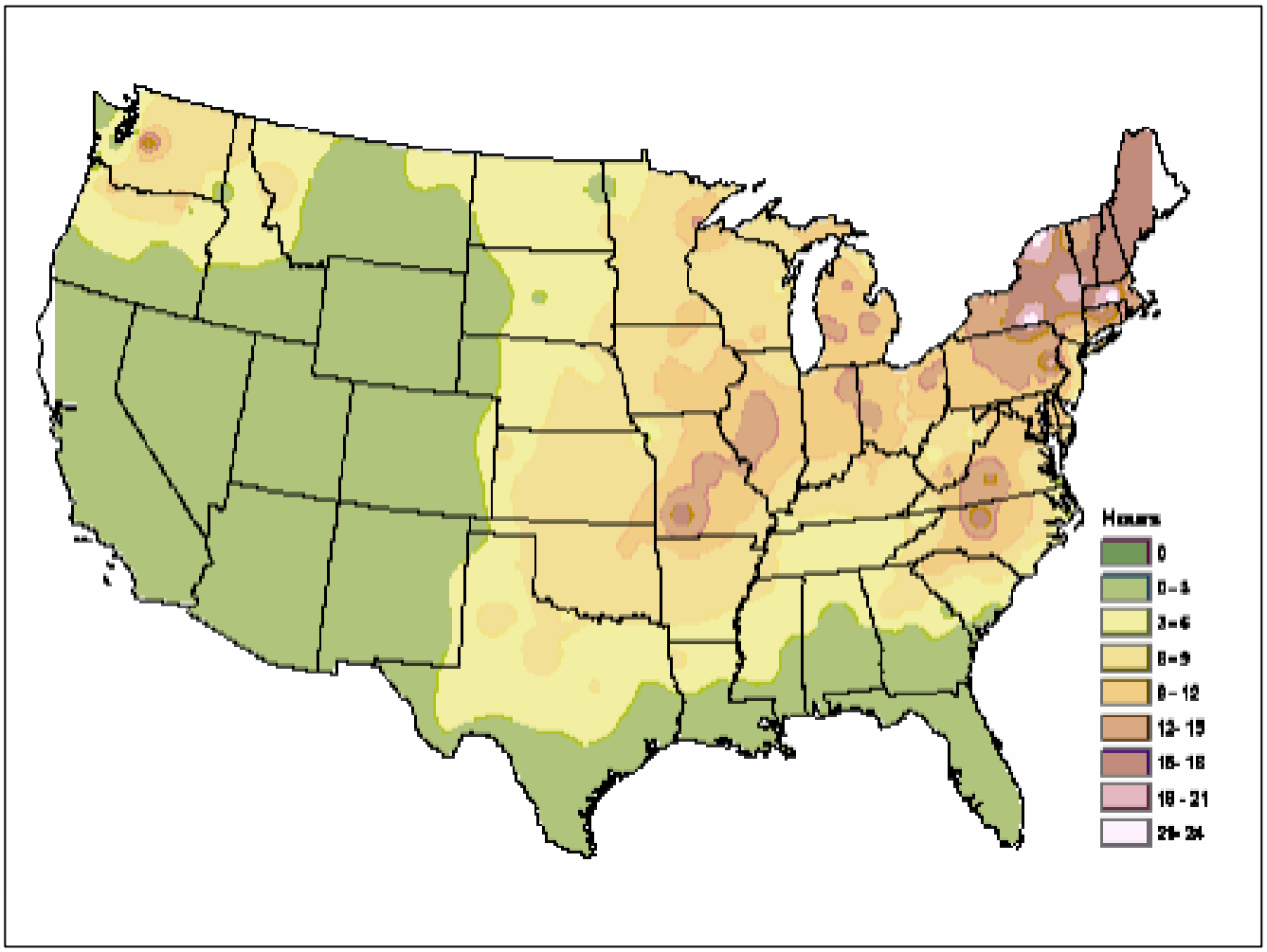
- **Blizzard**—Winds of 35 miles per hour or more with snow and blowing snow reducing visibility to less than ¼ mile for at least three hours.
- **Blowing Snow**—Wind-driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind.
- **Snow Squalls**—Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant.
- **Snow Showers**—Snow falling at varying intensities for brief periods of time. Some accumulation is possible.
- **Freezing Rain**—Measurable rain that falls onto a surface with a temperature below freezing. This causes it to freeze to surfaces, such as trees, cars, and roads, forming a coating or glaze of ice. Most freezing-rain events are short lived and occur near sunrise between the months of December and March.
- **Sleet**—Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects.

Geographic Location

Severe winter weather typically strikes Missouri more than once every year. Pulaski County receives winter weather events from heavy snows to freezing rain annually. Major snowstorms typically occur once each year, causing multiple school closings, as well as suspending business and government activity. Pulaski County is vulnerable to heavy snow, ice, extreme cold temperatures and freezing rain.

Figure 3.67 illustrates statewide average number of hours per year with freezing rain. Pulaski County receives approximately 9 to 12 hours.

Figure 3.67. NWS Nationwide Average Number of Hours per Year with Freezing Rain



Source: American Meteorological Society. "Freezing Rain Events in the United States."
http://ams.confex.com/ams/pdfpapers/71872.pdf

Strength/Magnitude/Extent

Severe winter storms include extreme cold, heavy snowfall, ice, and strong winds which can push the wind chill well below zero degrees in the planning area. Heavy snow can bring a community to a standstill by inhibiting transportation (in whiteout conditions), weighing down utility lines, and by causing structural collapse in buildings not designed to withstand the weight of the snow. Repair and snow removal costs can be significant. Ice buildup can collapse utility lines and communication towers, as well as make transportation difficult and hazardous. Ice can also become a problem on roadways if the air temperature is high enough that precipitation falls as freezing rain rather than snow.

Extreme cold often accompanies severe winter storms and can lead to hypothermia and frostbite in people without adequate clothing protection. Cold can cause fuel to congeal in storage tanks and supply lines, stopping electric generators. Cold temperatures can also overpower a building's heating

system and cause water and sewer pipes to freeze and rupture. Extreme cold also increases the likelihood for ice jams on flat rivers or streams. When combined with high winds from winter storms, extreme cold becomes extreme wind chill, which is hazardous to health and safety.

The National Institute on Aging estimates that more than 2.5 million Americans are elderly and especially vulnerable to hypothermia, with the isolated elders being most at risk. About 10 percent of people over the age of 65 have some kind of bodily temperature-regulating defect, and 3-4 percent of all hospital patients over 65 are hypothermic.

Also at risk are those without shelter, those who are stranded, or who live in a home that is poorly insulated or without heat. Other impacts of extreme cold include asphyxiation (unconsciousness or death from a lack of oxygen) from toxic fumes from emergency heaters; household fires, which can be caused by fireplaces and emergency heaters; and frozen/burst pipes.

Buildings with overhanging tree limbs are more vulnerable to damage during winter storms when limbs fall. Businesses experience loss of income as a result of closure during power outages. In general heavy winter storms increase wear and tear on roadways though the cost of such damages is difficult to determine. Businesses can experience loss of income as a result of closure during winter storms.

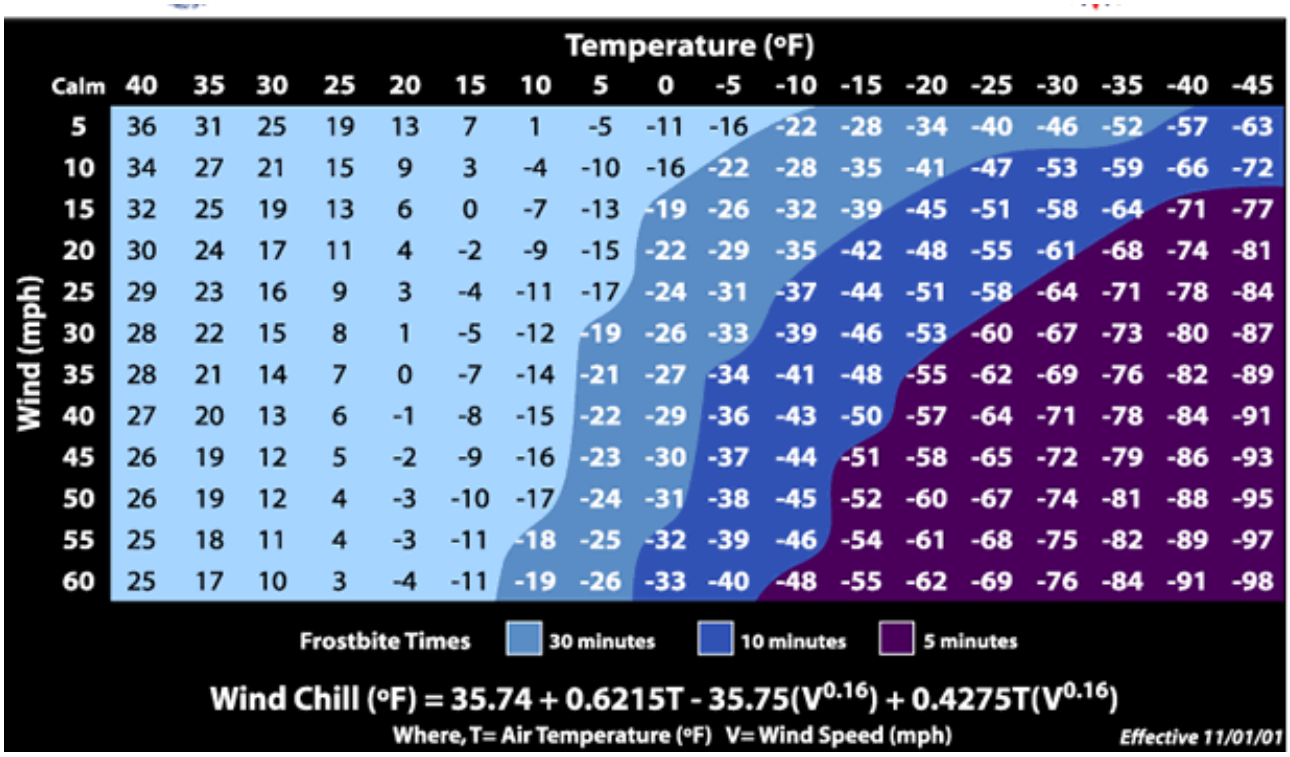
Overhead power lines and infrastructure are also vulnerable to damages from winter storms. In particular, ice accumulation during winter storms can damage power lines and equipment. Damages also occur to lines and equipment from falling trees and tree limbs weighted down by ice. Potential losses could include cost of repair or replacement of damaged facilities, and lost economic opportunities for businesses.

Secondary effects from loss of power could include burst water pipes in homes without electricity during winter storms. Public safety hazards include risk of electrocution from downed power lines. Specific amounts of estimated losses are not available due to the complexity and multiple variables associated with this hazard. Standard values for loss of service for utilities reported in FEMA's 2009 BCA Reference Guide, the economic impact as a result of loss of power is $126 per person per day of lost service.

Wind can greatly amplify the impact of cold ambient air temperatures. Provided by the National Weather Service, **Figure 3.68** below shows the relationship of wind speed to apparent temperature and typical time periods for the onset of frostbite.

Winter storms, cold, frost, and freeze all can influence or negatively impact crop production. However, data obtained from the USDA's Risk Management Agency for insured crop losses indicates that there were no claims paid in Pulaski County between 1999 and 2019 for severe winter weather.

Figure 3.68. Wind Chill Chart



Source: National Weather Service, http://www.nws.noaa.gov/om/winter/windchill.shtml

Previous Occurrences

Data was obtained from the NCEI for winter weather reported events and damages between 1999 and 2019 (**Table 3.81**). This data includes variables such as blizzard, cold/wind chill, extreme cold/wind chill, heavy snow, ice storm, sleet, winter storm, and winter weather. Additionally, narratives for specific events are listed below.

Table 3.81. NCEI Pulaski County Winter Weather Events Summary, 1999 - 2019

Type of Event	Inclusive Dates	# of Injuries	Property Damages	Crop Damages
Winter Storm	01/01/1999	0	50,000	0
Extreme Cold/Wind Chill	12/12/2000	0	0	0
Heavy Snow	12/12/2000	0	0	0
Ice Storm	12/15/2000	0	0	0
Extreme Cold/Wind Chill	01/01/2001	0	0	0
Ice Storm	12/21/2001	0	0	0
Winter Storm	03/02/2002	0	0	0
Winter Storm	12/04/2002	0	0	0
Winter Storm	12/24/2002	0	0	0

Type of Event	Inclusive Dates	# of Injuries	Property Damages	Crop Damages
Winter Storm	02/23/2003	0	0	0
Winter Storm	11/30/2006	0	50,000	0
Winter Storm	01/20/2007	0	0	0
Winter Storm	02/28/2009	0	0	0
Blizzard	02/01/2011	0	0	0
Winter Storm	02/21/2013	0	0	0
Winter Storm	01/05/2014	0	0	0
Winter Storm	03/02/2014	0	0	0
Winter Storm	02/20/2015	0	0	0
Winter Storm	02/28/2015	0	0	0
Ice Storm	01/13/2017	0	0	0
Winter Storm	01/11/2019	0	0	0
Winter Weather	02/15/2019	0	0	0
Winter Weather	12/16/2019	0	0	0
Total	**23**	**0**	**100K**	**0**

Source: NCEI, data accessed [7/27/2020]

Notable Winter Narratives:

1. **01/01/1999:** A band of snow and sleet (in addition to the ice) fell from southwest to central Missouri. Three to six inch amounts occurred in southwest Missouri in the Springfield, Galena, Ozark, and Buffalo areas. Heavier amounts of 5 to 10 inches occurred in central Missouri near the Lake of the Ozarks. The heaviest 8 to 10 inches of snow occurred in Morgan and northern Miller Counties.

2. **12/12/2000 – 12/31/2000:** A major winter storm dropped as much as 14 inches of snow across the Missouri Ozarks on 12/12/2000. Due to the weight of the snowfall, some roofs and carports were damaged along with some minor power outages. The heavy snow was followed by abnormally cold air moving into the Ozarks in the middle of December and this pattern continued through the early part of January. On 12/15/2000 an ice storm added to the accumulation of ice and snow. The combination of deep snow cover and an abnormally strong arctic air mass kept temperatures 10 to 20 degrees below normal.

3. **01/12/2007 – 01/14/2007:** Considered one of the greatest disasters to impact southwest Missouri. Several counties, mainly along and north of I-44 corridor, experienced ice accumulations up to two and a half inches. In Pulaski County there was significant damage to trees and power lines due to one and one half inches of ice over the entire county.

4. **12/09/2007:** A major ice storm impacted southwest Missouri and the Ozarks. Areas experienced accumulation ranging from one quarter of an inch to one and one quarter inches of ice. Intermittent periods of light freezing rain occurred through the morning of 10 December. Pulaski County had ice accumulations ranging from one quarter of an inch to three quarters of an inch. Power outages were common as several trees and power lines were damaged.

5. **01/26/2009 – 01/28/2009:** A significant winter storm brought a combination of freezing drizzle,

freezing rain, sleet and snow to the Missouri Ozarks. A significant accumulation of wintry mix of freezing rain, sleet and snow resulted in treacherous travel conditions. Ice accretion of near one quarter inch or less was followed by one to three inches of sleet and snow.

6. **02/28/2009:** A winter storm brought heavy snowfall to portions of central and south central Missouri. A relatively narrow band of four to eight inch accumulations set up northwest to southeast from the Truman Lake area to the eastern Ozarks. Heavy snow with accumulations of four to seven inches.

7. **02/01/2011:** A major winter storm brought heavy wintry precipitation to the Missouri Ozarks and southeast Kansas on February 1, 2011. Snowfall amounts ranged from around 20 to 24 inches in parts of west central into central Missouri to trace amounts over south central Missouri. In addition to the heavy snowfall, winds of 15 to 30 mph with some gusts near 40 mph occurred during the day and nighttime hours of February 1st creating significant blowing and drifting of snow along with bitterly cold wind chills. This created blizzard conditions with near zero visibility at times and snow drifts up to several feet. Travel was extremely treacherous with some roads impassable.

8. **02/21/2013:** A winter storm brought a mix of snow and sleet accompanied by thunder. Sleet accumulations ranged from one to two inches with snow accumulations ranging from one to two inches.

9. **01/05/2014:** A winter storm brought heavy snow to much of the Missouri Ozarks with accumulations of six to 12 inches generally along and north of I-44. Northwest winds of 20 to 35 mph resulted in significant blowing and drifting snow along with bitterly cold wind chills. Pulaski County had snow accumulations of six to 10 inches.

10. **03/02/2014:** A winter storm impacted the Missouri Ozarks. Precipitation began as a mixture of freezing rain and sleet across much of the region, with rain changing to freezing rain and sleet across far southern Missouri as the storm progressed. Many locations across southern Missouri also saw thunderstorms with reports of thunder sleet. Precipitation changed to snow during the day and as Arctic air mass overspread the area. In Pulaski County sleet accumulations of around ½ inch with snow accumulations of one to two inches.

11. **02/20/2015:** Winter storm brought significant amounts of freezing rain to portions of southeast Missouri with ice accretion up to around one quarter of an inch.

12. **02/28/2015:** Winter storm brough significant snowfall with total snow accumulation of 4 to 6 inches.

13. **01/13/2017:** Up to three quarters of an inch of ice accumulated on elevated objects and tree limbs across the county during the ice storm. There were scattered power outages reported.

14. **01/11/2019:** Rain became mixed with sleet, freezing rain, and snow before changing over to all snow. Main roads became snow covered with several accidents being reported. Total snowfall ranged from 4 to 6 inches across the far northern areas of the county, to 2 inches reported by the COOP observer at Fort Leonard Wood.

15. **02/15/2019:** Widespread 3 to 5 inches of snow fell across the county, with a measured 3.3 inches reported in Dixon and 4.5 inches 2 miles west southwest.

16. **12/16/2019:** Cooperative observer 4 miles north of Fort Leonard Wood reported a storm total

of 2.0 inches of snow.

Pulaski County has been included in two federal disaster declarations for ice storms since 2007.[43] Data obtained from the USDA's Risk Management Agency for insured crop losses indicates that there were no claims paid in Pulaski County between 1999 and 2019 for severe winter weather.

Probability of Future Occurrence

From the data obtained from the NCEI [44], annual average percent probabilities were calculated for winter weather within Pulaski County (**Table 3.81)**. There were 23 recorded events (**Table 3.81**) over a 21 year period. There is 100 percent annual average probability of winter weather occurrence (23 events/21 years)**,** with an average of 1.09 events per year.

Table 3.82. Annual Average % Probability of Winter Weather in Pulaski County

Location	Annual Avg. % P	Avg. # of Events
Pulaski County	100%	1.09

*P = probability; see page 3.24 for definition.

Vulnerability

Vulnerability Overview

Heavy snow can bring a community to a standstill by inhibiting transportation (in whiteout conditions), weighing down utility lines, and by causing structural collapse in buildings not designed to withstand the weight of the snow. Repair and snow removal costs can be significant. Ice buildup can collapse utility lines and communication towers, as well as make transportation difficult and hazardous. Ice can also become a problem on roadways if the air temperature is high enough that precipitation falls as freezing rain rather than snow.

Buildings with overhanging tree limbs are more vulnerable to damage during winter storms when limbs fall. Businesses experience loss of income as a result of closure during power outages. In general heavy winter storms increase wear and tear on roadways though the cost of such damages is difficult to determine. Businesses can experience loss of income as a result of closure during winter storms.

Overhead power lines and infrastructure are also vulnerable to damages from winter storms. In particular ice accumulation during winter storm events damage to power lines due to the ice weight on the lines and equipment. Damages also occur to lines and equipment from falling trees and tree limbs weighted down by ice. Potential losses could include cost of repair or replacement of damaged facilities, and lost economic opportunities for businesses.

Secondary effects from loss of power could include burst water pipes in homes without electricity during winter storms. Public safety hazards include risk of electrocution from downed power lines. Specific amounts of estimated losses are not available due to the complexity and multiple variables

[43] https://www.fema.gov/data-visualization-summary-disaster-declarations-and-grants
[44] http://www.ncdc.noaa.gov/stormevents/choosedates.jsp?statefips=29%2CMISSOURI

associated with this hazard. Standard values for loss of service for utilities reported in FEMA's 2009 BCA Reference Guide, the economic impact as a result of loss of power is $126 per person per day of lost service.

Data was obtained from the 2018 Missouri State Hazard Mitigation Plan for vulnerability information regarding Pulaski County. Various data sources were utilized for statistical analysis including the following:

- National Centers for Environmental Information (NCEI) storm event data (1996 to December 31, 2016)
- HAZUS Building Exposure Value data
- Housing density data from the U.S. Census (2015 ACS)
- Calculated Social Vulnerability Index for Missouri Counties from the Hazards and Vulnerability Research Institute in the Department of Geography at the University of South Carolina

From the statistical data collected, five factors were considered in determining overall vulnerability to severe winter weather as follows: housing density, building exposure, social vulnerability, likelihood of occurrence and average annual property loss. A rating value of one through five was assigned to each factor:

1) Low
2) Low-medium
3) Medium
4) Medium-high
5) High

Table 3.83 provides the factors considered and the ranges for the rating values assigned. After the individual ratings were determined for the common factors, a combined vulnerability ratings was computed for severe winter weather. Those can be seen in **Table 3.84**. The housing density, building exposure and SOVI data for Pulaski County can be found in **Table 3.85**.

Table 3.83. Ranges for Severe Winter Weather Vulnerability Factor Ratings

Factors Considered	Low (1)	Low Medium (2)	Medium (3)	Medium High (4)	High (5)
Common Factors					
Housing Density (# per sq. mile)	4.11-44.23	44.24-134.91	134.92-259.98	259.99-862.69	862.70-2836.23
Building Exposure ($)	$269,532-$3,224,641	$3,224,642-$8,792,829	$8,792,830-$22,249,768	$22,249,769-$46,880,213	$46,880,214-$138,887,850
Social Vulnerability	1	2	3	4	5
Likelihood of Occurrence (# of events/ yrs. of data)	1.05-1.43	1.44-1.76	1.77-2.10	2.11-2.67	2.68-4.57
Average Annual Property Loss (annual property loss/ yrs. Of data)	$0-$143,095.24	$143,095.25-$406,666.67	$406,666.68-$1,191,000.95	$1,191,000.96-$3,184,761.90	$3,184,761.91-$5,861,666.67

Source: 2018 Missouri Hazard Mitigation Pl

Table 3.84. Ranges for Severe Winter Weather Combined Vulnerability Rating

	Low (1)	Low-medium (2)	Medium (3)	Medium-high-4	High (5)
Severe Winter Weather Combined Vulnerability	7-8	8-10	10-12	12-15	15-22

Source: 2018 Missouri Hazard Mitigation Plan

Table 3.85. Housing Density, Building Exposure and SOVI Data for Pulaski County

Total Building Exposure (Hazus)	Building Exposure Rating	Housing Density	Housing Density Rating	SOVI Ranking	SOVI Rating
$5,344,660,000	2	33.60	1	Low	1

Source: 2018 Missouri Hazard Mitigation Plan

Table 3.86 provides the last piece of the data gathered from NCEI to complete the overall vulnerability analysis and the total overall vulnerability rating for severe winter weather. The total number of winter weather events includes blizzard, heavy snow, ice storm winter storm and winter weather events. The likelihood of occurrence is 1.29 or 100 percent per year. The total annualized property loss is $406,667, which provides a total annualized property loss rating of two and an overall vulnerability rating of seven – which translates to an overall Low vulnerability rating for the county for severe winter weather.

Table 3.86. Additional Statistical Data Compiled for Vulnerability Analysis for Pulaski County

Total number of Winter Weather Events	Likelihood of Occurrence	Likelihood of Occurrence Rating	Total Annualized Property Loss	Total Annualized Property Loss Rating	Overall Vulnerability Rating	Overall Vulnerability Rating Description
27	1.2857	1	$406,667	2	7	Low

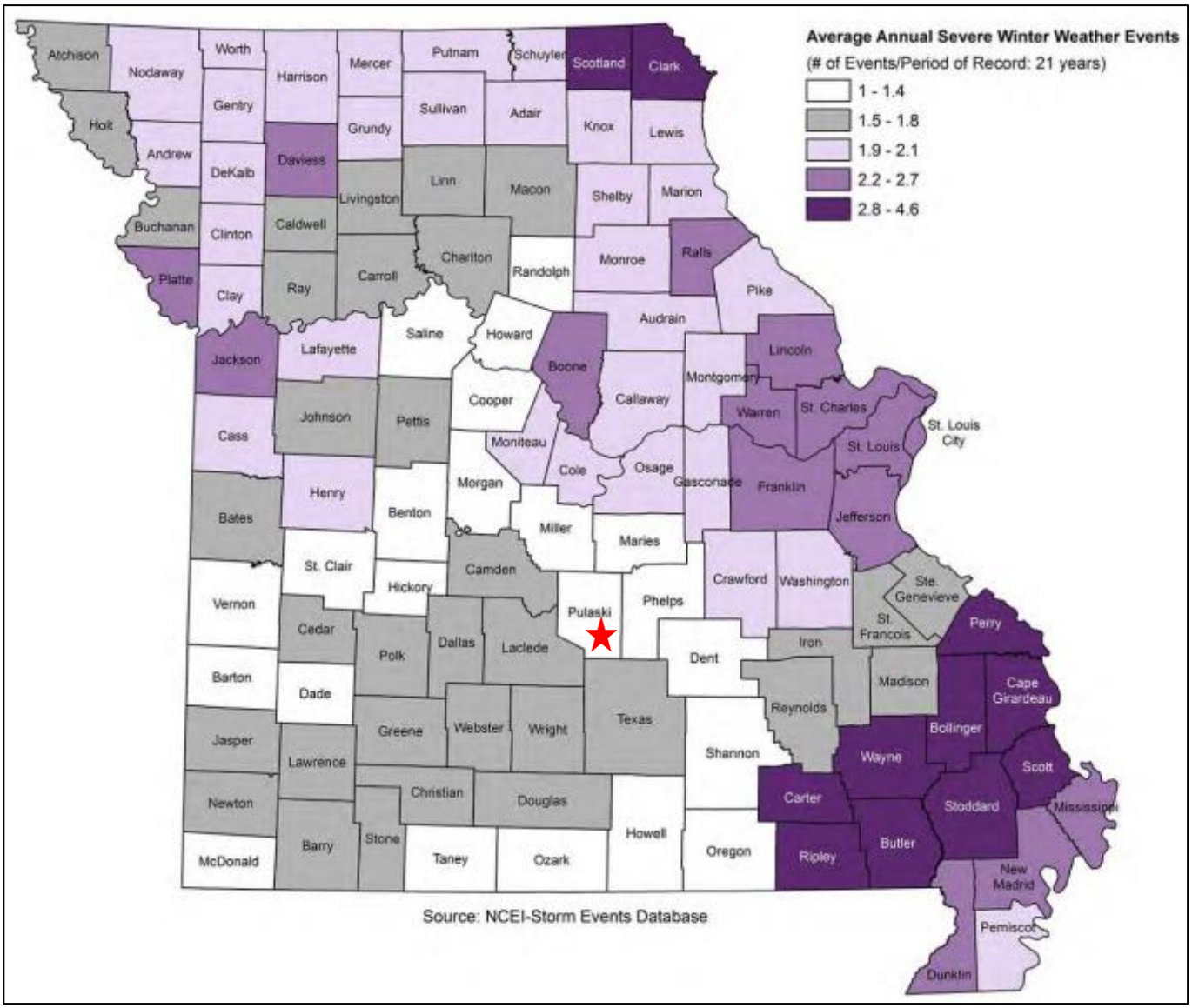
Source: 2018 Missouri Hazard Mitigation Plan

Figure 3.69 illustrates the average annual occurrence of severe winter weather statewide. Pulaski County falls into the Low category of 1 to 1.4 events per year.

Figure 3.70 provides an illustration of the vulnerability summary of all Missouri counties for severe

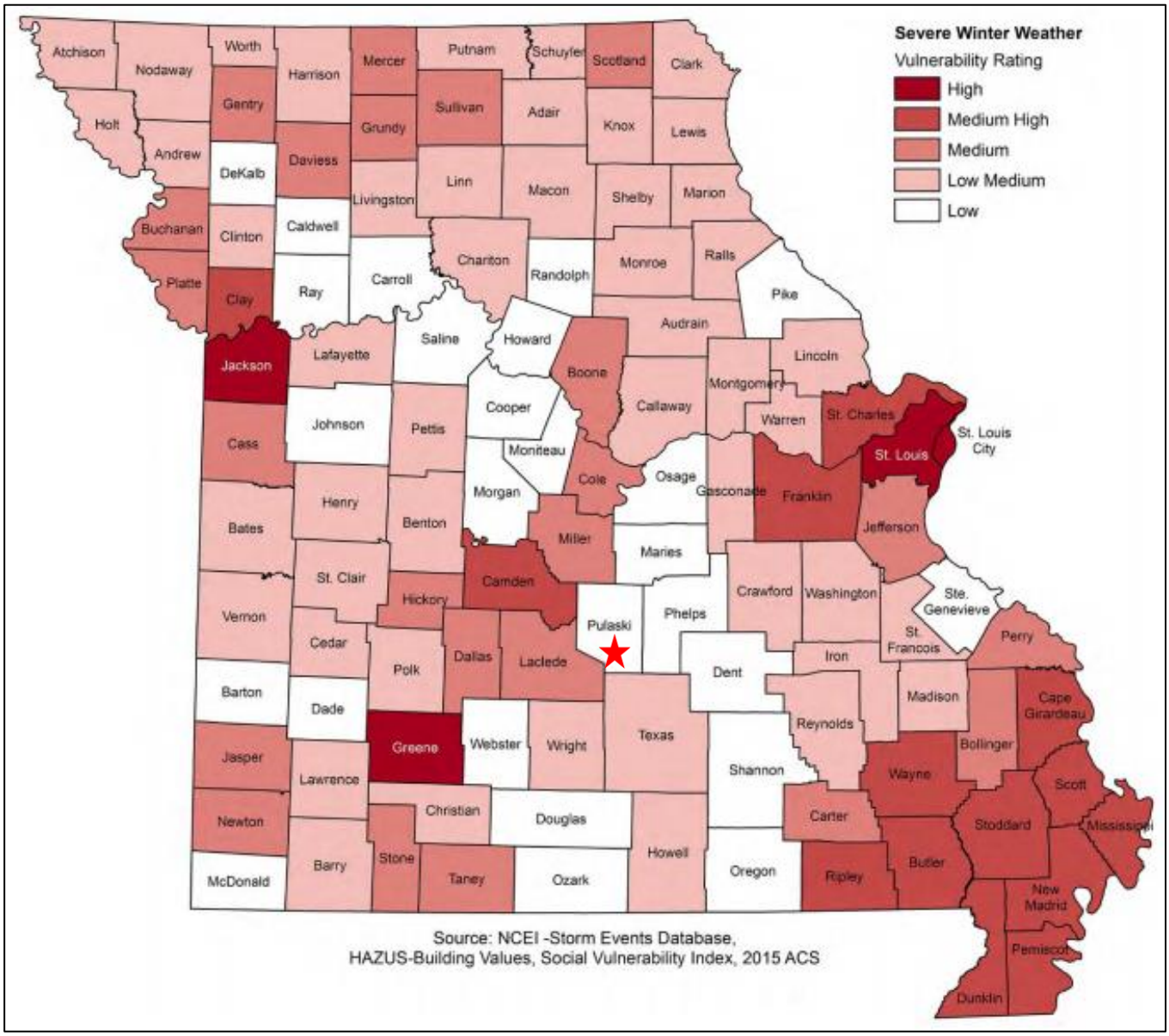
winter weather. Again, Pulaski County falls into the Low rating for overall vulnerability.

Figure 3.69. Average Annual Occurrence of Severe Winter Weather Events



*Source: 2018 Missouri Hazard Mitigation Plan, *Red star indicates Pulaski County*

Figure 3.70. Vulnerability Summary for Severe Winter Weather



*Source: 2018 Missouri Hazard Mitigation Plan, *Red star indicates Pulaski County*

Potential Losses to Existing Development

The next severe winter storm will most likely close schools and businesses for multiple days, and make roadways hazardous for travel. Heavy ice accumulation may damage electrical infrastructures, causing prolonged power outages for large portions of the region. In addition, freezing temperatures make water lines vulnerable to freeze/thaw. Fallen tree limbs also pose a threat to various structures/infrastructures across the county. According to the 2018 state plan, Pulaski County can expect annual property losses of $406,667 due to severe winter storms.

Future Development

Data for future development for the planning area is sparse. However, winter weather will affect the

county as a whole. Any future development is at risk to damages and increased exposure. In addition, the county's population within the cities is anticipated to increase, which would increase the number of individuals at risk during a winter weather event.

Hazard Summary by Jurisdiction

Variations in impacts are not anticipated for severe winter weather across the planning area. Yet, areas with high number of mobile homes tend to experience increased damages. The city of Richland has the highest abundance of mobile homes, making the area more prone to increase exposure to damage. In addition, rural areas of the county may be more susceptible to power outages due to more power infrastructure being exposed to the risk of damage from winter storms.

Problem Statement

In summary, Pulaski County is expected to experience at least one severe winter weather event annually; however the county has a low vulnerability rating. Jurisdictions should enhance their weather monitoring to be better prepared for severe weather hazards. If jurisdictions monitor winter weather, they can dispatch road crews to prepare for the hazard. County and city crews can also trim trees along power lines to minimize the potential for outages due to snow and ice. Citizens should also be educated about the benefits of being proactive to alleviate property damage as well preparing for power outages.

44 CFR Requirement §201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section presents the mitigation strategy developed by the Mitigation Planning Committee (MPC). The mitigation strategy was developed through a collaborative group process. The process included review of general goal statements to guide the jurisdictions in lessening disaster impacts as well as specific mitigation actions to directly reduce vulnerability to hazards and losses. The following definitions are taken from FEMA's *Local Hazard Mitigation Review Guide (October 1, 2012)*.

- **Mitigation Goals** are general guidelines that explain what you want to achieve. Goals are long-term policy statements and global visions that support the mitigation strategy. The goals address the risk of hazards identified in the plan.

- **Mitigation Actions** are specific actions, projects, activities, or processes taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. Implementing mitigation actions helps achieve the plan's mission and goals.

4.1 Goals

44 CFR Requirement §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

This planning effort is an update to Pulaski County's existing hazard mitigation plan originally approved by FEMA in August 2006 and updated and approved by FEMA on April 1, 2016. Therefore, the goals from the updated 2016 Pulaski County Hazard Mitigation Plan were reviewed to see if they were still valid, feasible, practical, and applicable to the defined hazard impacts. The MPC conducted a discussion session during their first meeting to review and update the plan goals. To ensure that the goals developed for this update were comprehensive and supported State goals, the 2018 State Hazard Mitigation Plan goals were reviewed. As the existing goals were broad, still applicable, and supported the 2018 State Hazard Mitigation Plan goals, the MPC saw no reason to make any changes. The Pulaski County goals are as follows:

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning and hazard mitigation activities.

Goal 2: Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their

vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Goal 5: Establish priorities for reducing risks to the people and their property with emphasis on long-term and maximum benefits to the public rather than short-term benefit of special interests.

Goal 6: Secure resources for investment in hazard mitigation.

4.2 Identification and Analysis of Mitigation Actions

44 CFR Requirement §201.6(c)(3)(ii): 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 effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

During the first MPC meeting, the committee discussed the planning tasks, participation requirements, how to get public input, the data collection questionnaires and discussed the applicable hazards and what needed to be updated in the risk assessment. Changes in risk since adoption of the previously approved plan were discussed. Since the last update, there has been death due to natural hazard events. Action items from the 2016 plan were distributed to the group for review. Discussions from the actions from the previous plan included completed actions, on-going actions, and actions upon which progress had not been made. The MPC discussed SEMA's identified funding priorities and the types of mitigation actions generally recognized by FEMA.

The focus of Meeting #2 was to review, prioritize and update the mitigation strategy. The MPC reviewed the list of actions proposed in the previous mitigation plan. The group decided which action items had been completed, which needed to be dropped due to lower priority, which were repetitive or could be combined with other similar action items and proposed additional mitigation actions. Facilitators also provided suggestions for actions based on what some of the surrounding counties had included in their plans. Participants were also encouraged to refer to the current State Plan and provided a link to the FEMA's publication, *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013).* This document was developed by FEMA as a resource for identification of a range of potential mitigation actions for reducing risk to natural hazards and disasters.

During the review of the plan document, MPC members were encouraged to review the details of the risk assessment vulnerability analysis specific to their jurisdiction.

The MPC reviewed the actions from the previously approved plan for progress made since the plan had been adopted. Copies of the list of actions for each jurisdiction were provided to MPC members at planning meetings and were emailed out to all members. Action items were reviewed and the MPC provided updates on the status of action items during the first two planning meetings. Each action item was reviewed and assigned one of the following:

- Completed, with a description of the progress,
- Not Started/Continue in Plan Update, with a discussion of the reasons for lack of progress,
- In Progress/Continue in Plan Update, with a description of the progress made to date or
- Deleted, with a discussion of the reasons for deletion.

Based on the status updates, there were 13 completed actions; two actions were deleted because they scored as low priorities; three actions were duplicates and were removed; 15 actions that were

combined with other, similar actions; and 29 continuing actions.

Table 4.1 provides a summary of the completed and deleted actions from the previous plan.

Table 4.1. Summary of Completed and Deleted Actions from the Previous Plan

Completed Actions	Completion Details (date, amount, funding source)
1.1.5 Educate school staff on natural hazards and make sure all staff are familiar with school emergency plan including evacuation and safety procedures.	The school districts have implemented this action item into their standard policies and procedures.
1.1.2 Continue to educate residents about precautions that should be taken during threats of natural disasters such as heat waves and severe weather.	Combined with 1.1.1.
1.1.3 Provide information to citizens on individual mitigation activities such as building personal shelters and assuring that propane tanks are appropriately tied down.	Combined with 1.1.1.
1.1.4 Promote development of emergency plans by businesses and public entities.	Combined with 2.1.3.
1.1.6 Schools need to continue to conduct emergency preparedness exercises on a regular basis.	The school districts have implemented this action item into their standard policies and procedures. School districts currently operate with a regular schedule of fire, tornado and earthquake drills.
1.1.7 Regularly review and update school emergency plans.	The school districts have implemented this action item and are required by the Department of Elementary and Secondary Education (DESE) to review and update school emergency plans on a regular basis.
1.2.3 Continue to partner with local radio stations to ensure that appropriate warning of impending disasters is provided to all residents.	Local jurisdictions have implemented this action item into standard policies and procedures and applicable plans.
1.3.2 Continue to encourage tree trimming and dead tree removal programs by utility companies and local government.	The cities, county and local electric cooperatives all have tree trimming programs in place.
2.1.1 Continue to encourage a self-inspection program at critical facilities to assure that building infrastructure is earthquake and tornado resistant.	The planning committee re-evaluated this priority. It received a low rating and was removed from the list.
2.1.3 Continue to encourage businesses and public entities to develop and implement emergency plans.	Combined with 1.1.4.
2.1.4 Encourage the installation of backup generators for critical infrastructure such as water systems and emergency services.	Combined with 1.2.5

Completed Actions	Completion Details (date, amount, funding source)
2.3.2 Monitor developments in data availability concerning the impact of dam failure, tornados, sinkholes, land subsidence and wildfire upon Pulaski County all jurisdictions through local, state and federal agencies for use in hazard mitigation planning.	Duplicate of 1.2.7.
2.3.3 Encourage the Mark Twain National Forest to levy stricter fines for persons causing fire hazards.	The planning committee re-evaluated this priority. It received a low rating and was removed from the list.
3.1.1 Distribute SEMA brochures on natural disasters, preparedness and NFIP at public facilities and events.	The action item has been implemented. Information is distributed routinely by local jurisdictions, local emergency response agencies and the Health Department at public facilities and events.
3.1.2 Distribute regular press releases from county and city EMD offices concerning hazards, where they strike, frequency, preparedness and how to mitigate.	This action item has been implemented. Press releases are distributed routinely by city and county EMD offices concerning hazards and how to mitigate and stay safe.
3.2.1 Encourage local residents to purchase weather radios through press releases and brochures.	Combined with 1.2.2.
3.2.2 Encourage meetings of EMD, city/county officials and SEMA to familiarize officials with mitigation planning, implementation and budgeting for mitigation projects.	This has been completed through presentations at MRPC meetings and SEMA area coordinator meetings.
3.3.2 Distribute press releases by jurisdiction regarding adopted mitigation measures to keep public abreast of changes and/or new regulations.	This action item has been implemented. Jurisdictions routinely share information on mitigation activities with local media.
3.4.1 Encourage county health department and local Red Cross Chapter to use publicity campaigns that make residents aware of proper measure to take during times of threatening conditions (e.g. drought, heat wave).	Combined with 1.1.1.
3.4.2 Publicize county or citywide drills.	This action item has been implemented. Jurisdictions routinely share information on drills and exercises with local media and emergency response agencies.
4.1.4 Maintain updated mutual aid agreements between emergency response agencies inside and outside the region.	This action item has been implemented. Local emergency response agencies have mutual aid agreements with other emergency response agencies. The county and cities have mutual aid agreements in place both within and outside the county for assistance during disasters. Region I has mutual aid agreements in place for fire departments.
4.2.1 Re-evaluate the hazard mitigation plan, merge with other community planning and coordinate and integrate hazard mitigation activities, where appropriate with emergency operations plans and procedures.	Duplicate of 3.3.1.

Completed Actions	Completion Details (date, amount, funding source)
4.2.2 Encourage meetings between EMD, city/county and SEMA to familiarize officials with mitigation planning and implementation and budgeting for mitigation projects.	Combined with 3.2.2. This has been completed through presentations at MRPC meetings and SEMA area coordinator meetings.
5.1.1 Incorporate hazard mitigation into the long-range planning and development activities of the county and each jurisdiction.	Combined with 3.3.1.
5.1.2 Encourage communities to budget for enhanced warning systems.	Combined with 1.2.1.
5.1.4 Coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures.	This action item has been implemented. Local emergency response agencies believe that hazard mitigation activities, as much as is appropriate, have been integrated into emergency operation plans and procedures.
5.1.5 Encourage cities to require contractor storm water management plans in all new development – both residential and commercial properties.	Combined with 2.2.2
5.2.1 Encourage the construction of storm shelters, especially tornado safe rooms near schools and large employment centers that currently do not have access to safe rooms.	Duplicate of 1.3.5.
5.2.2 Encourage the designation of public buildings as safe shelters and develop accessibility plans for the public during times of need.	Combined with 1.3.4.
5.3.2 Encourage communities to discuss zoning repetitive loss properties int eh floodplain as open space.	Combined with 5.3.1.
6.1.1 Work with SEMA Region I coordinator to learn about new mitigation funding opportunities.	Combined with 3.2.2 and marked as complete.
6.2.2 Implement public awareness program about the benefits of hazard mitigation projects, both public and private through press releases and brochures.	Combined with 1.1.1.
6.3.1 Prioritize hazard mitigation projects, based on cost-effectiveness and starting with those sites facing the greatest threat to life, health and property.	This action item has been implemented through the development, review and updating of the county hazard mitigation plan.

Source: Previously approved County Hazard Mitigation Plan; MPC committee; data collection questionnaires

4.3 Implementation of Mitigation Actions

44 CFR Requirement §201.6(c)(3)(ii): The mitigation strategy shall include an action strategy describing how the actions identified in paragraph (c)(2)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefits review of the proposed projects and their associated costs.

Jurisdictional MPC members were encouraged to meet with others in their community to discuss the actions to be included in the updated mitigation strategy. Throughout the MPC consideration and discussion, emphasis was placed on the importance of a benefit-cost analysis in determining project priority. The Disaster Mitigation Act requires benefit-cost review as the primary method by which mitigation projects should be prioritized. The MPC decided to pursue implementation according to when and where damage occurs, available funding, political will, jurisdictional priority, and priorities identified in the Missouri State Hazard Mitigation Plan. The benefit/cost review at the planning stage primarily consisted of a qualitative analysis, and was not the detailed process required grant funding application. For each action, the plan sets forth a narrative describing the types of benefits that could be realized from action implementation. The cost was estimated as closely as possible, with further refinement to be supplied as project development occurs.

FEMA's STAPLEE methodology was used to assess the costs and benefits, overall feasibility of mitigation actions, and other issues impacting project. During the prioritization process, the MPC worked together to review and assign scores. The process posed questions based on the STAPLEE elements as well as the potential mitigation effectiveness of each action. Scores were based on the responses to the questions as follows:

Definitely yes = 3 points
Maybe yes = 2 points
Probably no = 1
Definitely no = 0

The following questions were asked for each proposed action.

S: Is the action socially acceptable?
T: Is the action technically feasible and potentially successful?
A: Does the jurisdiction have the administrative capability to successfully implement this action?
P: Is the action politically acceptable?
L: Does the jurisdiction have the legal authority to implement the action?
E: Is the action economically beneficial?
E: Will the project have an environmental impact that is either beneficial or neutral? (score "3" if positive and "2" if neutral)

Will the implemented action result in lives saved?
Will the implanted action result in a reduction of disaster damage?

In addition to the STAPLEE process, each action item was also reviewed for Benefit/Cost. These two aspects of the prioritization process were scored as follows:

Benefit – two (2) points were added for each of the following avoided damages (8 points maximum = highest benefit)

- Injuries and/or casualties
- Property damages

- Loss-of-function/displacement impacts
- Emergency management costs/community costs

Cost – points were subtracted according to the following cost scale (-5 points maximum = highest cost)

- (-1) = Minimal – little cost to the jurisdiction involved
- (-3) = Moderate – definite cost involved but could likely be worked into operating budget
- (-5) = Significant – cost above and beyond most operating budgets; would require extra appropriations to finance or to meet matching funds for a grant

Note: For the Benefit/Cost Review, the benefit and cost of actions which used the word "encourage" were evaluated as if the action or strategy being encouraged was actually to be carried out.

In addition, the group considered the cost of mitigation versus the long-term savings in relation to potential lives saved and property damage avoided.

Total Score – The scores for the STAPLEE Review and Benefit/Cost Review were added to determine a Total Score for each action.

Priority Scale – To achieve an understanding of how a Total Score might be translated into a Priority Rating, a sample matrix was filled out for the possible range of ratings an action might receive on both the STAPLEE and Benefit/Cost Review. The possible ratings tested ranged between:

- A hypothetical action with "Half probably NO and half maybe YES" answers on STAPLEE (i.e. poor STAPLEE score) and Low Benefit/High Cost: Total Score = 7
- A hypothetical action with "All definitely YES" on STAPLEE and High Benefit/Little Cost: Total Score = 28

An inspection of the possible scores within this range led to the development of the following Priority Scale based on the Total Score in the STAPLEE- Benefit/Cost Review process:

20 – 28 points = High Priority
14-19 points = Medium Priority
13 points and below = Low Priority

The results of the STAPLEE process and Benefit/Cost analysis were then mailed out to all MPC members for feedback and consensus.

The final scores are listed below in the analysis of each action. Correspondence regarding the STAPLEE process is included in Appendix C: A spreadsheet with the action items and final scores is illustrated in Figure 4.1.

Jurisdictional Floodplain Management Programs

Pulaski County and the cities of Richland, St. Robert and Waynesville are members of the NFIP and regulate development in the floodplain by reviewing permit applications for all development including new and existing structures. Elevation certificates are required for all new construction, and existing structures with 50% or more damage following a flood are required to elevate. Floodplain maps are available in hard copy at the city hall and the county's flood maps can be obtained from the floodplain manager. Furthermore floodplain maps can be found online through FEMA's website https://msc.fema.gov/portal. The cities of Crocker and Dixon do not currently participate in the NFIP

nor monitor activities within the floodplain.

Table 4.1. Jurisdictional Floodplain Ordinance Adoption Date

Community Name	Ordinance Adoption Date
Pulaski County	04/17/85
Richland	09/10/84
St. Robert	11/30/04
Waynesville	10/06/76

Source: FEMA's Community Status Book Report[1]; NSFHA (SEMA)

[1] www.fema.gov/cis/mo.html

Figure 4.4 Prioritization of Mitigation Actions		3 = Def YES 2 = Maybe YES			1 = Prob NO 0 = Def NO										
Action No.	Mitigation Actions	S	T	A	P	L	E	E	STAPLEE Total	Losses Avoided (2 pts. Each)	Benefit	Cost	B/C Total	Total	Priority
1.1.1	Implement an education program on personal emergency preparedness that teaches residents how to prepare emergency survival kits with water, blankets, flashlights, etc. and how to shut off their home utilities during emergencies; provides them with information on precautions to be taken during threats of natural disasters such as heat waves; and provide information on personal mitigation actions such as building tornado shelters and securing propane tanks. Implement public awareness program about the benefits of hazard mitigation projects, both public and private through press releases and brochures.	3	3	3	3	3	2	3	20	IC, PD, LF, EMCC	8	-1	7	27	H
1.1.8	Designate storm shelters and as funding becomes available construct tornado safe rooms in every school that does not have one.	3	3	3	3	3	2	3	20	IC, EMCC	4	-3	1	21	H
1.2.1	Continue to encourage local governments to budget for and obtain enhanced early warning systems and improved communications systems.	3	3	2	3	3	1	3	18	IC, PD, LF, EMCC	8	-3	5	23	H
1.2.2	Continue to promote use of weather radios by local residents and schools through press releases and brochures to insure advanced warning about threatening weather.	3	3	3	3	3	3	3	21	IC,EMCC	4	-1	3	24	H
1.2.4	Promote the installation of fire alarms/security systems in public buildings.	3	3	2	2	3	2	3	18	IC, PD, LF, EMCC	8	-3	5	23	H
1.2.5	Acquire backup generators to safeguard the availability of critical services such as electricity, water and emergency services.	3	3	3	3	3	2	3	20	LF, EMCC	4	-1	3	23	H
1.2.6	Conduct a study of the Texas Road area to find mitigation solutions for flash flooding that has resulted in water rescues, damaged utilities and homes.	3	3	2	3	3	1	3	18	IC,PD, LF, EMCC	8	-5	3	21	H
1.2.7	Monitor developments in data availability concerning the impact of disasters such as dam failure, tornados, sinkholes, land subsidence and wildfire upon Pulaski County and all jurisdictions through local, state and federal agencies for use in hazard mitigation planning.	3	3	3	3	3	3	3	21	IC, PD, LF, EMCC	8	-1	7	28	H
1.3.1	Place water height gauges and signs near low water crossings	3	3	2	3	3	2	3	19	IC	2	-1	1	20	H

Action No.	Mitigation Actions	S	T	A	P	L	E	E	STAPLEE Total	Losses Avoided (2 pts. Each)	Benefit	Cost	B/C Total	Total	Priority
1.3.3	Continue to examine road and bridge upgrades to improve drainage and reduce flooding and the risk to residents and property.	3	3	2	3	3	2	2	18	IC, PD, LF, EMCC	8	-1	7	25	H
1.3.4	Establish designated shelters for residents to be used during tornado threats, as cooling centers during extreme heat or power outages and/or as shelters during other disasters. Encourage the designation of public buildings as safe shelters and develop accessibility plans for the public.	3	3	3	3	3	3	3	21	IC, LF, EMCC	6	-1	5	26	H
1.3.5	As funding becomes available, increase the availability (if necessary construction) of storm shelters for individual families and large groups, including near large employment centers and schools that currently do not have access to tornado safe rooms.	3	3	3	3	3	2	3	20	IC, EMCC	4	-3	1	21	H
1.3.6	Encourage establishing road signage that directs people on I-44 to local storm shelters during storm warnings.	3	3	2	3	3	3	3	20	IC, PD, EMCC	6	-1	5	25	H
2.1.2	Encourage the adoption of minimum standard building codes by all communities.	2	2	2	1	3	2	3	15	IC, PD, LF, EMCC	8	-3	5	20	H
2.1.3	Continue to encourage businesses and public entities to develop and implement emergency plans.	3	3	3	3	3	3	3	21	IC, PD, LF, EMCC	8	-3	5	26	H
2.2.1	Educate residents, realtors and contractors about the dangers of floodplain development and the benefits of the NFIP.	3	3	2	3	3	3	3	20	IC, PD, LF, EMCC	8	-1	7	27	M
2.2.2	Encourage development of storm water management plans in those jurisdictions that do not currently have them and in all new residential and commercial development.	3	2	2	2	3	2	3	18	IC, PD, LF, EMCC	8	-3	5	23	H
2.2.3	Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements in all existing and new development.	2	3	3	2	3	2	3	18	IC, PD, LF, EMCC	8	-3	5	23	H
2.3.1	Encourage local governments to develop and implement regulations for securing hazardous materials tanks and mobile homes to reduce hazards during storms and flooding.	2	2	2	2	3	3	3	17	IC, PD, LF, EMCC	8	-3	5	22	H

Action No.	Mitigation Actions	S	T	A	P	L	E	E	STAPLEE Total	Loss Avoided (2 pts. Each)	Benefit	Cost	B/C Total	Total	Priority
3.3.1	Re-evaluate the hazard mitigation plan, merge with other community planning and coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.	3	2	2	2	3	1	3	16	IC, PD, LF, EMCC	8	-3	5	21	H
3.4.3	Encourage the development of a county-wide CERT, COAD, and/or VOAD program and educate the public on how they can benefit from these types of programs.	3	3	3	3	3	3	3	21	IC, PD, LF, EMCC	8	-1	7	28	H
4.1.1	Participate in joint meetings of different organizations/agencies for mitigation related planning.	3	3	3	3	3	2	3	20	IC, PD, LF, EMCC	8	-1	7	27	H
4.1.2	Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).	3	2	2	3	3	2	3	18	IC, PD, LF, EMCC	8	-1	7	25	H
4.1.3	Pool different agency resources to achieve widespread mitigation planning results.	3	2	2	2	3	2	3	17	IC, PD, LF, EMCC	8	-1	7	24	H
5.3.1	Purchase properties in the floodplain as funds become available to convert that land into public space/recreation area and encourage communities to zone repetitive loss properties in the floodplain as open space.	2	3	3	2	3	2	3	18	IC, PD, LF, EMCC	8	-3	5	23	H
6.1.2	Structure grant proposals for road/bridge upgrades so that hazard mitigation concerns are also met.	3	2	2	2	3	2	3	17	IC, PD, LF, EMCC	8	-1	7	24	H
6.1.3	Work with state/local/federal agencies to include mitigation in all economic and community development projects.	3	2	2	2	3	2	2	16	IC, PD, LF, EMCC	8	-1	7	23	H
6.1.4	When funding is available, budget for mitigation projects.	3	3	3	3	3	2	3	20	IC, PD, LF, EMCC	8	-5	3	23	H
6.2.1	Encourage cities and counties to implement cost-share programs with private property owners for hazard mitigation projects that benefit the community as a whole.	2	1	1	1	2	2	2	11	IC, PD, LF, EMCC	8	-5	3	14	M

Pulaski County

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.

Action 1.1.1: Implement an education program on personal emergency preparedness that teaches residents how to prepare emergency survival kits with water, blankets, flashlights, etc. and how to shut off their home utilities during emergencies; provides them with information on precautions to be taken during threats of natural disasters such as heat waves; and provide information on personal mitigation actions such as building tornado shelters and securing propane tanks. Implement public awareness program about the benefits of hazard mitigation projects, both public and private through press releases and brochures.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Ongoing need to improve public education and awareness of hazards, personal emergency preparedness and the benefits of hazard mitigation.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	1.1.1
Name of Action or Project:	Public Education and Awareness Program on hazards, personal emergency preparedness and the benefits of hazard mitigation.
Action or Project Description:	Provide information and education to the general public through brochures, press releases, classes, presentations on personal emergency preparedness and the benefits of hazard mitigation.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$1,500 - $5,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County EMD, local emergency response agencies
Action/Project Priority:	27 – High Priority
Timeline for Completion:	1 – 5 years
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Information is distributed through local offices, at local events and through the media by the county EMD, SEMA, health department and emergency response agencies.

Action 1.2.1: Continue to encourage local governments to budget for and obtain enhanced early warning systems and improved communications systems.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with insufficient early warning systems and improved communications systems.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	1.2.1
Name of Action or Project:	Improving early warning and communications systems.
Action or Project Description:	Continue to encourage local governments to obtain early warning systems and improve communications systems.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown due to variables – $2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County EMD, Pulaski County Commission
Action/Project Priority:	23 –High Priority
Timeline for Completion:	One to 10 years
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The cities of Waynesville and St. Robert, as well as the military base – Fort Leonard Wood have cellphone alert systems available for residents. The city of Crocker now has a tornado siren. The school districts all have cellphone/text/email alert systems for students and parents.

Action 1.2.2: Continue to promote weather radios to local residents and schools to insure advanced warning about threatening weather.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks and vulnerabilities associated with lack of early warning systems for severe weather in rural areas of the county.
Hazard(s) Addressed:	Tornadoes, severe winter weather, severe thunderstorm/high winds/lightning/hail, extreme temperatures, flooding
Action or Project	
Action/Project Number:	1.2.2
Name of Action or Project:	Improving early warning for severe weather.
Action or Project Description:	The county should continue to encourage residents to invest in weather radios to improve early warning for severe weather for residents in rural areas of Pulaski County.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$1,500 - $2,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County EMD and local fire departments
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOPs
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Although the county has promoted weather radios in the past, there is currently no coordinated effort to encourage residents to purchase weather radios other than the efforts made by fire departments in the County. All school districts maintain weather radios.

Action 1.2.4: Promote the installation of fire alarms/security systems in public buildings.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with fire and inadequate alarms/security systems in public buildings.
Hazard(s) Addressed:	Wildfire
Action or Project	
Action/Project Number:	1.2.4
Name of Action or Project:	Improving fire alarms and security systems in public buildings.
Action or Project Description:	Promote the installation of fire alarms/security systems in public buildings.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County EMD, County Commission
Action/Project Priority:	23 –High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOPs
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	At least one rural fire department requires fire alarms. As a third class county, Pulaski County does not have the authority to enact building codes.

Action 1.2.5: Acquire backup generators to safeguard the availability of critical services such as electricity, water and emergency services.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with electrical, water and emergency services failure during a disaster.
Hazard(s) Addressed:	Floods and Earthquake
Action or Project	
Action/Project Number:	1.2.5
Name of Action or Project:	Generator backup
Action or Project Description:	Acquire generators to safeguard the availability of critical services such as electricity, water and emergency services.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$5,000 - $80,000 per generator unit
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County Commission, County EMD
Action/Project Priority:	23 – High Priority
Timeline for Completion:	5 – 10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Capital improvement plans, LEOP, hazard mitigation plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Both rural water districts have back-up generators. All rural fire departments have some kind of generator available. The Courthouse and new county jail both have generators.

Action 1.2.6: Conduct a study of the Texas Road area to find mitigation solutions for flash flooding that has resulted in water rescues, damaged utilities, roads and homes.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with lack of data/mitigation solutions for the Texas Road area
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	1.2.6
Name of Action or Project:	Texas Road Mitigation Study
Action or Project Description:	Texas Road is prone to flash flooding that has resulted in water rescues, damaged utilities, roads and homes. Need to study the area and find mitigation solutions.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$5,000 - $25,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County EMD, Pulaski County Commission
Action/Project Priority:	21 –High Priority
Timeline for Completion:	5 years
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	Not Stated – Continue in Plan Update
Report of Progress	The county does not currently have the resources to complete the project but does consider it a priority.

Action 1.2.7: Monitor developments in data availability concerning the impact of disasters such as dam failure, tornados, sinkholes, land subsidence and wildfire upon Pulaski County and all jurisdictions through local, state and federal agencies for use in hazard mitigation planning.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with lack of data concerning the impact of natural disasters on the County.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	1.2.7
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Monitor developments in data availability concerning the impact of disasters such as dam failure, tornadoes, sinkholes, land subsidence, and wildfire upon Pulaski County and all jurisdictions through local, state, and federal agencies for use in hazard mitigation planning.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County EMD, Pulaski County Commission
Action/Project Priority:	28 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, floodplain ordinance
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Some work has been done on this action item at the state and federal level. Improved data is becoming available for a number of different hazards including dam failure.

Action 1.3.1: Place water height gauges and signs near low water crossings.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with lack of signage and monitoring tools near low water crossings
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	1.3.1
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Place water height gauges and signs near low water crossings.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$2,500 - $3,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties and property damage, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County Road and Bridge Department
Action/Project Priority:	20 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Capital improvements plan, hazard mitigation plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Pulaski County currently maintains water height gauges on county-maintained roads and low water crossings but this is an on-going activity and there are still some gauges that need to be installed. There is also a developing project to place mile markers on the Big Piney and Gasconade River to better identify where to find emergencies on the river and establish GPS put-in points for rescues.

Action 1.3.3: Continue to examine road and bridge upgrades to improve drainage and reduce flooding and the risk to residents and property.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with flooding resulting from poor drainage during times of flooding.
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	1.3.3
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Continue to examine road and bridge upgrades to improve drainage and reduce flooding and the risk to residents and property.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown due to variables.
Benefits:	Losses avoided by implementing this action include injuries and/or casualties and property damage, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County Road and Bridge Department
Action/Project Priority:	25 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Capital improvements plan, hazard mitigation plan, Pulaski County has building specifications for subdivision builders to follow if they want the county to take over the subdivision roads.
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The county's policy is to go up a size any time a culvert is replaced in order to improve drainage and the county replaces an average of 55 culverts per year. Three low water crossings have been converted to bridges and a fourth is in the works for Bunker Road.

Action 1.3.4: Establish designated shelters for residents to be used during tornado threats, as cooling centers during extreme heat or power outages and/or as shelters during other disasters. Encourage the designation of public buildings as safe shelters and develop accessibility plans for the public.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with inadequate shelters for residents during disasters or extreme temperature events
Hazard(s) Addressed:	Tornado, Severe Winter Storm, Severe Weather, Extreme Heat
Action or Project	
Action/Project Number:	1.3.4
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Establish designated shelters for residents to be used during tornado and severe weather threats and as warming or cooling shelters during extreme heat or power outages and/or as shelters during other disasters. Insure that shelters are accessible.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$500 - $3,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County EMD
Action/Project Priority:	26 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
	Pulaski County has designated the county courthouse as a shelter. Additional shelters could be designated in rural areas of the county.

Action 1.3.5: As funding becomes available, increase availability (if necessary construction) of storm shelters for individual families and large groups, including near large employment centers and schools that currently do not have access to tornado safe rooms.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with nonexistent /unavailable storm shelters for individual families and large groups.
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	1.3.5
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	As funding becomes available, increase availability (if necessary, construction) of storm shelters for individual families and large groups, including near large employment centers and schools.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County Commission, County EMD
Action/Project Priority:	21 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan
Progress Report	
Action Status	Not Stated/Continue in Plan Update
Report of Progress	There are currently no certified tornado shelters located in unincorporated areas of the county, although two school districts have built certified tornado shelters – East Elementary in Waynesville and Crocker R-II School District campus at 601 Commercial Street, Crocker.

Action 1.3.6: Encourage establishing road signage that directs people on I-44 to local storm shelters during storm warnings.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated lack of signage to direct I-44 travelers to storm shelters during storm warnings
Hazard(s) Addressed:	Severe Weather, Tornado
Action or Project	
Action/Project Number:	1.3.6
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Encourage establishing road signage that directs people on I-44 to local storm shelters during storm warnings.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$500 - $2,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Mayors of Waynesville and St. Robert, EMDs
Action/Project Priority:	25 - H
Timeline for Completion:	5 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	Although no progress has been made on this action item, the county commission still considers it a high priority.

Goal 2: Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.

Action 2.2.1: Educate residents, realtors and contractors about the dangers of floodplain development and the benefits of the National Flood Insurance Program.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities of properties in the floodplain during a flood event.
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	2.2.1
Name of Action or Project:	Floodplain education/awareness
Action or Project Description:	Educate residents about the dangers of floodplain development and the benefits of the NFIP
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$500 - $2,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Floodplain Manager, Pulaski County Commission
Action/Project Priority:	27 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain management ordinances, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Information, brochures, etc. on floodplain development and the NFIP is available through the county floodplain manager. The program could benefit from direct mailings to realtors, contractors and residents with property located in the floodplain. This is a program that requires on-going activity as people move in and out of the county.

Action 2.2.2: Encourage development of storm water management plans/ordinances in those jurisdictions that do not currently have them and in all new development including unincorporated areas.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with flood events in areas that do not possess adequate storm water management plans
Hazard(s) Addressed:	Flood, Severe Weather
Action or Project	
Action/Project Number:	2.2.2
Name of Action or Project:	Encourage development of storm water management plans/ordinances
Action or Project Description:	Encourage development of storm water management plans in those jurisdictions that do not currently have them and in all new developments and encourage the county to review and strengthen any subdivision ordinances to incorporate mitigation measures such as storm water management.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$5,000 - $25,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Pulaski County Commission, city councils of cities, City Engineers, Public Works Directors
Action/Project Priority:	23 - H
Timeline for Completion:	10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	Capital Improvement plans, builders plans, comprehensive plans, transportation plans, land-use plans, flood mitigation assistance plans, ordinances
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The county requires some storm water management be incorporated into any new developments where the developer wants the county to take over road maintenance.

Action 2.2.3: Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements in all existing and new development.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with flooding and unregulated floodplain development.
Hazard(s) Addressed:	Flood, Severe Weather
Action or Project	
Action/Project Number:	2.2.3
Name of Action or Project:	Floodplain management compliance enforcement.
Action or Project Description:	Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$4,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Pulaski County Commission, floodplain manager
Action/Project Priority:	23 - H
Timeline for Completion:	1 - 5 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	Capital Improvement plans, builders plans, comprehensive plans, transportation plans, land-use plans, flood mitigation assistance plans, ordinances
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The county is a member of the NFIP and works to ensure compliance with the county floodplain ordinance. This is an on-going endeavor and could benefit from additional inspections of floodplain areas and additional education/awareness activities for builders and residents.

Action 2.3.1: Encourage local governments to develop and implement regulations for securing hazardous materials tanks and mobile homes to reduce hazards during storms and flooding.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with unsecured hazardous materials, tanks, and mobile homes during flood, severe weather, or tornado events.
Hazard(s) Addressed:	Flood, Severe Weather, Tornado
Action or Project	
Action/Project Number:	2.3.1
Name of Action or Project:	Encourage the development of regulations or ordinances for securing materials tanks and mobile homes to reduce hazards during storms and flooding.
Action or Project Description:	Encourage local governments to develop and implement regulations and/or ordinances for securing hazardous materials, tanks, and mobile homes to reduce hazards during storms, flooding, and high winds.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$3,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County EMD, Floodplain Manager, County Commission
Action/Project Priority:	22 – High Priority
Timeline for Completion:	10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, and services
Local Planning Mechanisms to be Used in Implementation, if any:	County ordinances, builders plans, LEOP, building codes, floodplain ordinances
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	The county indicated that they do not have the resources to complete this action item at this time.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Action 3.3.1: Re-evaluate the hazard mitigation plan, merge with other community planning and coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with not regularly reviewing and updating the mitigation plan and incorporating mitigation activities into emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	3.3.1
Name of Action or Project:	Re-evaluate the hazard mitigation plan and merge with other community planning activities.
Action or Project Description:	Re-evaluate the hazard mitigation plan, merge with other community planning activities and documents and incorporate hazard mitigation into the long-range planning and development activities of the county.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities
Estimated Cost:	$3,500 - $4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County EMD, Local Planners, MPC
Action/Project Priority:	21 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan, County Budget, Economic Development Plan, Transportation Plan, Floodplain Ordinance, economic development plan, land-use plan, capital improvement plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Hazard mitigation goals & actions have been incorporated into the regional Community & Economic Development Strategy. The Pulaski County Road & Bridge Department has incorporated

	mitigation activities into their regular maintenance program. Mitigation actions are part of the county LEOP. As local officials become familiar with mitigation and understand how it fits within other planning activities, this action item will continue to expand.

Action 3.4.3: Encourage the development of a county-wide CERT, COAD and/or VOAD program and educate the public on how they can benefit from these types of programs.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Lack of information on and need for CERT and/or COAD/VOAD programs to help communities prepare for, plan for and recover from disasters.
Hazard(s) Addressed:	All hazards.
Action or Project	
Action/Project Number:	3.4.3
Name of Action or Project:	Promote the development of CERT, COAD, VOAD
Action or Project Description:	Encourage the development of a county-wide CERT and/or COAD/VOAD program and educate the public on how they can benefit from these types of programs.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards and hazard mitigation alternatives that can reduce their vulnerabilities.
Estimated Cost:	$1,500 - $5,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County EMD
Action/Project Priority:	28 – High Priority
Timeline for Completion:	5 years to form CERT/COAD/VOAD, awareness – on-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	CERT training has been held in the county and there is an active COAD in the county. However, the CERT team is not currently active. The county would benefit from working to re-invigorate these programs.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Action 4.1.1: Participate in joint meetings of different organizations/agencies for mitigation related planning.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication among organizations/agencies for mitigation related planning.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.1
Name of Action or Project:	Participate in joint meetings of different organizations/agencies and continued communication on mitigation.
Action or Project Description:	Participate in joint meetings of different organizations/agencies for mitigation related planning.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County Commission, County EMD
Action/Project Priority:	27 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, Floodplain Ordinance, LEOP, County Budget
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. Region I Fire Chiefs meet regularly. The Region I SEMA area coordinator holds quarterly meetings throughout the six-county region, including in Pulaski County. This program could benefit from a more coordinated, focused effort to bring different agencies together to specifically discuss mitigation issues.

Action 4.1.2: Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination among agencies, public, and private entities on disaster training and emergency drills/exercises.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	4.1.2
Name of Action or Project:	Participate in joint training/drills/exercises among all jurisdictions and local businesses.
Action or Project Description:	Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).
Applicable Goal Statement:	Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.
Estimated Cost:	$1,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County EMD, Emergency Response Agencies
Action/Project Priority:	25 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Jurisdictions, EMDs and emergency response agencies within Pulaski County cooperate on training and drills on a regular basis. Fire and police departments regularly train with local school districts. The county fire chief's association meets regularly and do joint training. The Region I SEMA area coordinator works with local entities throughout the six-county area to do at least one exercise each year that is either regional or state-wide. The Pipeline Association of Missouri hosts annual tabletop exercises in the region.

Action 4.1.3: Whenever possible, pool different agency resources to achieve widespread mitigation results.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Lack of resources to carry out mitigation projects
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.3
Name of Action or Project:	Pool different agency resources to achieve widespread mitigation results.
Action or Project Description:	Bring together different agencies and organizations that have similar goals and work together to pool resources to move mitigation projects forward.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County EMD, County Commission, Floodplain Manager
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, Floodplain Ordinance, LEOP, County Budget
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. The county commission reported that they are interested in finding ways to pool resources to accomplish mitigation projects.

Goal 5: Establish priorities for reducing risks to the people and their property with emphasis on long-term and maximum benefits to the public rather than short-term benefit of special interests.

Action 5.3.1: Purchase properties in the floodplain as funds become available to convert that land into public space/recreation area and encourage communities to zone repetitive loss properties in the floodplain as open space.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated lack of adequate storm shelters.
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	5.3.1
Name of Action or Project:	Government purchase of properties in the floodplain.
Action or Project Description:	Purchase properties in the floodplain as funds become available and convert that land into public space/recreation area.
Applicable Goal Statement:	Establish priorities for reducing risks to the people and their property with emphasis on long-term and maximum benefits to the public rather than short-term benefits of special interests.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include property damage and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County Commission, floodplain manager
Action/Project Priority:	23– High Priority
Timeline for Completion:	One to ten years
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The county EMD has made some progress on this action item. Two shelters have been designated – the county courthouse in Vienna and the Masonic Lodge in Belle. Accessibility plans are in place for these two locations and both have shelter supplies. The county would benefit from having more detailed assessments done and additional shelters designated.

Action 5.3.1: Encourage local governments to purchase properties in the floodplain as funds become available and convert that land into public space/recreation area.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with floodplain properties
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	5.3.1
Name of Action or Project:	Government purchase of properties in the floodplain
Action or Project Description:	Encourage local governments to purchase properties in the floodplain as funds become available and convert that land into public space/recreation area.
Applicable Goal Statement:	Establish priorities for reducing risks to the people and their property with emphasis on long-term and maximum benefits to the public rather than short-term benefits of special interests.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include property damage, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County Commission, County EMD, Floodplain Manager/ Coordinator
Action/Project Priority:	23 - H
Timeline for Completion:	N/A
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain ordinance, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The County has purchased one repetitive loss property in the floodplain. As resources become available, the County would consider purchasing more floodplain properties.

Goal 6: Secure resources for investment in hazard mitigation.

Action 6.1.2: Structure grant proposals for road/bridge upgrades so that hazard mitigation concerns are also met.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Roads/bridges in need of upgrades
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	6.1.2
Name of Action or Project:	Structuring grant proposals to meet mitigation needs.
Action or Project Description:	Structure grant proposals for road/bridge upgrades so that hazard mitigation concerns are also met.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	$3,500 -$4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County Commission, County engineer, local grant writers
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, County Budget
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Pulaski County's policy is to incorporate upgrades in all road and bridge projects. However, this is an activity that would benefit from raising awareness of mitigation concerns and remedies. As more local officials become aware of the importance of mitigation and realize that grants can provide opportunities for funding those actions, this activity will become more integrated into local planning.

Action 6.1.3: Work with state/local/federal agencies to include mitigation in all economic and community development projects.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination of mitigation in community development projects and integration of mitigation actions into economic and community development projects.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	6.1.3
Name of Action or Project:	Coordination with state/local/federal agencies to integrate mitigation into economic and community development projects.
Action or Project Description:	Work with state/local/federal agencies to include mitigation into economic and community development projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/ displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County Commission, local planners, local economic developers, community development organizations, county EMD
Action/Project Priority:	23 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, economic development plans, CEDS, land-use plans
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Progress is being made in this area. Hazard mitigation goals and actions have been incorporated into the regional Community Economic Development Strategy (CEDS). As mitigation awareness grows, additional efforts will be made to incorporate mitigation activities into economic and community development projects.

Action 6.1.4: When funding is available, budget for mitigation projects.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Lack of funding for hazard mitigation projects.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	6.1.4
Name of Action or Project:	Budgeting for mitigation projects
Action or Project Description:	When funding is available, budget for mitigation projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County EMD, County Commission
Action/Project Priority:	23 - H
Timeline for Completion:	5 years to implement and then on-going
Potential Fund Sources:	Local general revenue funds
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, County Budget, CEDS, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Pulaski County currently budgets to upgrade all culvert replacements. The county is also asking FEMA to allow them to mitigate repairs following a disaster rather than build the road and/or bridge back just as it was before the damage.

Action 6.2.1: Encourage cities and county to implement cost-share programs with private property owners for hazard mitigation projects that benefit the community as a whole.

Action Worksheet	
Name of Jurisdiction:	Pulaski County
Risk / Vulnerability	
Problem being Mitigated:	Lack of cost-share programs with private property owners for hazard mitigation projects.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	6.2.1
Name of Action or Project:	Encourage local mitigation cost-share programs.
Action or Project Description:	Encourage cities and county to implement cost-share programs with private property owners for hazard mitigation projects that benefit the community as a whole.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown – dependent upon projects and interest
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	County Commission
Action/Project Priority:	14 – Medium Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The county will install culverts if the individual pays for the culvert to ensure that installation is done correctly and the culvert is sized correctly. This program could benefit from more organized guidelines and focused efforts if additional funding could be secured.

Crocker

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.

Action 1.1.1: Implement an education program on personal emergency preparedness that teaches residents how to prepare emergency survival kits with water, blankets, flashlights, etc. and how to shut off their home utilities during emergencies; provides them with information on precautions to be taken during threats of natural disasters such as heat waves; and provide information on personal mitigation actions such as building tornado shelters and securing propane tanks. Implement public awareness program about the benefits of hazard mitigation projects, both public and private through press releases and brochures.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Ongoing need to improve public education and awareness of hazards, personal emergency preparedness and the benefits of hazard mitigation.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	1.1.1
Name of Action or Project:	Public Education and Awareness Program on hazards, personal emergency preparedness and the benefits of hazard mitigation.
Action or Project Description:	Provide information and education to the general public through brochures, press releases, classes, presentations on personal emergency preparedness and the benefits of hazard mitigation.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$1,500 - $5,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, local emergency response agencies
Action/Project Priority:	27 – High Priority
Timeline for Completion:	1 – 5 years
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Information is distributed through local offices, at local events and through the media by the county EMD, SEMA, health department and emergency response agencies.

Action 1.2.1: Continue to encourage local governments to budget for and obtain enhanced early warning systems and improved communications systems.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with insufficient early warning systems and improved communications systems.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	1.2.1
Name of Action or Project:	Improving early warning and communications systems.
Action or Project Description:	Continue to encourage local governments to obtain early warning systems and improve communications systems.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown due to variables – $2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	23 –High Priority
Timeline for Completion:	One to 10 years
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city of Crocker now has a tornado siren. The community also has CodeRed – a phone/text system for emergency notifications. The school district has a phone/text/email system for sharing information.

Action 1.2.2: Continue to promote weather radios to local residents and schools to insure advanced warning about threatening weather.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Risks and vulnerabilities associated with lack of early warning systems for severe weather in rural areas of the county.
Hazard(s) Addressed:	Tornadoes, severe winter weather, severe thunderstorm/high winds/lightning/hail, extreme temperatures, flooding
Action or Project	
Action/Project Number:	1.2.2
Name of Action or Project:	Improving early warning for severe weather.
Action or Project Description:	The city should continue to encourage residents to invest in weather radios to improve early warning for severe weather.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$1,500 - $2,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City Council, city EMD and local fire department
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Although the county has promoted weather radios in the past, there is currently no coordinated effort to encourage residents to purchase weather radios other than the efforts made by fire departments.

Action 1.2.4: Promote the installation of fire alarms/security systems in public buildings.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with fire and inadequate alarms/security systems in public buildings.
Hazard(s) Addressed:	Wildfire
Action or Project	
Action/Project Number:	1.2.4
Name of Action or Project:	Improving fire alarms and security systems in public buildings.
Action or Project Description:	Promote the installation of fire alarms/security systems in public buildings.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	23 –High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	The city of Crocker currently does not require fire alarms in public buildings.

Action 1.2.5: Acquire backup generators to safeguard the availability of critical services such as electricity, water and emergency services.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with electrical, water and emergency services failure during a disaster.
Hazard(s) Addressed:	Floods and Earthquake
Action or Project	
Action/Project Number:	1.2.5
Name of Action or Project:	Generator backup
Action or Project Description:	Acquire generators to safeguard the availability of critical services such as electricity, water and emergency services.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$5,000 - $80,000 per generator unit
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City EMD
Action/Project Priority:	23 – High Priority
Timeline for Completion:	5 – 10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Capital improvement plans, LEOP, hazard mitigation plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Crocker has a backup generator for their sewer treatment plant, but would like to get generators for city hall and at least one of the city wells.

Action 1.2.7: Monitor developments in data availability concerning the impact of disasters such as dam failure, tornados, sinkholes, land subsidence and wildfire upon Pulaski County and all jurisdictions through local, state and federal agencies for use in hazard mitigation planning.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with lack of data concerning the impact of natural disasters on the County.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	1.2.7
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Monitor developments in data availability concerning the impact of disasters such as dam failure, tornadoes, sinkholes, land subsidence, and wildfire upon Pulaski County and all jurisdictions through local, state, and federal agencies for use in hazard mitigation planning.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	28 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, floodplain ordinance
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Some work has been done on this action item at the state and federal level. Improved data is becoming available for a number of different hazards including dam failure.

Action 1.3.4: Establish designated shelters for residents to be used during tornado threats, as cooling centers during extreme heat or power outages and/or as shelters during other disasters. Encourage the designation of public buildings as safe shelters and develop accessibility plans for the public.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with inadequate shelters for residents during disasters or extreme temperature events
Hazard(s) Addressed:	Tornado, Severe Winter Storm, Severe Weather, Extreme Heat
Action or Project	
Action/Project Number:	1.3.4
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Establish designated shelters for residents to be used during tornado and severe weather threats and as warming or cooling shelters during extreme heat or power outages and/or as shelters during other disasters. Insure that shelters are accessible.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$500 - $3,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD
Action/Project Priority:	26 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
	Crocker has designated the city library as a warming and cooling shelter, but the community would benefit from having additional shelters designated – particularly for tornados. The Crocker R-II School District has a certified tornado shelter located in the school cafeteria and the school district allows residents to use the shelter during severe weather and tornado warnings.

Action 1.3.5: As funding becomes available, increase availability (if necessary construction) of storm shelters for individual families and large groups, including near large employment centers and schools that currently do not have access to tornado safe rooms.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with nonexistent /unavailable storm shelters for individual families and large groups.
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	1.3.5
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	As funding becomes available, increase availability (if necessary, construction) of storm shelters for individual families and large groups, including near large employment centers and schools.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City EMD
Action/Project Priority:	21 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The Crocker school district built a certified tornado shelter for the school. However, the city would benefit from having a certified tornado shelter for residents as well.

Goal 2: Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.

Action 2.1.2: Encourage the adoption of minimum standard building codes by all communities that do not currently have them.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities to property and communities in the event of a natural disaster due to substandard construction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	2.1.2
Name of Action or Project:	Property & Infrastructure Protection
Action or Project Description:	Encourage the adoption of minimum standard building codes by all communities that do not currently have them.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$3,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen
Action/Project Priority:	20 - H
Timeline for Completion:	5 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	City ordinances
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	Crocker has building codes in its ordinances but does not have the resources to enforce building codes. The mayor has expressed an interest in getting help to re-establish, update and enforce minimum building codes.

Action 2.2.2: Encourage development of storm water management plans/ordinances in those jurisdictions that do not currently have them and in all new development including unincorporated areas.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with flood events in areas that do not possess adequate storm water management plans
Hazard(s) Addressed:	Flood, Severe Weather
Action or Project	
Action/Project Number:	2.2.2
Name of Action or Project:	Encourage development of storm water management plans/ordinances
Action or Project Description:	Encourage development of storm water management plans in those jurisdictions that do not currently have them and in all new developments. and encourage the county to review and strengthen any subdivision ordinances to incorporate mitigation measures such as storm water management.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$5,000 - $25,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City Engineer, Public Works Director
Action/Project Priority:	23 - H
Timeline for Completion:	10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	Capital Improvement plans, builders plans, comprehensive plans, transportation plans, land-use plans, flood mitigation assistance plans, ordinances
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	The city currently does not have the resources available to develop a storm water management plan or ordinances.

Action 2.3.1: Encourage local governments to develop and implement regulations for securing hazardous materials tanks and mobile homes to reduce hazards during storms and flooding.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with unsecured hazardous materials, tanks, and mobile homes during flood, severe weather, or tornado events.
Hazard(s) Addressed:	Flood, Severe Weather, Tornado
Action or Project	
Action/Project Number:	2.3.1
Name of Action or Project:	Encourage the development of regulations or ordinances for securing materials tanks and mobile homes to reduce hazards during storms and flooding.
Action or Project Description:	Encourage local governments to develop and implement regulations and/or ordinances for securing hazardous materials, tanks, and mobile homes to reduce hazards during storms, flooding, and high winds.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$3,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	22 – High Priority
Timeline for Completion:	10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, and services
Local Planning Mechanisms to be Used in Implementation, if any:	City ordinances, LEOP, building codes
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	Crocker has indicated that they do not have the resources to complete this action item at this time.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Action 3.3.1: Re-evaluate the hazard mitigation plan, merge with other community planning and coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with not regularly reviewing and updating the mitigation plan and incorporating mitigation activities into emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	3.3.1
Name of Action or Project:	Re-evaluate the hazard mitigation plan and merge with other community planning activities.
Action or Project Description:	Re-evaluate the hazard mitigation plan, merge with other community planning activities and documents and incorporate hazard mitigation into the long-range planning and development activities of the county.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities
Estimated Cost:	$3,500 - $4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Local Planners, MPC
Action/Project Priority:	21 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan, City Budget, Economic Development Plan, Transportation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Hazard mitigation goals & actions have been added to the regional CEDS. Mitigation is in the LEOP. As local officials become familiar with mitigation & understand how it fits within other planning activities, this action item will continue to expand.

Action 3.4.3: Encourage the development of a county-wide CERT, COAD and/or VOAD program and educate the public on how they can benefit from these types of programs.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Lack of information on and need for CERT and/or COAD/VOAD programs to help communities prepare for, plan for and recover from disasters.
Hazard(s) Addressed:	All hazards.
Action or Project	
Action/Project Number:	3.4.3
Name of Action or Project:	Promote the development of CERT, COAD, VOAD
Action or Project Description:	Encourage the development of a county-wide CERT and/or COAD/VOAD program and educate the public on how they can benefit from these types of programs.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards and hazard mitigation alternatives that can reduce their vulnerabilities.
Estimated Cost:	$1,500 - $5,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD
Action/Project Priority:	28 – High Priority
Timeline for Completion:	5 years to form CERT/COAD/VOAD, awareness – on-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	CERT training has been held in the county and there is an active COAD in the county. However, the CERT team is not currently active. The city would benefit from working to re-invigorate these programs and encouraging them within the city.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Action 4.1.1: Participate in joint meetings of different organizations/agencies for mitigation related planning.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication among organizations/agencies for mitigation related planning.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.1
Name of Action or Project:	Encourage joint meetings of different organizations/agencies and continued communication on mitigation.
Action or Project Description:	Participate in joint meetings of different organizations/agencies for mitigation related planning.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	27 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. Region I Fire Chiefs meet regularly. The Region I SEMA area coordinator holds quarterly meetings throughout the six-county region, including in Pulaski County. This program could benefit from a more coordinated, focused effort to bring different agencies together to specifically discuss mitigation issues.

Action 4.1.2: Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination among agencies, public, and private entities on disaster training and emergency drills/exercises.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	4.1.2
Name of Action or Project:	Encourage joint training/drills/exercises among all jurisdictions and local businesses.
Action or Project Description:	Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).
Applicable Goal Statement:	Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.
Estimated Cost:	$1,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, local Emergency Response Agencies
Action/Project Priority:	25 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Jurisdictions, EMDs and emergency response agencies within the city of Crocker and Pulaski County cooperate on training and drills on a regular basis. Fire and police departments regularly train with local school districts. The county fire chief's association meets regularly and do joint training. The Region I SEMA area coordinator works with local entities throughout the six-county area to do at least one exercise each year that is either regional or state-wide. The Pipeline Association of Missouri hosts annual tabletop exercises in the region.

Action 4.1.3: Pool different agency resources to achieve widespread mitigation results.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Lack of resources to carry out mitigation projects
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.3
Name of Action or Project:	Pool different agency resources to achieve widespread mitigation results.
Action or Project Description:	Bring together different agencies and organizations that have similar goals and work together to pool resources to move mitigation projects forward.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP, City Budget
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. The Crocker mayor reported that they are interested in finding ways to pool resources to accomplish mitigation projects.

Goal 6: Secure resources for investment in hazard mitigation.

Action 6.1.2: Structure grant proposals for road/bridge upgrades so that hazard mitigation concerns are also met.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Roads/bridges in need of upgrades
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	6.1.2
Name of Action or Project:	Structuring grant proposals to meet mitigation needs.
Action or Project Description:	Structure grant proposals for road/bridge upgrades so that hazard mitigation concerns are also met.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	$3,500 -$4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City engineer, local grant writers
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, City Budget
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	When resources are available the city tries to incorporate upgrades into all infrastructure projects. However, this is an activity that would benefit from raising awareness of mitigation concerns and remedies. As more local officials become aware of the importance of mitigation and realize that grants can provide opportunities for funding those actions, this activity will become more integrated into local planning.

Action 6.1.3: Work with state/local/federal agencies to include mitigation in all economic and community development projects.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination of mitigation in community development projects and integration of mitigation actions into economic and community development projects.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	6.1.3
Name of Action or Project:	Coordination with state/local/federal agencies to integrate mitigation into economic and community development projects.
Action or Project Description:	Work with state/local/federal agencies to include mitigation into economic and community development projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/ displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, local planners, local economic developers, community development organizations, city EMD
Action/Project Priority:	23 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, economic development plans, CEDS
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Progress is being made in this area. Hazard mitigation goals and actions have been incorporated into the regional Community Economic Development Strategy (CEDS). As mitigation awareness grows, additional efforts will be made to incorporate mitigation activities into economic and community development projects.

Action 6.1.4: When funding is available, budget for mitigation projects.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Lack of funding for hazard mitigation projects.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	6.1.4
Name of Action or Project:	Budgeting for mitigation projects
Action or Project Description:	When funding is available, budget for mitigation projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	23 - H
Timeline for Completion:	5 years to implement and then on-going
Potential Fund Sources:	Local general revenue funds
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, City Budget, CEDS, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	When resources are available, the city tries to make infrastructure improvements that include mitigation. However, this is an activity that would benefit from raising awareness of mitigation concerns and remedies. As more local officials become aware of the importance of mitigation and realize that projects can be accomplished through capital improvements, this activity will become more integrated into local budgeting.

Action 6.2.1: Encourage cities and county to implement cost-share programs with private property owners for hazard mitigation projects that benefit the community as a whole.

Action Worksheet	
Name of Jurisdiction:	City of Crocker
Risk / Vulnerability	
Problem being Mitigated:	Lack of cost-share programs with private property owners for hazard mitigation projects.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	6.2.1
Name of Action or Project:	Encourage local mitigation cost-share programs.
Action or Project Description:	Encourage cities and county to implement cost-share programs with private property owners for hazard mitigation projects that benefit the community as a whole.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown – dependent upon projects and interest
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, Chief of Public Works
Action/Project Priority:	14 – Medium Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city will install culverts if the individual pays for the culvert to ensure that installation is done correctly and the culvert is sized correctly. This program could benefit from more organized guidelines and focused efforts if additional funding could be secured.

Dixon

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.

Action 1.1.1: Implement an education program on personal emergency preparedness that teaches residents how to prepare emergency survival kits with water, blankets, flashlights, etc. and how to shut off their home utilities during emergencies; provides them with information on precautions to be taken during threats of natural disasters such as heat waves; and provide information on personal mitigation actions such as building tornado shelters and securing propane tanks. Implement public awareness program about the benefits of hazard mitigation projects, both public and private through press releases and brochures.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Ongoing need to improve public education and awareness of hazards, personal emergency preparedness and the benefits of hazard mitigation.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	1.1.1
Name of Action or Project:	Public Education and Awareness Program on hazards, personal emergency preparedness and the benefits of hazard mitigation.
Action or Project Description:	Provide information and education to the general public through brochures, press releases, classes, presentations on personal emergency preparedness and the benefits of hazard mitigation.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$1,500 - $5,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, local emergency response agencies
Action/Project Priority:	27 – High Priority
Timeline for Completion:	1 – 5 years
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Information is distributed through local offices, at local events and through the media by the county EMD, SEMA, health department and emergency response agencies.

Action 1.2.1: Continue to encourage local governments to budget for and obtain enhanced early warning systems and improved communications systems.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with insufficient early warning systems and improved communications systems.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	1.2.1
Name of Action or Project:	Improving early warning and communications systems.
Action or Project Description:	Continue to encourage local governments to obtain early warning systems and improve communications systems.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown due to variables – $2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	23 –High Priority
Timeline for Completion:	One to 10 years
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city of Dixon has one tornado siren which is not adequate for the entire community. The school district has a phone/text/email system for sharing information. The community would also benefit from adding a cellphone alert system.

Action 1.2.2: Continue to promote weather radios to local residents and schools to insure advanced warning about threatening weather.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Risks and vulnerabilities associated with lack of early warning systems for severe weather in rural areas of the county.
Hazard(s) Addressed:	Tornadoes, severe winter weather, severe thunderstorm/high winds/lightning/hail, extreme temperatures, flooding
Action or Project	
Action/Project Number:	1.2.2
Name of Action or Project:	Improving early warning for severe weather.
Action or Project Description:	The city should continue to encourage residents to invest in weather radios to improve early warning for severe weather.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$1,500 - $2,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City Council, city EMD and local fire department
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Although the county has promoted weather radios in the past, there is currently no coordinated effort to encourage residents to purchase weather radios other than the efforts made by fire departments.

Action 1.2.4: Promote the installation of fire alarms/security systems in public buildings.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with fire and inadequate alarms/security systems in public buildings.
Hazard(s) Addressed:	Wildfire
Action or Project	
Action/Project Number:	1.2.4
Name of Action or Project:	Improving fire alarms and security systems in public buildings.
Action or Project Description:	Promote the installation of fire alarms/security systems in public buildings.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	23 –High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	The city of Dixon currently does not require fire alarms in public buildings and does not have the resources to enforce codes requiring them.

Action 1.2.5: Acquire backup generators to safeguard the availability of critical services such as electricity, water and emergency services.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with electrical, water and emergency services failure during a disaster.
Hazard(s) Addressed:	Floods and Earthquake
Action or Project	
Action/Project Number:	1.2.5
Name of Action or Project:	Generator backup
Action or Project Description:	Acquire generators to safeguard the availability of critical services such as electricity, water and emergency services.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$5,000 - $80,000 per generator unit
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City EMD
Action/Project Priority:	23 – High Priority
Timeline for Completion:	5 – 10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Capital improvement plans, LEOP, hazard mitigation plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Dixon currently does not have any backup generators but is interested in acquiring generators for critical facilities if funding can be found.

Action 1.2.7: Monitor developments in data availability concerning the impact of disasters such as dam failure, tornados, sinkholes, land subsidence and wildfire upon Pulaski County and all jurisdictions through local, state and federal agencies for use in hazard mitigation planning.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with lack of data concerning the impact of natural disasters on the County.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	1.2.7
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Monitor developments in data availability concerning the impact of disasters such as dam failure, tornadoes, sinkholes, land subsidence, and wildfire upon Pulaski County and all jurisdictions through local, state, and federal agencies for use in hazard mitigation planning.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	28 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, floodplain ordinance
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Some work has been done on this action item at the state and federal level. Improved data is becoming available for a number of different hazards including dam failure.

Action 1.3.4: Establish designated shelters for residents to be used during tornado threats, as cooling centers during extreme heat or power outages and/or as shelters during other disasters. Encourage the designation of public buildings as safe shelters and develop accessibility plans for the public.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with inadequate shelters for residents during disasters or extreme temperature events
Hazard(s) Addressed:	Tornado, Severe Winter Storm, Severe Weather, Extreme Heat
Action or Project	
Action/Project Number:	1.3.4
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Establish designated shelters for residents to be used during tornado and severe weather threats and as warming or cooling shelters during extreme heat or power outages and/or as shelters during other disasters. Insure that shelters are accessible.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$500 - $3,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD
Action/Project Priority:	26 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
	The mayor is in discussions with local churches with basements about serving as tornado shelters, but nothing has been confirmed at this time and those would not be SEMA certified shelters.

Action 1.3.5: As funding becomes available, increase availability (if necessary construction) of storm shelters for individual families and large groups, including near large employment centers and schools that currently do not have access to tornado safe rooms.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with nonexistent /unavailable storm shelters for individual families and large groups.
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	1.3.5
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	As funding becomes available, increase availability (if necessary, construction) of storm shelters for individual families and large groups, including near large employment centers and schools.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City EMD
Action/Project Priority:	21 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	There are currently no certified tornado shelters in Dixon and the community does not currently have the resources to build one.

Goal 2: Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.

Action 2.1.2: Encourage the adoption of minimum standard building codes by all communities that do not currently have them.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities to property and communities in the event of a natural disaster due to substandard construction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	2.1.2
Name of Action or Project:	Property & Infrastructure Protection
Action or Project Description:	Encourage the adoption of minimum standard building codes by all communities that do not currently have them.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$3,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen
Action/Project Priority:	20 - H
Timeline for Completion:	5 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	City ordinances
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	Dixon does not have the resources to enforce building codes.

Action 2.2.2: Encourage development of storm water management plans/ordinances in those jurisdictions that do not currently have them and in all new development including unincorporated areas.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with flood events in areas that do not possess adequate storm water management plans
Hazard(s) Addressed:	Flood, Severe Weather
Action or Project	
Action/Project Number:	2.2.2
Name of Action or Project:	Encourage development of storm water management plans/ordinances
Action or Project Description:	Encourage development of storm water management plans in those jurisdictions that do not currently have them and in all new developments. and encourage the county to review and strengthen any subdivision ordinances to incorporate mitigation measures such as storm water management.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$5,000 - $25,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City Engineer, Public Works Director
Action/Project Priority:	23 - H
Timeline for Completion:	10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	Capital Improvement plans, builders plans, transportation plans, ordinances, Hazard Mitigation Plan
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	The city currently does not have the resources available to develop a storm water management plan or ordinances.

Action 2.3.1: Encourage local governments to develop and implement regulations for securing hazardous materials tanks and mobile homes to reduce hazards during storms and flooding.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with unsecured hazardous materials, tanks, and mobile homes during flood, severe weather, or tornado events.
Hazard(s) Addressed:	Flood, Severe Weather, Tornado
Action or Project	
Action/Project Number:	2.3.1
Name of Action or Project:	Encourage the development of regulations or ordinances for securing materials tanks and mobile homes to reduce hazards during storms and flooding.
Action or Project Description:	Encourage local governments to develop and implement regulations and/or ordinances for securing hazardous materials, tanks, and mobile homes to reduce hazards during storms, flooding, and high winds.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$3,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	22 – High Priority
Timeline for Completion:	10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, and services
Local Planning Mechanisms to be Used in Implementation, if any:	City ordinances, LEOP, building codes, Hazard Mitigation Plan
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	Dixon has indicated that they do not have the expertise or resources to complete this action item at this time.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Action 3.3.1: Re-evaluate the hazard mitigation plan, merge with other community planning and coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with not regularly reviewing and updating the mitigation plan and incorporating mitigation activities into emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	3.3.1
Name of Action or Project:	Re-evaluate the hazard mitigation plan and merge with other community planning activities.
Action or Project Description:	Re-evaluate the hazard mitigation plan, merge with other community planning activities and documents and incorporate hazard mitigation into the long-range planning and development activities of the county.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities
Estimated Cost:	$3,500 - $4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Local Planners, MPC
Action/Project Priority:	21 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan, City Budget, Economic Development Plan, Transportation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Hazard mitigation goals & actions have been incorporated into the regional Community & Economic Development Strategy. Mitigation actions are part of the LEOP. As local officials become

	familiar with mitigation and understand how it fits within other planning activities, this action item will continue to expand.

Action 3.4.3: Encourage the development of a county-wide CERT, COAD and/or VOAD program and educate the public on how they can benefit from these types of programs.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Lack of information on and need for CERT and/or COAD/VOAD programs to help communities prepare for, plan for and recover from disasters.
Hazard(s) Addressed:	All hazards.
Action or Project	
Action/Project Number:	3.4.3
Name of Action or Project:	Promote the development of CERT, COAD, VOAD
Action or Project Description:	Encourage the development of a county-wide CERT and/or COAD/VOAD program and educate the public on how they can benefit from these types of programs.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards and hazard mitigation alternatives that can reduce their vulnerabilities.
Estimated Cost:	$1,500 - $5,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD
Action/Project Priority:	28 – High Priority
Timeline for Completion:	5 years to form CERT/COAD/VOAD, awareness – on-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	CERT training has been held in the county and there is an active COAD in the county. However, the CERT team is not currently active. The city would benefit from working to re-invigorate these programs and encouraging them within the city.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Action 4.1.1: Participate in joint meetings of different organizations/agencies for mitigation related planning.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication among organizations/agencies for mitigation related planning.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.1
Name of Action or Project:	Participate in joint meetings of different organizations/agencies and continued communication on mitigation.
Action or Project Description:	Participate in joint meetings of different organizations/agencies for mitigation related planning.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	27 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. Region I Fire Chiefs meet regularly. The Region I SEMA area coordinator holds quarterly meetings throughout the six-county region, including in Pulaski County. This program could benefit from a more coordinated, focused effort to bring different agencies together to specifically discuss mitigation issues.

Action 4.1.2: Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination among agencies, public, and private entities on disaster training and emergency drills/exercises.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	4.1.2
Name of Action or Project:	Encourage joint training/drills/exercises among all jurisdictions and local businesses.
Action or Project Description:	Continue to encourage joint training (and drills) between agencies, public and private entities (including schools/businesses).
Applicable Goal Statement:	Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.
Estimated Cost:	$1,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, local Emergency Response Agencies
Action/Project Priority:	25 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Jurisdictions, EMDs and emergency response agencies within the city of Dixon and Pulaski County cooperate on training and drills on a regular basis. Fire and police departments regularly train with local school districts. The county fire chief's association meets regularly and do joint training. The Region I SEMA area coordinator works with local entities throughout the six-county area to do at least one exercise each year that is either regional or state-wide. The Pipeline Association of Missouri hosts annual tabletop exercises in the region.

Action 4.1.3: Pool different agency resources to achieve widespread mitigation results.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Lack of resources to carry out mitigation projects
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.3
Name of Action or Project:	Pool different agency resources to achieve widespread mitigation results.
Action or Project Description:	Bring together different agencies and organizations that have similar goals and work together to pool resources to move mitigation projects forward.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP, City Budget
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity and the city is always interested in finding ways to pool resources to achieve mitigation results.

Goal 6: Secure resources for investment in hazard mitigation.

Action 6.1.2: Structure grant proposals for road/bridge upgrades so that hazard mitigation concerns are also met.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Roads/bridges in need of upgrades
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	6.1.2
Name of Action or Project:	Structuring grant proposals to meet mitigation needs.
Action or Project Description:	Structure grant proposals for road/bridge upgrades so that hazard mitigation concerns are also met.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	$3,500 -$4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City engineer, local grant writers
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, City Budget
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	When resources are available the city tries to incorporate upgrades into all infrastructure projects. However, this is an activity that would benefit from raising awareness of mitigation concerns and remedies. As more local officials become aware of the importance of mitigation and realize that grants can provide opportunities for funding those actions, this activity will become more integrated into local planning.

Action 6.1.3: Work with state/local/federal agencies to include mitigation in all economic and community development projects.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination of mitigation in community development projects and integration of mitigation actions into economic and community development projects.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	6.1.3
Name of Action or Project:	Coordination with state/local/federal agencies to integrate mitigation into economic and community development projects.
Action or Project Description:	Work with state/local/federal agencies to include mitigation into economic and community development projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/ displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, local planners, local economic developers, community development organizations, city EMD
Action/Project Priority:	23 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, economic development plans, CEDS
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Progress is being made in this area. Hazard mitigation goals and actions have been incorporated into the regional Community Economic Development Strategy (CEDS). As mitigation awareness grows, additional efforts will be made to incorporate mitigation activities into economic and community development projects.

Action 6.1.4: When funding is available, budget for mitigation projects.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Lack of funding for hazard mitigation projects.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	6.1.4
Name of Action or Project:	Budgeting for mitigation projects
Action or Project Description:	When funding is available, budget for mitigation projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	23 - H
Timeline for Completion:	5 years to implement and then on-going
Potential Fund Sources:	Local general revenue funds
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, City Budget, CEDS, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	When resources are available, the city tries to make infrastructure improvements that include mitigation. However, this is an activity that would benefit from raising awareness of mitigation concerns and remedies. As more local officials become aware of the importance of mitigation and realize that projects can be accomplished through capital improvements, this activity will become more integrated into local budgeting.

Action 6.2.1: Encourage cities and county to implement cost-share programs with private property owners for hazard mitigation projects that benefit the community as a whole.

Action Worksheet	
Name of Jurisdiction:	City of Dixon
Risk / Vulnerability	
Problem being Mitigated:	Lack of cost-share programs with private property owners for hazard mitigation projects.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	6.2.1
Name of Action or Project:	Encourage local mitigation cost-share programs.
Action or Project Description:	Encourage cities and county to implement cost-share programs with private property owners for hazard mitigation projects that benefit the community as a whole.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown – dependent upon projects and interest
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, Chief of Public Works
Action/Project Priority:	14 – Medium Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city will install culverts if the individual pays for the culvert to ensure that installation is done correctly and the culvert is sized correctly. This program could benefit from more organized guidelines and focused efforts if additional funding could be secured.

Richland

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.

Action 1.1.1: Implement an education program on personal emergency preparedness that teaches residents how to prepare emergency survival kits with water, blankets, flashlights, etc. and how to shut off their home utilities during emergencies; provides them with information on precautions to be taken during threats of natural disasters such as heat waves; and provide information on personal mitigation actions such as building tornado shelters and securing propane tanks. Implement public awareness program about the benefits of hazard mitigation projects, both public and private through press releases and brochures.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Ongoing need to improve public education and awareness of hazards, personal emergency preparedness and the benefits of hazard mitigation.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	1.1.1
Name of Action or Project:	Public Education and Awareness Program on hazards, personal emergency preparedness and the benefits of hazard mitigation.
Action or Project Description:	Provide information and education to the general public through brochures, press releases, classes, presentations on personal emergency preparedness and the benefits of hazard mitigation.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$1,500 - $5,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, local emergency response agencies
Action/Project Priority:	27 – High Priority
Timeline for Completion:	1 – 5 years
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Information is distributed through local offices, at local events and through the media by the county EMD, SEMA, health department and emergency response agencies.

Action 1.2.1: Continue to encourage local governments to budget for and obtain enhanced early warning systems and improved communications systems.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with insufficient early warning systems and improved communications systems.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	1.2.1
Name of Action or Project:	Improving early warning and communications systems.
Action or Project Description:	Continue to encourage local governments to obtain early warning systems and improve communications systems.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown due to variables – $2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	23 –High Priority
Timeline for Completion:	One to 10 years
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city of Richland has four tornado sirens in the community. The school district has a phone/text/email system for sharing information. The community would also benefit from adding a cellphone alert system.

Action 1.2.2: Continue to promote weather radios to local residents and schools to insure advanced warning about threatening weather.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Risks and vulnerabilities associated with lack of early warning systems for severe weather in rural areas of the county.
Hazard(s) Addressed:	Tornadoes, severe winter weather, severe thunderstorm/high winds/lightning/hail, extreme temperatures, flooding
Action or Project	
Action/Project Number:	1.2.2
Name of Action or Project:	Improving early warning for severe weather.
Action or Project Description:	The city should continue to encourage residents to invest in weather radios to improve early warning for severe weather.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$1,500 - $2,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City Council, city EMD and local fire department
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Although the county has promoted weather radios in the past, there is currently no coordinated effort to encourage residents to purchase weather radios other than the efforts made by fire departments.

Action 1.2.4: Promote the installation of fire alarms/security systems in public buildings.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with fire and inadequate alarms/security systems in public buildings.
Hazard(s) Addressed:	Wildfire
Action or Project	
Action/Project Number:	1.2.4
Name of Action or Project:	Improving fire alarms and security systems in public buildings.
Action or Project Description:	Promote the installation of fire alarms/security systems in public buildings.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	23 –High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city of Richland does not require fire alarms in public buildings and does not have the resources to enforce codes requiring them.

Action 1.2.5: Acquire backup generators to safeguard the availability of critical services such as electricity, water and emergency services.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with electrical, water and emergency services failure during a disaster.
Hazard(s) Addressed:	Floods and Earthquake
Action or Project	
Action/Project Number:	1.2.5
Name of Action or Project:	Generator backup
Action or Project Description:	Acquire generators to safeguard the availability of critical services such as electricity, water and emergency services.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$5,000 - $80,000 per generator unit
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City EMD
Action/Project Priority:	23 – High Priority
Timeline for Completion:	5 – 10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Capital improvement plans, LEOP, hazard mitigation plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Richland has two fixed generators that provide backup power for city hall and the police station. The city would like to get generators for the sewer treatment facility.

Action 1.2.7: Monitor developments in data availability concerning the impact of disasters such as dam failure, tornados, sinkholes, land subsidence and wildfire upon Pulaski County and all jurisdictions through local, state and federal agencies for use in hazard mitigation planning.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with lack of data concerning the impact of natural disasters on the County.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	1.2.7
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Monitor developments in data availability concerning the impact of disasters such as dam failure, tornadoes, sinkholes, land subsidence, and wildfire upon Pulaski County and all jurisdictions through local, state, and federal agencies for use in hazard mitigation planning.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	28 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, floodplain ordinance
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Some work has been done on this action item at the state and federal level. Improved data is becoming available for a number of different hazards including dam failure.

Action 1.3.4: Establish designated shelters for residents to be used during tornado threats, as cooling centers during extreme heat or power outages and/or as shelters during other disasters. Encourage the designation of public buildings as safe shelters and develop accessibility plans for the public.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with inadequate shelters for residents during disasters or extreme temperature events
Hazard(s) Addressed:	Tornado, Severe Winter Storm, Severe Weather, Extreme Heat
Action or Project	
Action/Project Number:	1.3.4
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Establish designated shelters for residents to be used during tornado and severe weather threats and as warming or cooling shelters during extreme heat or power outages and/or as shelters during other disasters. Insure that shelters are accessible.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$500 - $3,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD
Action/Project Priority:	26 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan
Progress Report	
Action Status	Not Started/Continue in Plan Update
	Richland does not have any certified tornado shelters, nor does it have any designated tornado shelters.

Action 1.3.5: As funding becomes available, increase availability (if necessary construction) of storm shelters for individual families and large groups, including near large employment centers and schools that currently do not have access to tornado safe rooms.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with nonexistent /unavailable storm shelters for individual families and large groups.
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	1.3.5
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	As funding becomes available, increase availability (if necessary, construction) of storm shelters for individual families and large groups, including near large employment centers and schools.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City EMD
Action/Project Priority:	21 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	There are currently no certified tornado shelters in Richland and the community does not currently have the resources to build one.

Goal 2: Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.

Action 2.1.2: Encourage the adoption of minimum standard building codes by all communities that do not currently have them.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities to property and communities in the event of a natural disaster due to substandard construction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	2.1.2
Name of Action or Project:	Property & Infrastructure Protection
Action or Project Description:	Encourage the adoption of minimum standard building codes by all communities that do not currently have them.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$3,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen
Action/Project Priority:	20 - H
Timeline for Completion:	5 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	City ordinances
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Richland has adopted BOCA building codes and contracts with the city of Waynesville to use their building inspector.

Action 2.2.2: Encourage development of storm water management plans/ordinances in those jurisdictions that do not currently have them and in all new development including unincorporated areas.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with flood events in areas that do not possess adequate storm water management plans
Hazard(s) Addressed:	Flood, Severe Weather
Action or Project	
Action/Project Number:	2.2.2
Name of Action or Project:	Encourage development of storm water management plans/ordinances
Action or Project Description:	Encourage development of storm water management plans in those jurisdictions that do not currently have them and in all new developments. and encourage the county to review and strengthen any subdivision ordinances to incorporate mitigation measures such as storm water management.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$5,000 - $25,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City Engineer, Public Works Director
Action/Project Priority:	23 - H
Timeline for Completion:	10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	Capital Improvement plans, builders plans, transportation plans, ordinances, Hazard Mitigation Plan
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	The city currently does not have the resources available to develop a storm water management plan or ordinances.

Action 2.2.3: Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with flooding and unregulated floodplain development.
Hazard(s) Addressed:	Flood, Severe Weather
Action or Project	
Action/Project Number:	2.2.3
Name of Action or Project:	Floodplain management compliance enforcement.
Action or Project Description:	Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$4,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Floodplain manager, Board of Aldermen,
Action/Project Priority:	23 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain ordinance, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city of Richland continues to work to insure compliance with their floodplain ordinance. This is an on-going endeavor and could benefit from additional inspections of floodplain areas and additional education/awareness activities for builders and residents.

Action 2.3.1: Encourage local governments to develop and implement regulations for securing hazardous materials tanks and mobile homes to reduce hazards during storms and flooding.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with unsecured hazardous materials, tanks, and mobile homes during flood, severe weather, or tornado events.
Hazard(s) Addressed:	Flood, Severe Weather, Tornado
Action or Project	
Action/Project Number:	2.3.1
Name of Action or Project:	Encourage the development of regulations or ordinances for securing materials tanks and mobile homes to reduce hazards during storms and flooding.
Action or Project Description:	Encourage local governments to develop and implement regulations and/or ordinances for securing hazardous materials, tanks, and mobile homes to reduce hazards during storms, flooding, and high winds.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$3,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	22 – High Priority
Timeline for Completion:	10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, and services
Local Planning Mechanisms to be Used in Implementation, if any:	City ordinances, LEOP, building codes, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Richland is a member of the NFIP and floodplain management guidelines require that tanks and mobile homes be secured.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Action 3.3.1: Re-evaluate the hazard mitigation plan, merge with other community planning and coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with not regularly reviewing and updating the mitigation plan and incorporating mitigation activities into emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	3.3.1
Name of Action or Project:	Re-evaluate the hazard mitigation plan and merge with other community planning activities.
Action or Project Description:	Re-evaluate the hazard mitigation plan, merge with other community planning activities and documents and incorporate hazard mitigation into the long-range planning and development activities of the county.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities
Estimated Cost:	$3,500 - $4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Local Planners, MPC
Action/Project Priority:	21 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan, City Budget, Economic Development Plan, Transportation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Hazard mitigation goals & actions have been incorporated into the regional CEDS. Mitigation actions are part of the LEOP. As local officials become familiar with mitigation & understand how it fits within other planning activities, this action item will expand.

Action 3.4.3: Encourage the development of a county-wide CERT, COAD and/or VOAD program and educate the public on how they can benefit from these types of programs.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Lack of information on and need for CERT and/or COAD/VOAD programs to help communities prepare for, plan for and recover from disasters.
Hazard(s) Addressed:	All hazards.
Action or Project	
Action/Project Number:	3.4.3
Name of Action or Project:	Promote the development of CERT, COAD, VOAD
Action or Project Description:	Encourage the development of a county-wide CERT and/or COAD/VOAD program and educate the public on how they can benefit from these types of programs.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards and hazard mitigation alternatives that can reduce their vulnerabilities.
Estimated Cost:	$1,500 - $5,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD
Action/Project Priority:	28 – High Priority
Timeline for Completion:	5 years to form CERT/COAD/VOAD, awareness – on-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	CERT training has been held in the county and there is an active COAD in the county. However, the CERT team is not currently active. The city would benefit from working to re-invigorate these programs and encouraging them within the city.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Action 4.1.1: Participate in joint meetings of different organizations/agencies for mitigation related planning.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication among organizations/agencies for mitigation related planning.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.1
Name of Action or Project:	Participate in joint meetings of different organizations/agencies and continued communication on mitigation.
Action or Project Description:	Participate in joint meetings of different organizations/agencies for mitigation related planning.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	27 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. Region I Fire Chiefs meet regularly. The Region I SEMA area coordinator holds quarterly meetings throughout the six-county region, including in Pulaski County. This program could benefit from a more coordinated, focused effort to bring different agencies together to specifically discuss mitigation issues.

Action 4.1.2: Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination among agencies, public, and private entities on disaster training and emergency drills/exercises.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	4.1.2
Name of Action or Project:	Participate in joint training/drills/exercises among all jurisdictions and local businesses.
Action or Project Description:	Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).
Applicable Goal Statement:	Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.
Estimated Cost:	$1,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, local Emergency Response Agencies
Action/Project Priority:	25 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Jurisdictions, EMDs and emergency response agencies within the city of Richland and Pulaski County cooperate on training and drills on a regular basis. Fire and police departments regularly train with local school districts. The county fire chief's association meets regularly and do joint training. The Region I SEMA area coordinator works with local entities throughout the six-county area to do at least one exercise each year that is either regional or state-wide. The Pipeline Association of Missouri hosts annual tabletop exercises in the region.

Action 4.1.3: Pool different agency resources to achieve widespread mitigation results.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Lack of resources to carry out mitigation projects
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.3
Name of Action or Project:	Pool different agency resources to achieve widespread mitigation results.
Action or Project Description:	Bring together different agencies and organizations that have similar goals and work together to pool resources to move mitigation projects forward.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP, City Budget
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. The city has reported that they are interested in finding ways to pool resources to accomplish mitigation projects.

Goal 5: Establish priorities for reducing risks to the people and their property with emphasis on long-term and maximum benefits to the public rather than short-term benefits of special interests.

Action 5.3.1: Encourage local governments to purchase properties in the floodplain as funds become available and convert that land into public space/recreation area.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with floodplain properties
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	5.3.1
Name of Action or Project:	Government purchase of properties in the floodplain
Action or Project Description:	Encourage local governments to purchase properties in the floodplain as funds become available and convert that land into public space/recreation area.
Applicable Goal Statement:	Establish priorities for reducing risks to the people and their property with emphasis on long-term and maximum benefits to the public rather than short-term benefits of special interests.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include property damage, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Floodplain Manager, Board of Aldermen, City EMD
Action/Project Priority:	23 - H
Timeline for Completion:	Unknown
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, City Budget, Floodplain Management Ordinance
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	To date the city of Richland has not purchased any properties in the floodplain but would consider doing so if the opportunity became available.

Goal 6: Secure resources for investment in hazard mitigation.

Action 6.1.2: Structure grant proposals for road/bridge upgrades so that hazard mitigation concerns are also met.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Roads/bridges in need of upgrades
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	6.1.2
Name of Action or Project:	Structuring grant proposals to meet mitigation needs.
Action or Project Description:	Structure grant proposals for road/bridge upgrades so that hazard mitigation concerns are also met.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	$3,500 -$4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City engineer, local grant writers
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, City Budget
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	When resources are available the city tries to incorporate upgrades into all infrastructure projects. However, this is an activity that would benefit from raising awareness of mitigation concerns and remedies. As more local officials become aware of the importance of mitigation and realize that grants can provide opportunities for funding those actions, this activity will become more integrated into local planning.

Action 6.1.3: Work with state/local/federal agencies to include mitigation in all economic and community development projects.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination of mitigation in community development projects and integration of mitigation actions into economic and community development projects.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	6.1.3
Name of Action or Project:	Coordination with state/local/federal agencies to integrate mitigation into economic and community development projects.
Action or Project Description:	Work with state/local/federal agencies to include mitigation into economic and community development projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/ displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, local planners, local economic developers, community development organizations, city EMD
Action/Project Priority:	23 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, economic development plans, CEDS
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Progress is being made in this area. Hazard mitigation goals and actions have been incorporated into the regional Community Economic Development Strategy (CEDS). As mitigation awareness grows, additional efforts will be made to incorporate mitigation activities into economic and community development projects.

Action 6.1.4: When funding is available, budget for mitigation projects.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Lack of funding for hazard mitigation projects.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	6.1.4
Name of Action or Project:	Budgeting for mitigation projects
Action or Project Description:	When funding is available, budget for mitigation projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	23 - H
Timeline for Completion:	5 years to implement and then on-going
Potential Fund Sources:	Local general revenue funds
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, City Budget, CEDS, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	When resources are available, the city tries to make infrastructure improvements that include mitigation. However, this is an activity that would benefit from raising awareness of mitigation concerns and remedies. As more local officials become aware of the importance of mitigation and realize that projects can be accomplished through capital improvements, this activity will become more integrated into local budgeting.

Action 6.2.1: Encourage cities and county to implement cost-share programs with private property owners for hazard mitigation projects that benefit the community as a whole.

Action Worksheet	
Name of Jurisdiction:	City of Richland
Risk / Vulnerability	
Problem being Mitigated:	Lack of cost-share programs with private property owners for hazard mitigation projects.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	6.2.1
Name of Action or Project:	Encourage local mitigation cost-share programs.
Action or Project Description:	Encourage cities and county to implement cost-share programs with private property owners for hazard mitigation projects that benefit the community as a whole.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown – dependent upon projects and interest
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, Chief of Public Works
Action/Project Priority:	14 – Medium Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city will install culverts if the individual pays for the culvert to ensure that installation is done correctly and the culvert is sized correctly. This program could benefit from more organized guidelines and focused efforts if additional funding could be secured.

St. Robert

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.

Action 1.1.1: Implement an education program on personal emergency preparedness that teaches residents how to prepare emergency survival kits with water, blankets, flashlights, etc. and how to shut off their home utilities during emergencies; provides them with information on precautions to be taken during threats of natural disasters such as heat waves; and provide information on personal mitigation actions such as building tornado shelters and securing propane tanks. Implement public awareness program about the benefits of hazard mitigation projects, both public and private through press releases and brochures.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Ongoing need to improve public education and awareness of hazards, personal emergency preparedness and the benefits of hazard mitigation.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	1.1.1
Name of Action or Project:	Public Education and Awareness Program on hazards, personal emergency preparedness and the benefits of hazard mitigation.
Action or Project Description:	Provide information and education to the general public through brochures, press releases, classes, presentations on personal emergency preparedness and the benefits of hazard mitigation.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$1,500 - $5,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, local emergency response agencies
Action/Project Priority:	27 – High Priority
Timeline for Completion:	1 – 5 years
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Information is distributed through local offices, at local events and through the media by the county EMD, SEMA, health department and emergency response agencies.

Action 1.2.1: Continue to encourage local governments to budget for and obtain enhanced early warning systems and improved communications systems.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with insufficient early warning systems and improved communications systems.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	1.2.1
Name of Action or Project:	Improving early warning and communications systems.
Action or Project Description:	Continue to encourage local governments to obtain early warning systems and improve communications systems.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown due to variables – $2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	23 –High Priority
Timeline for Completion:	One to 10 years
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city of St. Robert has four tornado sirens in the community. The school district has a phone/text/email system for sharing information. The community also has the Notify Me and RSS cellphone alert systems.

Action 1.2.2: Continue to promote weather radios to local residents and schools to insure advanced warning about threatening weather.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Risks and vulnerabilities associated with lack of early warning systems for severe weather in rural areas of the county.
Hazard(s) Addressed:	Tornadoes, severe winter weather, severe thunderstorm/high winds/lightning/hail, extreme temperatures, flooding
Action or Project	
Action/Project Number:	1.2.2
Name of Action or Project:	Improving early warning for severe weather.
Action or Project Description:	The city should continue to encourage residents to invest in weather radios to improve early warning for severe weather.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$1,500 - $2,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, city EMD and local fire department
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Although the county has promoted weather radios in the past, there is currently no coordinated effort to encourage residents to purchase weather radios other than the efforts made by fire departments. The city has Notify Me and RSS– phone/text/email warning systems in place for residents.

Action 1.2.4: Promote the installation of fire alarms/security systems in public buildings.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with fire and inadequate alarms/security systems in public buildings.
Hazard(s) Addressed:	Wildfire
Action or Project	
Action/Project Number:	1.2.4
Name of Action or Project:	Improving fire alarms and security systems in public buildings.
Action or Project Description:	Promote the installation of fire alarms/security systems in public buildings.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	23 –High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP
Progress Report	
Action Status	Completed
Report of Progress	The city of St. Robert has ordinances in place that require that public buildings have fire alarms. Other communities in the county do not have ordinances in place.

Action 1.2.5: Acquire backup generators to safeguard the availability of critical services such as electricity, water and emergency services.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with electrical, water and emergency services failure during a disaster.
Hazard(s) Addressed:	Floods and Earthquake
Action or Project	
Action/Project Number:	1.2.5
Name of Action or Project:	Generator backup
Action or Project Description:	Acquire generators to safeguard the availability of critical services such as electricity, water and emergency services.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$5,000 - $80,000 per generator unit
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City EMD
Action/Project Priority:	23 – High Priority
Timeline for Completion:	5 – 10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Capital improvement plans, LEOP, hazard mitigation plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	St. Robert has backup generators for city hall, the fire department, community center (which serves as the emergency operations center), treatment plant and wells. The ambulance district also has a generator.

Action 1.2.7: Monitor developments in data availability concerning the impact of disasters such as dam failure, tornados, sinkholes, land subsidence and wildfire upon Pulaski County and all jurisdictions through local, state and federal agencies for use in hazard mitigation planning.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with lack of data concerning the impact of natural disasters on the County.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	1.2.7
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Monitor developments in data availability concerning the impact of disasters such as dam failure, tornadoes, sinkholes, land subsidence, and wildfire upon Pulaski County and all jurisdictions through local, state, and federal agencies for use in hazard mitigation planning.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	28 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, floodplain ordinance
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Some work has been done on this action item at the state and federal level. Improved data is becoming available for a number of different hazards including dam failure.

Action 1.3.4: Establish designated shelters for residents to be used during tornado threats, as cooling centers during extreme heat or power outages and/or as shelters during other disasters. Encourage the designation of public buildings as safe shelters and develop accessibility plans for the public.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with inadequate shelters for residents during disasters or extreme temperature events
Hazard(s) Addressed:	Tornado, Severe Winter Storm, Severe Weather, Extreme Heat
Action or Project	
Action/Project Number:	1.3.4
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Establish designated shelters for residents to be used during tornado and severe weather threats and as warming or cooling shelters during extreme heat or power outages and/or as shelters during other disasters. Insure that shelters are accessible.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$500 - $3,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD
Action/Project Priority:	26 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
	St. Robert does not have any certified tornado shelters. However, the community center serves as a warming and cooling shelter.

Action 1.3.5: As funding becomes available, increase availability (if necessary construction) of storm shelters for individual families and large groups, including near large employment centers and schools that currently do not have access to tornado safe rooms.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with nonexistent /unavailable storm shelters for individual families and large groups.
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	1.3.5
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	As funding becomes available, increase availability (if necessary, construction) of storm shelters for individual families and large groups, including near large employment centers and schools.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City EMD
Action/Project Priority:	21 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	There are currently no certified tornado shelters in St. Robert and the community does not currently have the resources to build one.

Goal 2: Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.

Action 2.1.2: Encourage the adoption of minimum standard building codes by all communities that do not currently have them.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities to property and communities in the event of a natural disaster due to substandard construction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	2.1.2
Name of Action or Project:	Property & Infrastructure Protection
Action or Project Description:	Encourage the adoption of minimum standard building codes by all communities that do not currently have them.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$3,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen
Action/Project Priority:	20 - H
Timeline for Completion:	5 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	City ordinances
Progress Report	
Action Status	Completed
Report of Progress	St. Robert has adopted 2006 IBC/IRC building codes and has a building inspector.

Action 2.2.2: Encourage development of storm water management plans/ordinances in those jurisdictions that do not currently have them and in all new development including unincorporated areas.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with flood events in areas that do not possess adequate storm water management plans
Hazard(s) Addressed:	Flood, Severe Weather
Action or Project	
Action/Project Number:	2.2.2
Name of Action or Project:	Encourage development of storm water management plans/ordinances
Action or Project Description:	Encourage development of storm water management plans in those jurisdictions that do not currently have them and in all new developments. and encourage the county to review and strengthen any subdivision ordinances to incorporate mitigation measures such as storm water management.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$5,000 - $25,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City Engineer, Public Works Director
Action/Project Priority:	23 - H
Timeline for Completion:	10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	Capital Improvement plans, builders plans, transportation plans, ordinances, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city has a stormwater and drainage ordinance in place. Stormwater projects include: installation of stormwater boxes on Kathy Lane and 400 ft of 48” pipe to divert flow from new commercial development; new asphalt and curb and gutter to channel stormwater runoff on Lensman Road; new curb and five driveway replacements on Sawmill Road to address stormwater issues; installed grated trench drain, replaced curb and gutter and two driveways and extended storm water pipe on Opal Street.

Action 2.2.3: Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with flooding and unregulated floodplain development.
Hazard(s) Addressed:	Flood, Severe Weather
Action or Project	
Action/Project Number:	2.2.3
Name of Action or Project:	Floodplain management compliance enforcement.
Action or Project Description:	Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$4,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Floodplain manager, Board of Aldermen,
Action/Project Priority:	23 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain ordinance, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city of St. Robert continues to work to insure compliance with their floodplain ordinance. The city is currently undertaking a large -scale project to move its wastewater treatment facility out of the floodplain. This is an on-going endeavor and could benefit from additional inspections of floodplain areas and additional education/awareness activities for builders and residents.

Action 2.3.1: Encourage local governments to develop and implement regulations for securing hazardous materials tanks and mobile homes to reduce hazards during storms and flooding.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with unsecured hazardous materials, tanks, and mobile homes during flood, severe weather, or tornado events.
Hazard(s) Addressed:	Flood, Severe Weather, Tornado
Action or Project	
Action/Project Number:	2.3.1
Name of Action or Project:	Encourage the development of regulations or ordinances for securing materials tanks and mobile homes to reduce hazards during storms and flooding.
Action or Project Description:	Encourage local governments to develop and implement regulations and/or ordinances for securing hazardous materials, tanks, and mobile homes to reduce hazards during storms, flooding, and high winds.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$3,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	22 – High Priority
Timeline for Completion:	10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, and services
Local Planning Mechanisms to be Used in Implementation, if any:	City ordinances, LEOP, building codes, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	St. Robert is a member of the NFIP and floodplain management guidelines require that tanks and mobile homes be secured.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Action 3.3.1: Re-evaluate the hazard mitigation plan, merge with other community planning & coordinate & integrate hazard mitigation activities, where appropriate, with emergency operations plans & procedures as well as long-range planning and development activities of each jurisdiction.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with not regularly reviewing and updating the mitigation plan and incorporating mitigation activities into emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	3.3.1
Name of Action or Project:	Re-evaluate the hazard mitigation plan and merge with other community planning activities.
Action or Project Description:	Re-evaluate the hazard mitigation plan, merge with other community planning activities and documents and incorporate hazard mitigation into the long-range planning and development activities of the county.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities
Estimated Cost:	$3,500 - $4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Local Planners, MPC
Action/Project Priority:	21 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan, City Budget, Economic Development Plan, Transportation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Hazard mitigation goals & actions have been incorporated into the regional Community & Economic Development Strategy. Mitigation actions are part of the LEOP. As local officials become

	familiar with mitigation and understand how it fits within other planning activities, this action item will continue to expand.

Action 3.4.3: Encourage the development of a county-wide CERT, COAD and/or VOAD program and educate the public on how they can benefit from these types of programs.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Lack of information on and need for CERT and/or COAD/VOAD programs to help communities prepare for, plan for and recover from disasters.
Hazard(s) Addressed:	All hazards.
Action or Project	
Action/Project Number:	3.4.3
Name of Action or Project:	Promote the development of CERT, COAD, VOAD
Action or Project Description:	Encourage the development of a county-wide CERT and/or COAD/VOAD program and educate the public on how they can benefit from these types of programs.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards and hazard mitigation alternatives that can reduce their vulnerabilities.
Estimated Cost:	$1,500 - $5,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD
Action/Project Priority:	28 – High Priority
Timeline for Completion:	5 years to form CERT/COAD/VOAD, awareness – on-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	CERT training has been held in the county and there is an active COAD in the county. However, the CERT team is not currently active. The city would benefit from working to re-invigorate these programs and encouraging them within the city.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Action 4.1.1: Participate in joint meetings of different organizations/agencies for mitigation related planning.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication among organizations/agencies for mitigation related planning.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.1
Name of Action or Project:	Participate in joint meetings of different organizations/agencies and continued communication on mitigation.
Action or Project Description:	Participate in joint meetings of different organizations/agencies for mitigation related planning.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	27 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. Region I Fire Chiefs meet regularly. The Region I SEMA area coordinator holds quarterly meetings throughout the six-county region, including in Pulaski County. This program could benefit from a more coordinated, focused effort to bring different agencies together to specifically discuss mitigation issues.

Action 4.1.2: Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination among agencies, public, and private entities on disaster training and emergency drills/exercises.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	4.1.2
Name of Action or Project:	Participate in joint training/drills/exercises among all jurisdictions and local businesses.
Action or Project Description:	Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).
Applicable Goal Statement:	Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.
Estimated Cost:	$1,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, local Emergency Response Agencies
Action/Project Priority:	25 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	St. Robert installed a new fire training site on Plattner Ave. when they built the new fire station. Jurisdictions, EMDs and emergency response agencies within the city of St. Robert and Pulaski County cooperate on training and drills on a regular basis. Fire and police departments regularly train with local school districts. The county fire chief's association meets regularly and do joint training. The Region I SEMA area coordinator works with local entities throughout the six-county area to do at least one exercise each year that is either regional or state-wide. The Pipeline Association of Missouri hosts annual tabletop exercises in the region.

Action 4.1.3: Pool different agency resources to achieve widespread mitigation results.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Lack of resources to carry out mitigation projects
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.3
Name of Action or Project:	Pool different agency resources to achieve widespread mitigation results.
Action or Project Description:	Bring together different agencies and organizations that have similar goals and work together to pool resources to move mitigation projects forward.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP, City Budget
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. The city has reported that they are interested in finding ways to pool resources to accomplish mitigation projects.

Goal 5: Establish priorities for reducing risks to the people and their property with emphasis on long-term and maximum benefits to the public rather than short-term benefits of special interests.

Action 5.3.1: Encourage local governments to purchase properties in the floodplain as funds become available and convert that land into public space/recreation area.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with floodplain properties
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	5.3.1
Name of Action or Project:	Government purchase of properties in the floodplain
Action or Project Description:	Encourage local governments to purchase properties in the floodplain as funds become available and convert that land into public space/recreation area.
Applicable Goal Statement:	Establish priorities for reducing risks to the people and their property with emphasis on long-term and maximum benefits to the public rather than short-term benefits of special interests.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include property damage, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Floodplain Manager, Board of Aldermen, City EMD
Action/Project Priority:	23 - H
Timeline for Completion:	Unknown
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, City Budget, Floodplain Management Ordinance
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	To date the city of St. Robert has not purchased any properties in the floodplain but would consider doing so if the opportunity became available. The city is in the process of moving its wastewater treatment facility out of the floodplain.

Goal 6: Secure resources for investment in hazard mitigation.

Action 6.1.2: Structure grant proposals for road/bridge upgrades so that hazard mitigation concerns are also met.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Roads/bridges in need of upgrades
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	6.1.2
Name of Action or Project:	Structuring grant proposals to meet mitigation needs.
Action or Project Description:	Structure grant proposals for road/bridge upgrades so that hazard mitigation concerns are also met.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	$3,500 -$4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City engineer, local grant writers
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, City Budget
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	When resources are available the city tries to incorporate upgrades into all infrastructure projects. New asphalt was laid on Lensman Road to improve stormwater issues. However, this is an activity that would benefit from raising awareness of mitigation concerns and remedies. As more local officials become aware of the importance of mitigation and realize that grants can provide opportunities for funding those actions, this activity will become more integrated into local planning.

Action 6.1.3: Work with state/local/federal agencies to include mitigation in all economic and community development projects.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination of mitigation in community development projects and integration of mitigation actions into economic and community development projects.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	6.1.3
Name of Action or Project:	Coordination with state/local/federal agencies to integrate mitigation into economic and community development projects.
Action or Project Description:	Work with state/local/federal agencies to include mitigation into economic and community development projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/ displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, local planners, local economic developers, community development organizations, city EMD
Action/Project Priority:	23 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, economic development plans, CEDS
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Progress is being made in this area. Hazard mitigation goals and actions have been incorporated into the regional Community Economic Development Strategy (CEDS). As mitigation awareness grows, additional efforts will be made to incorporate mitigation activities into economic and community development projects.

Action 6.1.4: When funding is available, budget for mitigation projects.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Lack of funding for hazard mitigation projects.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	6.1.4
Name of Action or Project:	Budgeting for mitigation projects
Action or Project Description:	When funding is available, budget for mitigation projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	23 - H
Timeline for Completion:	5 years to implement and then on-going
Potential Fund Sources:	Local general revenue funds
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, City Budget, CEDS, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	When resources are available, the city tries to make infrastructure improvements that include mitigation. The city is actively changing out electric poles and main feeder poles for higher rated poles and upgrading the size of overhead mains for load rating. Neighborhood electric poles have been upgraded to higher rated poles and relocated along streets for easier access for repairs. Estimated 3,000 feet of underground power lines and 22 electric vaults have been installed to serve the new well. However, this is an activity that would benefit from raising awareness of mitigation concerns and remedies. As more local officials become aware of the importance of mitigation and realize that projects can be accomplished through capital improvements, this activity will become more integrated into local budgeting.

Action 6.2.1: Encourage cities and county to implement cost-share programs with private property owners for hazard mitigation projects that benefit the community as a whole.

Action Worksheet	
Name of Jurisdiction:	City of St. Robert
Risk / Vulnerability	
Problem being Mitigated:	Lack of cost-share programs with private property owners for hazard mitigation projects.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	6.2.1
Name of Action or Project:	Encourage local mitigation cost-share programs.
Action or Project Description:	Encourage cities and county to implement cost-share programs with private property owners for hazard mitigation projects that benefit the community as a whole.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown – dependent upon projects and interest
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, Chief of Public Works
Action/Project Priority:	14 – Medium Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city will install culverts if the individual pays for the culvert to ensure that installation is done correctly and the culvert is sized correctly. This program could benefit from more organized guidelines and focused efforts if additional funding could be secured.

Waynesville

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.

Action 1.1.1: Implement an education program on personal emergency preparedness that teaches residents how to prepare emergency survival kits with water, blankets, flashlights, etc. and how to shut off their home utilities during emergencies; provides them with information on precautions to be taken during threats of natural disasters such as heat waves; and provide information on personal mitigation actions such as building tornado shelters and securing propane tanks. Implement public awareness program about the benefits of hazard mitigation projects, both public and private through press releases and brochures.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Ongoing need to improve public education and awareness of hazards, personal emergency preparedness and the benefits of hazard mitigation.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	1.1.1
Name of Action or Project:	Public Education and Awareness Program on hazards, personal emergency preparedness and the benefits of hazard mitigation.
Action or Project Description:	Provide information and education to the general public through brochures, press releases, classes, presentations on personal emergency preparedness and the benefits of hazard mitigation.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$1,500 - $5,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, local emergency response agencies
Action/Project Priority:	27 – High Priority
Timeline for Completion:	1 – 5 years
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Information is distributed through local offices, at local events and through the media by the county EMD, SEMA, health department and emergency response agencies.

Action 1.2.1: Continue to encourage local governments to budget for and obtain enhanced early warning systems and improved communications systems.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with insufficient early warning systems and improved communications systems.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	1.2.1
Name of Action or Project:	Improving early warning and communications systems.
Action or Project Description:	Continue to encourage local governments to obtain early warning systems and improve communications systems.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown due to variables – $2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	23 –High Priority
Timeline for Completion:	One to 10 years
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city of Waynesville does not have outdoor tornado sirens but does use CodeRed – a phone/texting/email program – for alerts. The school district also has a phone/text/email system for sharing information.

Action 1.2.2: Continue to promote weather radios to local residents and schools to insure advanced warning about threatening weather.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Risks and vulnerabilities associated with lack of early warning systems for severe weather in rural areas of the county.
Hazard(s) Addressed:	Tornadoes, severe winter weather, severe thunderstorm/high winds/lightning/hail, extreme temperatures, flooding
Action or Project	
Action/Project Number:	1.2.2
Name of Action or Project:	Improving early warning for severe weather.
Action or Project Description:	The city should continue to encourage residents to invest in weather radios to improve early warning for severe weather.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$1,500 - $2,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City Council, city EMD and local fire department
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Although the county has promoted weather radios in the past, there is currently no coordinated effort to encourage residents to purchase weather radios other than the efforts made by fire departments. The city has CodeRed – a phone/text/email warning system in place for residents.

Action 1.2.4: Promote the installation of fire alarms/security systems in public buildings.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with fire and inadequate alarms/security systems in public buildings.
Hazard(s) Addressed:	Wildfire
Action or Project	
Action/Project Number:	1.2.4
Name of Action or Project:	Improving fire alarms and security systems in public buildings.
Action or Project Description:	Promote the installation of fire alarms/security systems in public buildings.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	23 –High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP
Progress Report	
Action Status	Completed
Report of Progress	The city of Waynesville has a fire alarm requirement for public buildings in the city code.

Action 1.2.5: Acquire backup generators to safeguard the availability of critical services such as electricity, water and emergency services.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with electrical, water and emergency services failure during a disaster.
Hazard(s) Addressed:	Floods and Earthquake
Action or Project	
Action/Project Number:	1.2.5
Name of Action or Project:	Generator backup
Action or Project Description:	Acquire generators to safeguard the availability of critical services such as electricity, water and emergency services.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$5,000 - $80,000 per generator unit
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City EMD
Action/Project Priority:	23 – High Priority
Timeline for Completion:	5 – 10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Capital improvement plans, LEOP, hazard mitigation plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Waynesville has two fixed generators that provide backup power for sewer treatment plant but would like to get generators for city hall and at least one of the city wells.

Action 1.2.7: Monitor developments in data availability concerning the impact of disasters such as dam failure, tornados, sinkholes, land subsidence and wildfire upon Pulaski County and all jurisdictions through local, state and federal agencies for use in hazard mitigation planning.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with lack of data concerning the impact of natural disasters on the County.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	1.2.7
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Monitor developments in data availability concerning the impact of disasters such as dam failure, tornadoes, sinkholes, land subsidence, and wildfire upon Pulaski County and all jurisdictions through local, state, and federal agencies for use in hazard mitigation planning.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	28 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, floodplain ordinance
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Some work has been done on this action item at the state and federal level. Improved data is becoming available for a number of different hazards including dam failure.

Action 1.3.4: Establish designated shelters for residents to be used during tornado threats, as cooling centers during extreme heat or power outages and/or as shelters during other disasters. Encourage the designation of public buildings as safe shelters and develop accessibility plans for the public.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with inadequate shelters for residents during disasters or extreme temperature events
Hazard(s) Addressed:	Tornado, Severe Winter Storm, Severe Weather, Extreme Heat
Action or Project	
Action/Project Number:	1.3.4
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Establish designated shelters for residents to be used during tornado and severe weather threats and as warming or cooling shelters during extreme heat or power outages and/or as shelters during other disasters. Insure that shelters are accessible.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$500 - $3,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD
Action/Project Priority:	26 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
	Waynesville has one certified tornado shelters, nor does it have any designated tornado shelters. However, East Elementary School in Waynesville does have a certified tornado shelter.

Action 1.3.5: As funding becomes available, increase availability (if necessary construction) of storm shelters for individual families and large groups, including near large employment centers and schools that currently do not have access to tornado safe rooms.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with nonexistent /unavailable storm shelters for individual families and large groups.
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	1.3.5
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	As funding becomes available, increase availability (if necessary, construction) of storm shelters for individual families and large groups, including near large employment centers and schools.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City EMD
Action/Project Priority:	21 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	There are currently no certified tornado shelters in Waynesville – other than at East Elementary School - and the community does not currently have the resources to build one.

Goal 2: Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.

Action 2.1.2: Encourage the adoption of minimum standard building codes by all communities that do not currently have them.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities to property and communities in the event of a natural disaster due to substandard construction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	2.1.2
Name of Action or Project:	Property & Infrastructure Protection
Action or Project Description:	Encourage the adoption of minimum standard building codes by all communities that do not currently have them.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$3,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen
Action/Project Priority:	20 - H
Timeline for Completion:	5 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	City ordinances
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Waynesville has adopted 2006 ICC building codes and has a building inspector. The city has a contract with the city of Richland to provide that community with building inspection services.

Action 2.2.2: Encourage development of storm water management plans/ordinances in those jurisdictions that do not currently have them and in all new development including unincorporated areas.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with flood events in areas that do not possess adequate storm water management plans
Hazard(s) Addressed:	Flood, Severe Weather
Action or Project	
Action/Project Number:	2.2.2
Name of Action or Project:	Encourage development of storm water management plans/ordinances
Action or Project Description:	Encourage development of storm water management plans in those jurisdictions that do not currently have them and in all new developments. and encourage the county to review and strengthen any subdivision ordinances to incorporate mitigation measures such as storm water management.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$5,000 - $25,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City Engineer, Public Works Director
Action/Project Priority:	23 - H
Timeline for Completion:	10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	Capital Improvement plans, builders plans, transportation plans, ordinances, Hazard Mitigation Plan
Progress Report	
Action Status	Completed
Report of Progress	The city has a storm water ordinance in place.

Action 2.2.3: Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with flooding and unregulated floodplain development.
Hazard(s) Addressed:	Flood, Severe Weather
Action or Project	
Action/Project Number:	2.2.3
Name of Action or Project:	Floodplain management compliance enforcement.
Action or Project Description:	Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$4,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Floodplain manager, Board of Aldermen,
Action/Project Priority:	23 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain ordinance, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city of Waynesville continues to work to insure compliance with their floodplain ordinance. The city has suffered from a number of severe floods in the last 10 years. This is an on-going endeavor and could benefit from additional education/awareness activities for builders and residents.

Action 2.3.1: Encourage local governments to develop and implement regulations for securing hazardous materials tanks and mobile homes to reduce hazards during storms and flooding.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with unsecured hazardous materials, tanks, and mobile homes during flood, severe weather, or tornado events.
Hazard(s) Addressed:	Flood, Severe Weather, Tornado
Action or Project	
Action/Project Number:	2.3.1
Name of Action or Project:	Encourage the development of regulations or ordinances for securing materials tanks and mobile homes to reduce hazards during storms and flooding.
Action or Project Description:	Encourage local governments to develop and implement regulations and/or ordinances for securing hazardous materials, tanks, and mobile homes to reduce hazards during storms, flooding, and high winds.
Applicable Goal Statement:	Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.
Estimated Cost:	$3,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	22 – High Priority
Timeline for Completion:	10 years
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, and services
Local Planning Mechanisms to be Used in Implementation, if any:	City ordinances, LEOP, building codes, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Waynesville is a member of the NFIP and floodplain management guidelines require that tanks and mobile homes be secured.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Action 3.3.1: Re-evaluate the hazard mitigation plan, merge with other community planning and coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with not regularly reviewing and updating the mitigation plan and incorporating mitigation activities into emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	3.3.1
Name of Action or Project:	Re-evaluate the hazard mitigation plan and merge with other community planning activities.
Action or Project Description:	Re-evaluate the hazard mitigation plan, merge with other community planning activities and documents and incorporate hazard mitigation into the long-range planning and development activities of the county.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities
Estimated Cost:	$3,500 - $4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Local Planners, MPC
Action/Project Priority:	21 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan, City Budget, Economic Development Plan, Transportation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Hazard mitigation goals & actions have been incorporated into the regional Community & Economic Development Strategy. Mitigation actions are part of the LEOP. As local officials become

	familiar with mitigation and understand how it fits within other planning activities, this action item will continue to expand.

Action 3.4.3: Encourage the development of a county-wide CERT, COAD and/or VOAD program and educate the public on how they can benefit from these types of programs.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Lack of information on and need for CERT and/or COAD/VOAD programs to help communities prepare for, plan for and recover from disasters.
Hazard(s) Addressed:	All hazards.
Action or Project	
Action/Project Number:	3.4.3
Name of Action or Project:	Promote the development of CERT, COAD, VOAD
Action or Project Description:	Encourage the development of a county-wide CERT and/or COAD/VOAD program and educate the public on how they can benefit from these types of programs.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards and hazard mitigation alternatives that can reduce their vulnerabilities.
Estimated Cost:	$1,500 - $5,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD
Action/Project Priority:	28 – High Priority
Timeline for Completion:	5 years to form CERT/COAD/VOAD, awareness – on-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	CERT training has been held in the county and there is an active COAD in the county. However, the CERT team is not currently active. The city would benefit from working to re-invigorate these programs and encouraging them within the city.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Action 4.1.1: Participate in joint meetings of different organizations/agencies for mitigation related planning.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication among organizations/agencies for mitigation related planning.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.1
Name of Action or Project:	Encourage joint meetings of different organizations/agencies and continued communication on mitigation.
Action or Project Description:	Participate in joint meetings of different organizations/agencies for mitigation related planning.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	27 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. Region I Fire Chiefs meet regularly. The Region I SEMA area coordinator holds quarterly meetings throughout the six-county region, including in Pulaski County. This program could benefit from a more coordinated, focused effort to bring different agencies together to specifically discuss mitigation issues.

Action 4.1.2: Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination among agencies, public, and private entities on disaster training and emergency drills/exercises.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	4.1.2
Name of Action or Project:	Participate in joint training/drills/exercises among all jurisdictions and local businesses.
Action or Project Description:	Continue to encourage joint training (and drills) between agencies, public and private entities (including schools/businesses).
Applicable Goal Statement:	Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.
Estimated Cost:	$1,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, local Emergency Response Agencies
Action/Project Priority:	25 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Jurisdictions, EMDs and emergency response agencies within the city of Waynesville and Pulaski County cooperate on training and drills on a regular basis. Fire and police departments regularly train with local school districts. The county fire chief's association meets regularly and do joint training. The Region I SEMA area coordinator works with local entities throughout the six-county area to do at least one exercise each year that is either regional or state-wide. The Pipeline Association of Missouri hosts annual tabletop exercises in the region.

Action 4.1.3: Pool different agency resources to achieve widespread mitigation results.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Lack of resources to carry out mitigation projects
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.3
Name of Action or Project:	Pool different agency resources to achieve widespread mitigation results.
Action or Project Description:	Bring together different agencies and organizations that have similar goals and work together to pool resources to move mitigation projects forward.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, LEOP, City Budget
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. The city has reported that they are interested in finding ways to pool resources to accomplish mitigation projects.

Goal 5: Establish priorities for reducing risks to the people and their property with emphasis on long-term and maximum benefits to the public rather than short-term benefits of special interests.

Action 5.3.1: Encourage local governments to purchase properties in the floodplain as funds become available and convert that land into public space/recreation area.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with floodplain properties
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	5.3.1
Name of Action or Project:	Government purchase of properties in the floodplain
Action or Project Description:	Encourage local governments to purchase properties in the floodplain as funds become available and convert that land into public space/recreation area.
Applicable Goal Statement:	Establish priorities for reducing risks to the people and their property with emphasis on long-term and maximum benefits to the public rather than short-term benefits of special interests.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include property damage, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Floodplain Manager, Board of Aldermen, City EMD
Action/Project Priority:	23 - H
Timeline for Completion:	Unknown
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, City Budget, Floodplain Management Ordinance
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Waynesville has purchased two properties in the floodplain and continues to look for opportunities to purchase properties and move residents and businesses out of the floodplain.

Goal 6: Secure resources for investment in hazard mitigation.

Action 6.1.2: Structure grant proposals for road/bridge upgrades so that hazard mitigation concerns are also met.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Roads/bridges in need of upgrades
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	6.1.2
Name of Action or Project:	Structuring grant proposals to meet mitigation needs.
Action or Project Description:	Structure grant proposals for road/bridge upgrades so that hazard mitigation concerns are also met.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	$3,500 -$4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, City engineer, local grant writers
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, City Budget
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	When resources are available the city tries to incorporate upgrades into all infrastructure projects. After flooding resulted in deaths at a low water crossing in the community, it was replaced with a bridge. However, this is an activity that would benefit from raising awareness of mitigation concerns and remedies. As more local officials become aware of the importance of mitigation and realize that grants can provide opportunities for funding those actions, this activity will become more integrated into local planning.

Action 6.1.3: Work with state/local/federal agencies to include mitigation in all economic and community development projects.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination of mitigation in community development projects and integration of mitigation actions into economic and community development projects.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	6.1.3
Name of Action or Project:	Coordination with state/local/federal agencies to integrate mitigation into economic and community development projects.
Action or Project Description:	Work with state/local/federal agencies to include mitigation into economic and community development projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/ displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, local planners, local economic developers, community development organizations, city EMD
Action/Project Priority:	23 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan, economic development plans, CEDS
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Progress is being made in this area. Hazard mitigation goals and actions have been incorporated into the regional Community Economic Development Strategy (CEDS). As mitigation awareness grows, additional efforts will be made to incorporate mitigation activities into economic and community development projects.

Action 6.1.4: As funding is available, budget for mitigation projects.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Lack of funding for hazard mitigation projects.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	6.1.4
Name of Action or Project:	Budgeting for mitigation projects
Action or Project Description:	As funding is available, budget for mitigation projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	City EMD, Board of Aldermen
Action/Project Priority:	23 - H
Timeline for Completion:	5 years to implement and then on-going
Potential Fund Sources:	Local general revenue funds
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, City Budget, CEDS, LEOP
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city has done several mitigation projects in the wake of major flooding over the last ten years. Projects include one bridge replacement, buyouts of two properties in the floodplain. The city provided match funds for grants to make those projects happen. When resources are available, the city makes infrastructure improvements that include mitigation. As more local officials become aware of the importance of mitigation and realize that projects can be accomplished through capital improvements, this activity will become more integrated into local budgeting.

Action 6.2.1: Encourage cities and county to implement cost-share programs with private property owners for hazard mitigation projects that benefit the community as a whole.

Action Worksheet	
Name of Jurisdiction:	City of Waynesville
Risk / Vulnerability	
Problem being Mitigated:	Lack of cost-share programs with private property owners for hazard mitigation projects.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	6.2.1
Name of Action or Project:	Encourage local mitigation cost-share programs.
Action or Project Description:	Encourage cities and county to implement cost-share programs with private property owners for hazard mitigation projects that benefit the community as a whole.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown – dependent upon projects and interest
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen, Chief of Public Works
Action/Project Priority:	14 – Medium Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The city will install culverts if the individual pays for the culvert to ensure that installation is done correctly and the culvert is sized correctly. This program could benefit from more organized guidelines and focused efforts if additional funding could be secured.

Dixon R-I

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning and hazard mitigation activities.

Action 1.1.8: Designate storm shelters and if funding becomes available, construct tornado safe rooms in every school that does not have one.

Action Worksheet	
Name of Jurisdiction:	Dixon R-I
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with insufficient storm shelters and tornado safe rooms in schools that do not have them.
Hazard(s) Addressed:	Tornado, Severe Weather
Action or Project	
Action/Project Number:	1.1.8
Name of Action or Project:	Expansion of storm shelter availability and construction of certified tornado safe rooms.
Action or Project Description:	Designate storm shelters and as funding becomes available construct tornado safe rooms in every school that does not have one.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown due to variables
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent and Board of Education
Action/Project Priority:	21 - H
Timeline for Completion:	5 years to increase the number of storm shelters in the county. 10 years to construct certified tornado safe rooms in each school district.
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, school capital improvement plan, school budget and school crisis management plan
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	No progress has been made. Lack of financial resources for construction continues to be the main obstacle, however, the school district is interested in building safe rooms if funding can be secured.

Action 1.2.7: Monitor developments in data availability concerning the impact of disasters such as dam failure, tornados, sinkholes, land subsidence and wildfire upon Pulaski County and all jurisdictions through local, state and federal agencies for use in hazard mitigation planning.

Action Worksheet	
Name of Jurisdiction:	Dixon R-I
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with lack of data concerning the impact of natural disasters on the County.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	1.2.7
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Monitor developments in data availability concerning the impact of disasters such as dam failure, tornadoes, sinkholes, land subsidence, and wildfire upon Pulaski County and all jurisdictions through local, state, and federal agencies for use in hazard mitigation planning.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	28 – H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Some work has been done on this action item at the state and federal level. Improved data is becoming available for a number of different hazards including dam failure.

Action 1.3.5: As funding becomes available, increase the availability (if necessary construction) of storm shelters for individual families and large groups, including near large employment centers and schools that currently do not have access to tornado safe rooms.

Action Worksheet	
Name of Jurisdiction:	Dixon R-I
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with nonexistent /unavailable storm shelters for individual families and large groups.
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	1.3.5
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	As funding becomes available, increase the availability (if necessary, construction) of storm shelters for individual families and large groups, including near large employment centers and schools.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	21 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan, school budget, school crisis management plan and capital improvements plan
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	There are currently no certified tornado shelters in the Dixon school district. The district does not currently have the resources to build one.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Action 3.3.1: Re-evaluate the hazard mitigation plan, merge with other community planning and coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.

Action Worksheet	
Name of Jurisdiction:	Dixon R-I
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with not regularly reviewing and updating the mitigation plan and incorporating mitigation activities into emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	3.3.1
Name of Action or Project:	Re-evaluate the hazard mitigation plan and merge with other community planning activities.
Action or Project Description:	Re-evaluate the hazard mitigation plan, merge with other community planning activities and documents and incorporate hazard mitigation into the long-range planning and development activities of the county.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities
Estimated Cost:	$3,500 - $4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	21 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard mitigation plan, district budget, capital improvement plan, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Where applicable, hazard mitigation goals and actions have been incorporated into the LEOP & school crisis management plan. As local officials become familiar with mitigation & understand how it fits within other planning activities, this will continue to expand.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Action 4.1.1: Participate in joint meetings of different organizations/agencies for mitigation related planning.

Action Worksheet	
Name of Jurisdiction:	Dixon R-I
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication among organizations/agencies for mitigation related planning.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.1
Name of Action or Project:	Participate in joint meetings of different organizations/agencies and continued communication on mitigation.
Action or Project Description:	Participate in joint meetings of different organizations/agencies for mitigation related planning.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	27 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity that has been embraced by local emergency responders. Region I Fire Chiefs meet regularly. The Region I SEMA area coordinator holds quarterly meetings throughout the six-county region, including in Pulaski County. This program could benefit from a more coordinated, focused effort to bring different agencies together to specifically discuss mitigation issues – especially school districts.

Action 4.1.2: Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).

Action Worksheet	
Name of Jurisdiction:	Dixon R-I
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination among agencies, public, and private entities on disaster training and emergency drills/exercises.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	4.1.2
Name of Action or Project:	Participate in joint training/drills/exercises among all jurisdictions and local businesses.
Action or Project Description:	Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).
Applicable Goal Statement:	Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.
Estimated Cost:	$1,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	25 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard mitigation plan, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Jurisdictions, EMDs and emergency response agencies within the school district, city of Dixon and Pulaski County cooperate on training and drills on a regular basis. Fire and police departments regularly train with local school districts. The county fire chief's association meets regularly and do joint training. The Region I SEMA area coordinator works with local entities throughout the six-county area to do at least one exercise each year that is either regional or state-wide. The Pipeline Association of Missouri hosts annual tabletop exercises in the region.

Action 4.1.3: Pool different agency resources to achieve widespread mitigation results.

Action Worksheet	
Name of Jurisdiction:	Dixon R-I
Risk / Vulnerability	
Problem being Mitigated:	Lack of resources to carry out mitigation projects
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.3
Name of Action or Project:	Pool different agency resources to achieve widespread mitigation results.
Action or Project Description:	Bring together different agencies and organizations that have similar goals and work together to pool resources to move mitigation projects forward.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, district budget, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. The school district has reported that they are interested in finding ways to pool resources to accomplish mitigation projects.

Goal 6: Secure resources for investment in hazard mitigation.

Action 6.1.4: When funding is available, budget for mitigation projects.

Action Worksheet	
Name of Jurisdiction:	Dixon R-I
Risk / Vulnerability	
Problem being Mitigated:	Lack of funding for hazard mitigation projects.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	6.1.4
Name of Action or Project:	Budgeting for mitigation projects
Action or Project Description:	When funding is available, budget for mitigation projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	23 - H
Timeline for Completion:	5 years to implement and then on-going
Potential Fund Sources:	Local general revenue funds
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, district budget, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The district strives to build mitigation into any improvements made to district assets and programs – when the resources are available to do so. As more local officials become aware of the importance of mitigation and realize that projects can be accomplished through capital improvements, this activity will become more integrated into local budgeting.

Crocker R-II

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning and hazard mitigation activities.

Action 1.1.8: Designate storm shelters and if funding becomes available, construct tornado safe rooms in every school that does not have one.

Action Worksheet	
Name of Jurisdiction:	Crocker R-II
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with insufficient storm shelters and tornado safe rooms in schools that do not have them.
Hazard(s) Addressed:	Tornado, Severe Weather
Action or Project	
Action/Project Number:	1.1.8
Name of Action or Project:	Expansion of storm shelter availability and construction of certified tornado safe rooms.
Action or Project Description:	Designate storm shelters and if funding becomes available construct tornado safe rooms in every school that does not have one.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown due to variables
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent and Board of Education
Action/Project Priority:	21 - H
Timeline for Completion:	5 years to increase the number of storm shelters in the county. 10 years to construct certified tornado safe rooms in each school district.
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, school capital improvement plan, school budget and school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Crocker R-II constructed a FEMA certified safe room in 2014 and makes it available to residents of Crocker during tornado and severe weather warnings.

Action 1.2.7: Monitor developments in data availability concerning the impact of disasters such as dam failure, tornados, sinkholes, land subsidence and wildfire upon Pulaski County and all jurisdictions through local, state and federal agencies for use in hazard mitigation planning.

Action Worksheet	
Name of Jurisdiction:	Crocker R-II
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with lack of data concerning the impact of natural disasters on the County.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	1.2.7
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Monitor developments in data availability concerning the impact of disasters such as dam failure, tornadoes, sinkholes, land subsidence, and wildfire upon Pulaski County and all jurisdictions through local, state, and federal agencies for use in hazard mitigation planning.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	28 – H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Some work has been done on this action item at the state and federal level. Improved data is becoming available for a number of different hazards including dam failure.

Action 1.3.5: As funding becomes available, increase availability (if necessary construction) of storm shelters for individual families and large groups, including near large employment centers and schools that currently do not have access to tornado safe rooms.

Action Worksheet	
Name of Jurisdiction:	Crocker R-II
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with nonexistent /unavailable storm shelters for individual families and large groups.
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	1.3.5
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	As funding becomes available, increase availability (if necessary, construction) of storm shelters for individual families and large groups, including near large employment centers and schools.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	21 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan, school budget, school crisis management plan and capital improvements plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Crocker R-II constructed a FEMA certified tornado shelter in 2014. The shelter serves the school district and is open to local Crocker residents during severe weather and tornado warnings.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Action 3.3.1: Re-evaluate the hazard mitigation plan, merge with other community planning and coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.

Action Worksheet	
Name of Jurisdiction:	Crocker R-II
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with not regularly reviewing and updating the mitigation plan and incorporating mitigation activities into emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	3.3.1
Name of Action or Project:	Re-evaluate the hazard mitigation plan and merge with other community planning activities.
Action or Project Description:	Re-evaluate the hazard mitigation plan, merge with other community planning activities and documents and incorporate hazard mitigation into the long-range planning and development activities of the county.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities
Estimated Cost:	$3,500 - $4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	21 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard mitigation plan, district budget, capital improvement plan, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Where applicable, hazard mitigation goals & actions have been incorporated into the LEOP & school crisis management plan. As local officials become familiar with mitigation and understand how it fits within other planning activities, this will continue to expand.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Action 4.1.1: Participate in joint meetings of different organizations/agencies for mitigation related planning.

Action Worksheet	
Name of Jurisdiction:	Crocker R-II
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication among organizations/agencies for mitigation related planning.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.1
Name of Action or Project:	Participate in joint meetings of different organizations/agencies and continued communication on mitigation.
Action or Project Description:	Participate in joint meetings of different organizations/agencies for mitigation related planning.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	27 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity that has been embraced by local emergency responders. Region I Fire Chiefs meet regularly. The Region I SEMA area coordinator holds quarterly meetings throughout the six-county region, including in Pulaski County. This program could benefit from a more coordinated, focused effort to bring different agencies together to specifically discuss mitigation issues – especially school districts.

Action 4.1.2: Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).

Action Worksheet	
Name of Jurisdiction:	Crocker R-II
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination among agencies, public, and private entities on disaster training and emergency drills/exercises.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	4.1.2
Name of Action or Project:	Participate in joint training/drills/exercises among all jurisdictions and local businesses.
Action or Project Description:	Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).
Applicable Goal Statement:	Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.
Estimated Cost:	$1,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	25 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard mitigation plan, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Jurisdictions, EMDs and emergency response agencies within the school district, city of Crocker and Pulaski County cooperate on training and drills on a regular basis. Fire and police departments regularly train with local school districts. The county fire chief's association meets regularly and do joint training. The Region I SEMA area coordinator works with local entities throughout the six-county area to do at least one exercise each year that is either regional or state-wide. The Pipeline Association of Missouri hosts annual tabletop exercises in the region.

Action 4.1.3: Pool different agency resources to achieve widespread mitigation results.

Action Worksheet	
Name of Jurisdiction:	Crocker R-II
Risk / Vulnerability	
Problem being Mitigated:	Lack of resources to carry out mitigation projects
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.3
Name of Action or Project:	Pool different agency resources to achieve widespread mitigation results.
Action or Project Description:	Bring together different agencies and organizations that have similar goals and work together to pool resources to move mitigation projects forward.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, district budget, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. The school district has reported that they are interested in finding ways to pool resources to accomplish mitigation projects.

Goal 6: Secure resources for investment in hazard mitigation.

Action 6.1.4: When funding is available, budget for mitigation projects.

Action Worksheet	
Name of Jurisdiction:	Crocker R-II
Risk / Vulnerability	
Problem being Mitigated:	Lack of funding for hazard mitigation projects.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	6.1.4
Name of Action or Project:	Budgeting for mitigation projects
Action or Project Description:	When funding is available, budget for mitigation projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	23 - H
Timeline for Completion:	5 years to implement and then on-going
Potential Fund Sources:	Local general revenue funds
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, district budget, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The district strives to build mitigation into any improvements made to district assets and programs – when the resources are available to do so. As more local officials become aware of the importance of mitigation and realize that projects can be accomplished through capital improvements, this activity will become more integrated into local budgeting.

Swedeborg R-III

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning and hazard mitigation activities.

Action 1.1.8: Designate storm shelters and if funding becomes available, construct tornado safe rooms in every school that does not have one.

Action Worksheet	
Name of Jurisdiction:	Swedeborg R-III
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with insufficient storm shelters and tornado safe rooms in schools that do not have them.
Hazard(s) Addressed:	Tornado, Severe Weather
Action or Project	
Action/Project Number:	1.1.8
Name of Action or Project:	Expansion of storm shelter availability and construction of certified tornado safe rooms.
Action or Project Description:	Designate storm shelters and as funding becomes available, construct tornado safe rooms in every school that does not have one.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown due to variables
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent and Board of Education
Action/Project Priority:	21 - H
Timeline for Completion:	5 years to increase the number of storm shelters in the county. 10 years to construct certified tornado safe rooms in each school district.
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, school capital improvement plan, school budget and school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	No progress has been made. Lack of financial resources for construction continues to be the main obstacle, however, the school district is interested in building safe rooms if funding can be secured.

Action 1.2.7: Monitor developments in data availability concerning the impact of disasters such as dam failure, tornados, sinkholes, land subsidence and wildfire upon Pulaski County and all jurisdictions through local, state and federal agencies for use in hazard mitigation planning.

Action Worksheet	
Name of Jurisdiction:	Swedeborg R-III
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with lack of data concerning the impact of natural disasters on the County.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	1.2.7
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Monitor developments in data availability concerning the impact of disasters such as dam failure, tornadoes, sinkholes, land subsidence, and wildfire upon Pulaski County and all jurisdictions through local, state, and federal agencies for use in hazard mitigation planning.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	28 – H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Some work has been done on this action item at the state and federal level. Improved data is becoming available for a number of different hazards including dam failure.

Action 1.3.5: As funding becomes available, increase the availability (if necessary construction) of storm shelters for individual families and large groups, including near large employment centers and schools that currently do not have access to tornado safe rooms.

Action Worksheet	
Name of Jurisdiction:	Swedeborg R-III
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with nonexistent /unavailable storm shelters for individual families and large groups.
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	1.3.5
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	As funding becomes available, increase the availability (if necessary, construction) of storm shelters for individual families and large groups, including near large employment centers and schools.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	21 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan, school budget, school crisis management plan and capital improvements plan
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	There are currently no certified tornado shelters in the Swedeborg school district. The district does not currently have the resources to build one.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Action 3.3.1: Re-evaluate the hazard mitigation plan, merge with other community planning and coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.

Action Worksheet	
Name of Jurisdiction:	Swedeborg R-III
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with not regularly reviewing and updating the mitigation plan and incorporating mitigation activities into emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	3.3.1
Name of Action or Project:	Re-evaluate the hazard mitigation plan and merge with other community planning activities.
Action or Project Description:	Re-evaluate the hazard mitigation plan, merge with other community planning activities and documents and incorporate hazard mitigation into the long-range planning and development activities of the county.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities
Estimated Cost:	$3,500 - $4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	21 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard mitigation plan, district budget, capital improvement plan, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Where applicable, hazard mitigation goals & actions have been incorporated into the LEOP & school crisis management plan. As local officials become familiar with mitigation and understand how it fits within other planning activities, this will continue to expand.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Action 4.1.1: Participate in joint meetings of different organizations/agencies for mitigation related planning.

Action Worksheet	
Name of Jurisdiction:	Swedeborg R-III
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication among organizations/agencies for mitigation related planning.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.1
Name of Action or Project:	Participate in joint meetings of different organizations/agencies and continued communication on mitigation.
Action or Project Description:	Participate in joint meetings of different organizations/agencies for mitigation related planning.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	27 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity that has been embraced by local emergency responders. Region I Fire Chiefs meet regularly. The Region I SEMA area coordinator holds quarterly meetings throughout the six-county region, including in Pulaski County. This program could benefit from a more coordinated, focused effort to bring different agencies together to specifically discuss mitigation issues – especially school districts.

Action 4.1.2: Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).

Action Worksheet	
Name of Jurisdiction:	Swedeborg R-III
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination among agencies, public, and private entities on disaster training and emergency drills/exercises.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	4.1.2
Name of Action or Project:	Participate in joint training/drills/exercises among all jurisdictions and local businesses.
Action or Project Description:	Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).
Applicable Goal Statement:	Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.
Estimated Cost:	$1,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	25 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard mitigation plan, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Jurisdictions, EMDs and emergency response agencies within the school district, community and Pulaski County cooperate on training and drills on a regular basis. Fire and police departments regularly train with local school districts. The county fire chief's association meets regularly and do joint training. The Region I SEMA area coordinator works with local entities throughout the six-county area to do at least one exercise each year that is either regional or state-wide. The Pipeline Association of Missouri hosts annual tabletop exercises in the region.

Action 4.1.3: Pool different agency resources to achieve widespread mitigation results.

Action Worksheet	
Name of Jurisdiction:	Swedeborg R-III
Risk / Vulnerability	
Problem being Mitigated:	Lack of resources to carry out mitigation projects
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.3
Name of Action or Project:	Pool different agency resources to achieve widespread mitigation results.
Action or Project Description:	Bring together different agencies and organizations that have similar goals and work together to pool resources to move mitigation projects forward.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, district budget, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. The school district has reported that they are interested in finding ways to pool resources to accomplish mitigation projects.

Goal 6: Secure resources for investment in hazard mitigation.

Action 6.1.4: When funding is available, budget for mitigation projects.

Action Worksheet	
Name of Jurisdiction:	Swedeborg R-III
Risk / Vulnerability	
Problem being Mitigated:	Lack of funding for hazard mitigation projects.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	6.1.4
Name of Action or Project:	Budgeting for mitigation projects
Action or Project Description:	When funding is available, budget for mitigation projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	23 - H
Timeline for Completion:	5 years to implement and then on-going
Potential Fund Sources:	Local general revenue funds
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, district budget, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The district strives to build mitigation into any improvements made to district assets and programs – when the resources are available to do so. As more local officials become aware of the importance of mitigation and realize that projects can be accomplished through capital improvements, this activity will become more integrated into local budgeting.

Richland R-IV

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning and hazard mitigation activities.

Action 1.1.8: Designate storm shelters and if funding becomes available, construct tornado safe rooms in every school that does not have one.

Action Worksheet	
Name of Jurisdiction:	Richland R-IV
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with insufficient storm shelters and tornado safe rooms in schools that do not have them.
Hazard(s) Addressed:	Tornado, Severe Weather
Action or Project	
Action/Project Number:	1.1.8
Name of Action or Project:	Expansion of storm shelter availability and construction of certified tornado safe rooms.
Action or Project Description:	Designate storm shelters and as funding becomes available, construct tornado safe rooms in every school that does not have one.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown due to variables
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent and Board of Education
Action/Project Priority:	21 - H
Timeline for Completion:	5 years to increase the number of storm shelters in the county. 10 years to construct certified tornado safe rooms in each school district.
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, school capital improvement plan, school budget and school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	No progress has been made. Lack of financial resources for construction continues to be the main obstacle, however, the school district is interested in building safe rooms if funding can be secured.

Action 1.2.7: Monitor developments in data availability concerning the impact of disasters such as dam failure, tornados, sinkholes, land subsidence and wildfire upon Pulaski County and all jurisdictions through local, state and federal agencies for use in hazard mitigation planning.

Action Worksheet	
Name of Jurisdiction:	Richland R-IV
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with lack of data concerning the impact of natural disasters on the County.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	1.2.7
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Monitor developments in data availability concerning the impact of disasters such as dam failure, tornadoes, sinkholes, land subsidence, and wildfire upon Pulaski County and all jurisdictions through local, state, and federal agencies for use in hazard mitigation planning.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	28 – H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Some work has been done on this action item at the state and federal level. Improved data is becoming available for a number of different hazards including dam failure.

Action 1.3.5: As funding becomes available, increase the availability (if necessary construction) of storm shelters for individual families and large groups, including near large employment centers and schools that currently do not have access to tornado safe rooms.

Action Worksheet	
Name of Jurisdiction:	Richland R-IV
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with nonexistent /unavailable storm shelters for individual families and large groups.
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	1.3.5
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	As funding becomes available, increase the availability (if necessary, construction) of storm shelters for individual families and large groups, including near large employment centers and schools.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	21 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan, school budget, school crisis management plan and capital improvements plan
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	There are currently no certified tornado shelters in the Richland school district. The district does not currently have the resources to build one.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Action 3.3.1: Re-evaluate the hazard mitigation plan, merge with other community planning and coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.

Action Worksheet	
Name of Jurisdiction:	Richland R-IV
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with not regularly reviewing and updating the mitigation plan and incorporating mitigation activities into emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	3.3.1
Name of Action or Project:	Re-evaluate the hazard mitigation plan and merge with other community planning activities.
Action or Project Description:	Re-evaluate the hazard mitigation plan, merge with other community planning activities and documents and incorporate hazard mitigation into the long-range planning and development activities of the county.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities
Estimated Cost:	$3,500 - $4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	21 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard mitigation plan, district budget, capital improvement plan, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Where applicable, hazard mitigation goals &actions have been incorporated into the LEOP & school crisis management plan. As local officials become familiar with mitigation & understand how it fits within other planning activities, this will continue to expand.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Action 4.1.1: Participate in joint meetings of different organizations/agencies for mitigation related planning.

Action Worksheet	
Name of Jurisdiction:	Richland R-IV
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication among organizations/agencies for mitigation related planning.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.1
Name of Action or Project:	Participate in joint meetings of different organizations/agencies and continued communication on mitigation.
Action or Project Description:	Participate in joint meetings of different organizations/agencies for mitigation related planning.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	27 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity that has been embraced by local emergency responders. Region I Fire Chiefs meet regularly. The Region I SEMA area coordinator holds quarterly meetings throughout the six-county region, including in Pulaski County. This program could benefit from a more coordinated, focused effort to bring different agencies together to specifically discuss mitigation issues – especially school districts.

Action 4.1.2: Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).

Action Worksheet	
Name of Jurisdiction:	Richland R-IV
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination among agencies, public, and private entities on disaster training and emergency drills/exercises.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	4.1.2
Name of Action or Project:	Participate in joint training/drills/exercises among all jurisdictions and local businesses.
Action or Project Description:	Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).
Applicable Goal Statement:	Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.
Estimated Cost:	$1,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	25 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard mitigation plan, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Jurisdictions, EMDs and emergency response agencies within the school district, community and Pulaski County cooperate on training and drills on a regular basis. Fire and police departments regularly train with local school districts. The county fire chief's association meets regularly and do joint training. The Region I SEMA area coordinator works with local entities throughout the six-county area to do at least one exercise each year that is either regional or state-wide. The Pipeline Association of Missouri hosts annual tabletop exercises in the region.

Action 4.1.3: Pool different agency resources to achieve widespread mitigation results.

Action Worksheet	
Name of Jurisdiction:	Richland R-IV
Risk / Vulnerability	
Problem being Mitigated:	Lack of resources to carry out mitigation projects
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.3
Name of Action or Project:	Pool different agency resources to achieve widespread mitigation results.
Action or Project Description:	Bring together different agencies and organizations that have similar goals and work together to pool resources to move mitigation projects forward.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, district budget, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. The school district has reported that they are interested in finding ways to pool resources to accomplish mitigation projects.

Goal 6: Secure resources for investment in hazard mitigation.

Action 6.1.4: When funding is available, budget for mitigation projects.

Action Worksheet	
Name of Jurisdiction:	Richland R-IV
Risk / Vulnerability	
Problem being Mitigated:	Lack of funding for hazard mitigation projects.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	6.1.4
Name of Action or Project:	Budgeting for mitigation projects
Action or Project Description:	When funding is available, budget for mitigation projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	23 - H
Timeline for Completion:	5 years to implement and then on-going
Potential Fund Sources:	Local general revenue funds
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, district budget, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The district strives to build mitigation into any improvements made to district assets and programs – when the resources are available to do so. As more local officials become aware of the importance of mitigation and realize that projects can be accomplished through capital improvements, this activity will become more integrated into local budgeting.

Laquey R-V

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning and hazard mitigation activities.

Action 1.1.8: Designate storm shelters and if funding becomes available, construct tornado safe rooms in every school that does not have one.

Action Worksheet	
Name of Jurisdiction:	Laquey R-V
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with insufficient storm shelters and tornado safe rooms in schools that do not have them.
Hazard(s) Addressed:	Tornado, Severe Weather
Action or Project	
Action/Project Number:	1.1.8
Name of Action or Project:	Expansion of storm shelter availability and construction of certified tornado safe rooms.
Action or Project Description:	Designate storm shelters and if funding becomes available, construct tornado safe rooms in every school that does not have one.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown due to variables
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent and Board of Education
Action/Project Priority:	21 - H
Timeline for Completion:	5 years to increase the number of storm shelters in the county. 10 years to construct certified tornado safe rooms in each school district.
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, school capital improvement plan, school budget and school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	No progress has been made. Lack of financial resources for construction continues to be the main obstacle, however, the school district is interested in building safe rooms if funding can be secured.

Action 1.2.7: Monitor developments in data availability concerning the impact of disasters such as dam failure, tornados, sinkholes, land subsidence and wildfire upon Pulaski County and all jurisdictions through local, state and federal agencies for use in hazard mitigation planning.

Action Worksheet	
Name of Jurisdiction:	Laquey R-V
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with lack of data concerning the impact of natural disasters on the County.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	1.2.7
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Monitor developments in data availability concerning the impact of disasters such as dam failure, tornadoes, sinkholes, land subsidence, and wildfire upon Pulaski County and all jurisdictions through local, state, and federal agencies for use in hazard mitigation planning.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	28 – H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Some work has been done on this action item at the state and federal level. Improved data is becoming available for a number of different hazards including dam failure.

Action 1.3.5: As funding becomes available, increase availability (if necessary construction) of storm shelters for individual families and large groups, including near large employment centers and schools that currently do not have access to tornado safe rooms.

Action Worksheet	
Name of Jurisdiction:	Laquey R-V
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with nonexistent /unavailable storm shelters for individual families and large groups.
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	1.3.5
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	As funding becomes available, increase availability (if necessary, construction) of storm shelters for individual families and large groups, including near large employment centers and schools.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	21 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan, school budget, school crisis management plan and capital improvements plan
Progress Report	
Action Status	Not Started/Continue in Plan Update
Report of Progress	There are currently no certified tornado shelters in the Laquey school district. The district does not currently have the resources to build one.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Action 3.3.1: Re-evaluate the hazard mitigation plan, merge with other community planning and coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.

Action Worksheet	
Name of Jurisdiction:	Laquey R-V
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with not regularly reviewing and updating the mitigation plan and incorporating mitigation activities into emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	3.3.1
Name of Action or Project:	Re-evaluate the hazard mitigation plan and merge with other community planning activities.
Action or Project Description:	Re-evaluate the hazard mitigation plan, merge with other community planning activities and documents and incorporate hazard mitigation into the long-range planning and development activities of the county.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities
Estimated Cost:	$3,500 - $4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	21 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard mitigation plan, district budget, capital improvement plan, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Where applicable, hazard mitigation goals & actions have been incorporated into the LEOP & school crisis management plan. As local officials become familiar with mitigation & understand how it fits within other planning activities, this will continue to expand.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Action 4.1.1: Participate in joint meetings of different organizations/agencies for mitigation related planning.

Action Worksheet	
Name of Jurisdiction:	Laquey R-V
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication among organizations/agencies for mitigation related planning.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.1
Name of Action or Project:	Participate in joint meetings of different organizations/agencies and continued communication on mitigation.
Action or Project Description:	Participate in joint meetings of different organizations/agencies for mitigation related planning.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	27 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity that has been embraced by local emergency responders. Region I Fire Chiefs meet regularly. The Region I SEMA area coordinator holds quarterly meetings throughout the six-county region, including in Pulaski County. This program could benefit from a more coordinated, focused effort to bring different agencies together to specifically discuss mitigation issues – especially school districts.

Action 4.1.2: Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).

Action Worksheet	
Name of Jurisdiction:	Laquey R-V
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination among agencies, public, and private entities on disaster training and emergency drills/exercises.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	4.1.2
Name of Action or Project:	Participate in joint training/drills/exercises among all jurisdictions and local businesses.
Action or Project Description:	Participate in Ejoint training (and drills) between agencies, public and private entities (including schools/businesses).
Applicable Goal Statement:	Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.
Estimated Cost:	$1,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	25 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard mitigation plan, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Jurisdictions, EMDs and emergency response agencies within the school district, community and Pulaski County cooperate on training and drills on a regular basis. Fire and police departments regularly train with local school districts. The county fire chief's association meets regularly and do joint training. The Region I SEMA area coordinator works with local entities throughout the six-county area to do at least one exercise each year that is either regional or state-wide. The Pipeline Association of Missouri hosts annual tabletop exercises in the region.

Action 4.1.3: Pool different agency resources to achieve widespread mitigation results.

Action Worksheet	
Name of Jurisdiction:	Laquey R-V
Risk / Vulnerability	
Problem being Mitigated:	Lack of resources to carry out mitigation projects
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.3
Name of Action or Project:	Pool different agency resources to achieve widespread mitigation results.
Action or Project Description:	Bring together different agencies and organizations that have similar goals and work together to pool resources to move mitigation projects forward.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, district budget, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. The school district has reported that they are interested in finding ways to pool resources to accomplish mitigation projects.

Goal 6: Secure resources for investment in hazard mitigation.

Action 6.1.4: When funding is available, budget for mitigation projects.

Action Worksheet	
Name of Jurisdiction:	Laquey R-V
Risk / Vulnerability	
Problem being Mitigated:	Lack of funding for hazard mitigation projects.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	6.1.4
Name of Action or Project:	Budgeting for mitigation projects
Action or Project Description:	When funding is available, budget for mitigation projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	23 - H
Timeline for Completion:	5 years to implement and then on-going
Potential Fund Sources:	Local general revenue funds
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, district budget, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The district strives to build mitigation into any improvements made to district assets and programs – when the resources are available to do so. As more local officials become aware of the importance of mitigation and realize that projects can be accomplished through capital improvements, this activity will become more integrated into local budgeting.

Waynesville R-VI

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning and hazard mitigation activities.

Action 1.1.8: Designate storm shelters and if funding becomes available, the construction of tornado safe rooms in every school that does not have one.

Action Worksheet	
Name of Jurisdiction:	Waynesville R-VI
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with insufficient storm shelters and tornado safe rooms in schools that do not have them.
Hazard(s) Addressed:	Tornado, Severe Weather
Action or Project	
Action/Project Number:	1.1.8
Name of Action or Project:	Expansion of storm shelter availability and construction of certified tornado safe rooms.
Action or Project Description:	Designate storm shelters and if funding becomes available, the construction of tornado safe rooms in every school that does not have one.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown due to variables
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent and Board of Education
Action/Project Priority:	21 - H
Timeline for Completion:	5 years to increase the number of storm shelters in the county. 10 years to construct certified tornado safe rooms in each school district.
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, school capital improvement plan, school budget and school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	A FEMA certified tornado safe room was constructed at East Elementary School in 2014. Lack of financial resources for construction continues to be the main obstacle to building additional shelters, however, the school district is interested in building safe rooms if funding can be secured.

Action 1.2.7: Monitor developments in data availability concerning the impact of disasters such as dam failure, tornados, sinkholes, land subsidence and wildfire upon Pulaski County and all jurisdictions through local, state and federal agencies for use in hazard mitigation planning.

Action Worksheet	
Name of Jurisdiction:	Waynesville R-VI
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with lack of data concerning the impact of natural disasters on the County.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	1.2.7
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	Monitor developments in data availability concerning the impact of disasters such as dam failure, tornadoes, sinkholes, land subsidence, and wildfire upon Pulaski County and all jurisdictions through local, state, and federal agencies for use in hazard mitigation planning.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	$2,500 - ?
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	28 – H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Some work has been done on this action item at the state and federal level. Improved data is becoming available for a number of different hazards including dam failure.

Action 1.3.5: As funding becomes available, increase the availability (if necessary construction) of storm shelters for individual families and large groups, including near large employment centers and schools that currently do not have access to tornado safe rooms.

Action Worksheet	
Name of Jurisdiction:	Waynesville R-VI
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with nonexistent /unavailable storm shelters for individual families and large groups.
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	1.3.5
Name of Action or Project:	Reducing Vulnerability of People
Action or Project Description:	As funding becomes available, increase availability (if necessary, construction) of storm shelters for individual families and large groups, including near large employment centers and schools.
Applicable Goal Statement:	Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning, and hazard mitigation activities.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	21 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, hazard mitigation plan, school budget, school crisis management plan and capital improvements plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	A FEMA certified tornado safe room was constructed at East Elementary School in 2014. Lack of financial resources for construction continues to be the main obstacle to building additional shelters, however, the school district is interested in building safe rooms if funding can be secured.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Action 3.3.1: Re-evaluate the hazard mitigation plan, merge with other community planning and coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.

Action Worksheet	
Name of Jurisdiction:	Waynesville R-VI
Risk / Vulnerability	
Problem being Mitigated:	Risks/vulnerabilities associated with not regularly reviewing and updating the mitigation plan and incorporating mitigation activities into emergency operations plans and procedures as well as long-range planning and development activities of each jurisdiction.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	3.3.1
Name of Action or Project:	Re-evaluate the hazard mitigation plan and merge with other community planning activities.
Action or Project Description:	Re-evaluate the hazard mitigation plan, merge with other community planning activities and documents and incorporate hazard mitigation into the long-range planning and development activities of the county.
Applicable Goal Statement:	Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities
Estimated Cost:	$3,500 - $4,500
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	21 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard mitigation plan, district budget, capital improvement plan, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Where applicable, hazard mitigation goals & actions have been incorporated into the LEOP & school crisis management plan. As local officials become familiar with mitigation & understand how it fits within other planning activities, this will continue to expand.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Action 4.1.1: Participate in joint meetings of different organizations/agencies for mitigation related planning.

Action Worksheet	
Name of Jurisdiction:	Waynesville R-VI
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication among organizations/agencies for mitigation related planning.
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.1
Name of Action or Project:	Participate in joint meetings of different organizations/agencies and continued communication on mitigation.
Action or Project Description:	Participate in joint meetings of different organizations/agencies for mitigation related planning.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	27 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity that has been embraced by local emergency responders. Region I Fire Chiefs meet regularly. The Region I SEMA area coordinator holds quarterly meetings throughout the six-county region, including in Pulaski County. This program could benefit from a more coordinated, focused effort to bring different agencies together to specifically discuss mitigation issues – especially school districts.

Action 4.1.2: Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).

Action Worksheet	
Name of Jurisdiction:	Waynesville R-VI
Risk / Vulnerability	
Problem being Mitigated:	Lack of synergy/communication/coordination among agencies, public, and private entities on disaster training and emergency drills/exercises.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	4.1.2
Name of Action or Project:	Participate in joint training/drills/exercises among all jurisdictions and local businesses.
Action or Project Description:	Participate in joint training (and drills) between agencies, public and private entities (including schools/businesses).
Applicable Goal Statement:	Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.
Estimated Cost:	$1,000 - $10,000
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	25 - H
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	LEOP, Hazard mitigation plan, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	Jurisdictions, EMDs and emergency response agencies within the school district, Waynesville and Pulaski County cooperate on training and drills on a regular basis. Fire and police departments regularly train with local school districts. The county fire chief's association meets regularly and do joint training. The Region I SEMA area coordinator works with local entities throughout the six-county area to do at least one exercise each year that is either regional or state-wide. The Pipeline Association of Missouri hosts annual tabletop exercises in the region.

Action 4.1.3: Pool different agency resources to achieve widespread mitigation results.

Action Worksheet	
Name of Jurisdiction:	Waynesville R-VI
Risk / Vulnerability	
Problem being Mitigated:	Lack of resources to carry out mitigation projects
Hazard(s) Addressed:	All hazards
Action or Project	
Action/Project Number:	4.1.3
Name of Action or Project:	Pool different agency resources to achieve widespread mitigation results.
Action or Project Description:	Bring together different agencies and organizations that have similar goals and work together to pool resources to move mitigation projects forward.
Applicable Goal Statement:	Strengthen communication and coordinate participation between agencies, stakeholders, jurisdictions, and the public to create widespread interest in mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	24 – High Priority
Timeline for Completion:	On-going
Potential Fund Sources:	Grants, local general revenue funds, and private donations of cash, goods, or services.
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, LEOP, district budget, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	This is an on-going activity. The school district has reported that they are interested in finding ways to pool resources to accomplish mitigation projects.

Goal 6: Secure resources for investment in hazard mitigation.

Action 6.1.4: When funding becomes available, budget for mitigation projects.

Action Worksheet	
Name of Jurisdiction:	Waynesville R-VI
Risk / Vulnerability	
Problem being Mitigated:	Lack of funding for hazard mitigation projects.
Hazard(s) Addressed:	All Hazards
Action or Project	
Action/Project Number:	6.1.4
Name of Action or Project:	Budgeting for mitigation projects
Action or Project Description:	When funding becomes available, budget for mitigation projects.
Applicable Goal Statement:	Secure resources for investment in hazard mitigation.
Estimated Cost:	Unknown
Benefits:	Losses avoided by implementing this action include injuries and/or casualties, property damages, loss-of-function/displacement impacts, and emergency management costs/community costs.
Plan for Implementation	
Responsible Organization/Department:	School Superintendent, Board of Education
Action/Project Priority:	23 - H
Timeline for Completion:	5 years to implement and then on-going
Potential Fund Sources:	Local general revenue funds
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard mitigation plan, district budget, school crisis management plan
Progress Report	
Action Status	In Progress/Continue in Plan Update
Report of Progress	The district strives to build mitigation into any improvements made to district assets and programs – when the resources are available to do so. As more local officials become aware of the importance of mitigation and realize that projects can be accomplished through capital improvements, this activity will become more integrated into local budgeting.

5 PLAN MAINTENANCE PROCESS

This chapter provides an overview of the overall strategy for plan maintenance and outlines the method and schedule for monitoring, updating and evaluating the plan. The chapter also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

5.1 Monitoring, Evaluating, and Updating the Plan

44 CFR Requirement 201.6(c)(4): The plan maintenance process shall include a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

5.1.1 Responsibility for Plan Maintenance

Periodic revisions and updates of the Plan are required by Missouri SEMA to ensure that the goals and objectives for Pulaski County are kept current. More importantly, revisions may be necessary to ensure the plan is in full compliance with Federal regulations and state statutes. This portion of the plan outlines the procedures for completing such revisions and updates.

A key component of the ongoing plan monitoring, evaluating and updating will be the Pulaski County Hazard Mitigation Planning Committee (MPC). In order to carry out the activities necessary for maintaining the plan, the MPC will need to remain in place and meet periodically. The coordination of this group, as indicated in the mitigation strategy, should be a responsibility of the county EMD. On-going activities of the MPC are:

- Meet annually, and after a disaster event, to monitor and evaluate the implementation of the plan;
- Act as a forum for hazard mitigation issues;
- Disseminate hazard mitigation ideas and activities to all participants;
- Pursue the implementation of high priority, low or no-cost recommended actions;
- Maintain vigilant monitoring of multi-objective, cost-share, and other funding opportunities to help the community implement the plan's recommended actions for which no current funding exists;
- Monitor and assist in implementation and update of this plan;

- Keep the concept of mitigation in the forefront of community decision making by identifying plan recommendations when other community goals, plans, and activities overlap, influence, or directly affect increased community vulnerability to disasters;
- Report on plan progress and recommended changes to the County Board of Supervisors and governing bodies of participating jurisdictions; and
- Inform and solicit input from the public.

The MPC (or other designated responsible entity) is an advisory body and can only make recommendations to county, city, town, or district elected officials. Its primary duty is to see the plan successfully carried out and to report to the community governing boards and the public on the status of plan implementation and mitigation opportunities. Other duties include reviewing and promoting mitigation proposals, hearing stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information in areas accessible to the public.

5.1.2 Plan Maintenance Schedule

The MPC (or other designated responsible entity) agrees to meet annually and after a state or federally declared hazard event, as appropriate, to monitor progress and update the mitigation strategy. The Pulaski County Emergency Management Director will be responsible for initiating the plan reviews and will invite members of the MPC (or other designated responsible entity) to the meeting.

In coordination with all participating jurisdictions, a five-year written update of the plan will be submitted to the Missouri State Emergency Management Agency (SEMA) and FEMA Region VII per Requirement §201.6(c)(4)(i) of the Disaster Mitigation Act of 2000, unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule.

5.1.3 Plan Maintenance Process

Progress on the proposed actions can be monitored by evaluating changes in vulnerabilities identified in the plan. The MPC (or other designated responsible entity) during the annual meeting should review changes in vulnerability identified as follows:

- Decreased vulnerability as a result of implementing recommended actions;
- Increased vulnerability as a result of failed or ineffective mitigation actions;
- Increased vulnerability due to hazard events; and/or
- Increased vulnerability as a result of new development (and/or annexation).

Future 5-year updates to this plan will include the following activities:

- Consideration of changes in vulnerability due to action implementation;
- Documentation of success stories where mitigation efforts have proven effective;
- Documentation of unsuccessful mitigation actions and why the actions were not effective;
- Documentation of previously overlooked hazard events that may have occurred since the previous plan approval;
- Incorporation of new data or studies with information on hazard risks;
- Incorporation of new capabilities or changes in capabilities;

- Incorporation of growth data and changes to inventories; and
- Incorporation of ideas for new actions and changes in action prioritization.

In order to best evaluate any changes in vulnerability as a result of plan implementation, the participating jurisdictions will adopt the following process:

- Each proposed action in the plan identified an individual, office, or agency responsible for action implementation. This entity will track and report on an annual basis to the jurisdictional MPC (or designated responsible entity) member on action status. The entity will provide input on whether the action as implemented meets the defined objectives and is likely to be successful in reducing risk.
- If the action does not meet identified objectives, the jurisdictional MPC (or designated responsible entity) member will determine necessary remedial action, making any required modifications to the plan.

Changes will be made to the plan to remedy actions that have failed or are not considered feasible. Feasibility will be determined after a review of action consistency with established criteria, time frame, community priorities, and/or funding resources. Actions that were not ranked high but were identified as potential mitigation activities will be reviewed as well during the monitoring of this plan. Updating of the plan will be accomplished by written changes and submissions, as the MPC (or designated responsible entity) deems appropriate and necessary. Changes will be approved by the Pulaski County Hazard Mitigation Planning Committee and the governing boards of the other participating jurisdictions.

5.2 Incorporation into Existing Planning Mechanisms

44 CFR Requirement §201.6(c)(4)(ii): [The plan 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.

Where possible, plan participants, including school and special districts, will use existing plans and/or programs to implement hazard mitigation actions. Additionally, as jurisdictions review and update existing planning mechanisms, relevant action items and data from the HMP will be integrated. Those existing plans and programs were described in **Section 2.2** of this plan. Based on the capability assessments of the participating jurisdictions, communities in Pulaski County will continue to plan and implement programs to reduce losses to life and property from hazards. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through the following plans:

- Regional Comprehensive Economic Development Strategy (CEDS) document
- General or master plans of participating jurisdictions;
- Ordinances of participating jurisdictions;
- Pulaski County Local Emergency Operations Plan (LEOP);
- Capital improvement plans and budgets;
- Other community plans within the County, such as water conservation plans, storm water management plans, and parks and recreation plans;
- School and Special District Plans and budgets; and
- Other plans and policies outlined in the capability assessment sections for each jurisdiction in Chapter 2 of this plan.

The MPC (or designated responsible entity) members involved in updating these existing planning mechanisms will be responsible for integrating the findings and actions of the mitigation plan, as appropriate. The MPC (or designated responsible entity) is also responsible for monitoring this integration and incorporation of the appropriate information into the five-year update of the multi-jurisdictional hazard mitigation plan.

Additionally, after the annual review of the Hazard Mitigation Plan, the Pulaski County Emergency Management Director (EMD) will provide the updated Mitigation Strategy with current status of each mitigation action to the County (Boards of Supervisors or Commissions) as well as all Mayors, City Clerks, and School District Superintendents. The EMD will request that the mitigation strategy be incorporated, where appropriate, in other planning mechanisms.

Table 5.1 below lists the planning mechanisms by jurisdiction into which the Hazard Mitigation Plan will be integrated.

Table 5.1 Planning Mechanisms Identified for Integration of Hazard Mitigation Plan

Jurisdiction	Planning Mechanisms	Integration Process for Previous Plan	Integration Process for Current Plan
Unincorporated Pulaski County	County Emergency Operations Plan County Mitigation Plan. Regional Transportation Plan Comprehensive Economic Development Strategy Construction Road/Bridge Budget	Hazard Mitigation action items were incorporated into the regional CEDS and Regional Transportation Plan by MRPC. EMD was encouraged to incorporate hazard mitigation into LEOP where applicable.	County Commission and road and bridge supervisors incorporating hazard mitigation projects into budgets and future road improvements. EMD will review LEOP and incorporate hazard mitigation updates where applicable. CEDS and Regional Transportation Plan will be reviewed to update with revised action items.
Crocker	Emergency Operations Plan (part of county) County Mitigation Plan Regional Transportation Plan Comprehensive Economic Development Strategy Public Works Construction Budget	Hazard Mitigation action items were incorporated into the regional CEDS and Regional Transportation Plan by MRPC. EMD was encouraged to incorporate hazard mitigation into LEOP where applicable.	Mayor, Aldermen and public works department will work toward incorporating hazard mitigation projects into city budget where possible and future public works improvements. EMD will review LEOP and incorporate hazard mitigation updates where applicable. CEDS and Regional Transportation Plan will be reviewed to update with revised action items.

Jurisdiction	Planning Mechanisms	Integration Process for Previous Plan	Integration Process for Current Plan
Dixon	Emergency Operations Plan (part of county) County Mitigation Plan Regional Transportation Plan Comprehensive Economic Development Strategy (construction budget) Public Works Construction Budget	Hazard Mitigation action items were incorporated into the regional CEDS and Regional Transportation Plan by MRPC. City EMD was encouraged to incorporate hazard mitigation into LEOP where applicable.	Mayor, Aldermen and public works department will work toward incorporating hazard mitigation projects into city budget where possible and future public works improvements. EMD will review LEOP and incorporate hazard mitigation updates where applicable. CEDS and Regional Transportation Plan will be reviewed to update with revised action items.
Richland	Emergency Operations Plan (part of county) County Mitigation Plan Regional Transportation Plan Comprehensive Economic Development Strategy Public Works Construction Budget	Hazard Mitigation action items were incorporated into the regional CEDS and Regional Transportation Plan by MRPC. City EMD was encouraged to incorporate hazard mitigation into LEOP where applicable.	Mayor, Aldermen and public works department will work toward incorporating hazard mitigation projects into city budget where possible and future public works improvements. EMD will review LEOP and incorporate hazard mitigation updates where applicable. CEDS and Regional Transportation Plan will be reviewed to update with revised action items.
St. Robert	Emergency Operations Plan (part of county) County Mitigation Plan Regional Transportation Plan Comprehensive Economic Development Strategy Public Works Construction Budget	Hazard Mitigation action items were incorporated into the regional CEDS and Regional Transportation Plan by MRPC. City EMD was encouraged to incorporate hazard mitigation into LEOP where applicable.	Mayor, Aldermen and public works department will work toward incorporating hazard mitigation projects into city budget where possible and future public works improvements. EMD will review LEOP and incorporate hazard mitigation updates where applicable. CEDS and Regional Transportation Plan will be reviewed to update with revised action

Jurisdiction	Planning Mechanisms	Integration Process for Previous Plan	Integration Process for Current Plan
			items.
Waynesville	Emergency Operations Plan (part of county) County Mitigation Plan Regional Transportation Plan Comprehensive Economic Development Strategy Public Works Construction Budget	Hazard Mitigation action items were incorporated into the regional CEDS and Regional Transportation Plan by MRPC. City EMD was encouraged to incorporate hazard mitigation into LEOP where applicable.	Mayor, Aldermen and public works department will work toward incorporating hazard mitigation projects into city budget where possible and future public works improvements. EMD will review LEOP and incorporate hazard mitigation updates where applicable. CEDS and Regional Transportation Plan will be reviewed to update with revised action items.
Dixon R-I	School Emergency Plan District Budget	School board and superintendent reviewed school emergency plan to see where hazard mitigation actions could be incorporated.	School board and superintendent will review School Emergency Plan to update applicable areas with revised action items list. Superintendent will work toward including the certified tornado safe room(s) into the district budget.
Crocker R-II	School Emergency Plan District Budget Community Safe Room Operations Plan	School board and superintendent reviewed school emergency plan and Community safe Room Operations Plan to see where hazard mitigation actions could be incorporated.	School board and superintendent will review School Emergency Plan and Community Safe Room Operations Plan to update applicable areas with revised action items list.
Swedeborg R-III	School Emergency Plan District Budget	School board and superintendent reviewed school emergency plan to see where hazard mitigation actions could be incorporated.	School board and superintendent will review School Emergency Plan to update applicable areas with revised action items list. Superintendent will work toward including the certified tornado safe room(s) into the district budget.
Richland R-IV	School Emergency Plan	School board and	School board and

Jurisdiction	Planning Mechanisms	Integration Process for Previous Plan	Integration Process for Current Plan
	District Budget	superintendent reviewed school emergency plan to see where hazard mitigation actions could be incorporated.	superintendent will review School Emergency Plan to update applicable areas with revised action items list. Superintendent will work toward including the certified tornado safe room(s) into the district budget.
Laquey R-V	School Emergency Plan District Budget	School board and superintendent reviewed school emergency plan to see where hazard mitigation actions could be incorporated.	School board and superintendent will review School Emergency Plan to update applicable areas with revised action items list. Superintendent will work toward including the certified tornado safe room(s) into the district budget.
Waynesville R-VI	School Emergency Plan District Budget	School board and superintendent reviewed school emergency plan to see where hazard mitigation actions could be incorporated.	School board and superintendent will review School Emergency Plan to update applicable areas with revised action items list. Superintendent will work toward including the certified tornado safe room(s) into the district budget.

Source: Jurisdiction surveys 2018

Including hazard mitigation is now routine for any planning projects or plan updates carried out by the Meramec Regional Planning Commission (MRPC). Applicable goals and action items from hazard mitigation plans have been incorporated into the regional transportation plan as well as the Community Economic Development Strategy for the region. Both of these documents are resources for cities and counties within the eight-county area and are updated on a regular basis with input from city and county representatives. This review and update process has helped city and county representatives better understand and appreciate the importance of including hazard mitigation in all applicable plans. In addition, MRPC and the hazard mitigation planning committee are also working to encourage the incorporation of hazard mitigation into the planning activities of all local governments, school districts and local entities through presentations and participation in planning activities.

5.3 Continued Public Involvement

44 CFR Requirement §201.6(c)(4)(iii): [The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

The hazard mitigation plan update process provides an opportunity to publicize success stories resulting from the plan's implementation and seek additional public comment. Information about the annual reviews will be posted in the local newspaper as well as on the Meramec Regional Planning Commission's website following each annual review of the mitigation plan. When the MPC reconvenes for the five-year update, it will coordinate with all stakeholders participating in the planning process. Included in this group will be those who joined the MPC after the initial effort to update and revise the plan. Public notice will be posted and public participation will be actively solicited, at a minimum, through available website postings and press releases to local media outlets, primarily newspapers.

6 Appendix

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B: Planning Process

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MEMORANDUM

TO: Pulaski County Hazard Mitigation Planning Committee

FROM: Tammy Snodgrass, MRPC Environmental Programs Manager/Assistant Director

DATE: January 24, 2020

SUBJECT: Hazard mitigation planning meeting **RESCHEDULED FOR FEBRUARY 20, 2020**

The Meramec Regional Planning Commission (MRPC) has been contracted by Pulaski County and the State Emergency Management Agency (SEMA) to review and update the multi-jurisdictional hazard mitigation plan for Pulaski County, its cities and school districts. The project is being funded by state and federal dollars with matching funds from Pulaski County. We need your help to successfully complete this project.

The county must submit the first draft of an updated hazard mitigation plan to SEMA and FEMA by January 1, 2021 in order to continue to be eligible for some hazard mitigation grants, so it is in every jurisdiction's best interest to participate in the review and update of this plan. Hazard mitigation funds are used for such projects as floodplain buyouts, burying electrical lines, tornado shelters for schools, etc.

A meeting of the Pulaski County hazard mitigation planning committee has been rescheduled for Thursday, February 20, 2020 at 10:30 a.m. in the large community room in the basement of the Pulaski County courthouse located at 301 Historic 66 East, Waynesville, Mo. An agenda is attached. The focus of this meeting will be to review existing goals and action items and determine if any changes need to be made. In addition, the group will need to report on what action items have been accomplished and what mitigation activities have occurred since the plan was updated five years ago. This can include activities such as improvements to roads and bridges that were prone to flooding, new programs that have reduced risk to residents and/or businesses and new tornado shelters that have been constructed in the past five years. I have attached a list of the current action items for you to review. SEMA and FEMA have indicated that they would like to see fewer action items listed in the plans and that the action items be better defined. Please think about what action items can be removed from the list without compromising the kinds of projects that jurisdictions can apply for hazard mitigation grants in the next five years.

As the county, each city and school district are required to participate in the planning process and will be asked to formally approve and adopt the Pulaski County Hazard Mitigation Plan, we strongly encourage you to participate in this committee or to send a representative who will convey your jurisdiction or department's needs for hazard mitigation as well as report on your hazard mitigation accomplishments. It is important to include representatives from road and bridge, local planners, emergency management offices, law enforcement, city/county officials, fire protection, local health services, disaster relief volunteer services and other appropriate groups.

Thank you for your assistance in addressing hazard mitigation for Pulaski County. If you have any questions, contact me at (573) 265-2993, or via e-mail: tsnodgrass@merameregion.org. I look forward to seeing you at the meeting.

TS

Enclosures

Enclosures

Pulaski County
Multi-Jurisdictional Hazard Mitigation Plan Update
Planning Meeting

Thursday, February 20, 2020 ~ 10:30 a.m.
Community Room (Basement), Pulaski County Courthouse

AGENDA

I. Welcome/Introductions – Tammy Snodgrass, Assistant Director, Meramec Regional Planning Commission

II. Hazard Mitigation Planning Purpose

III. Grant Programs Linked to Approved Plan

IV. Planning Tasks / Multi-jurisdictional Approach

V. Participation Requirements

VI. Public Involvement

VII. Data Collection Questionnaires

VIII. Discussion of Hazards

IX. Critical Facilities

X. Next Steps in the Planning Process

XI. Set Next Meeting Date(s)

NOTICE OF PUBLIC MEETING

Date and time of posting: **February 20, 2020 at 10:30 a.m.**
Notice is hereby given that the **Pulaski County Hazard Mitigation Planning Committee** will meet at 10:30 a.m. on **Thursday, February 20, 2020** at the Pulaksi County Courthouse, community room (basement), located at 301 Historic 66 East, Waynesville, Mo.

The tentative agenda of this meeting includes:

- Welcome and Introductions
- Hazard Mitigation Planning Purpose
- Grant Programs Linked to Approved Plan
- Planning Tasks/Multi-Jurisdictional Approach
- Participation Requirements
- Public Involvement
- Data Collection Questionnaires
- Discussion of Hazards
- Critical Facilities
- Next Steps in the Planning Process
- Setting of Date and Time for Next Meeting
- Adjourn

Representatives of the news media may obtain copies of this notice by contacting:

Tamara Snodgrass
#4 Industrial Drive
St. James, MO 65559
(573) 265-2993
tsnodgrass@meramecregion.org

If you require any accommodations (i.e. qualified interpreter, large print, hearing assistance) in order to attend this meeting, please notify this office at 573-265-2993 no later than 48 hours prior to the scheduled commencement of the meeting.

Pulaski County Hazard Mitigation Plan Review Meeting
February 20, 2020 ~ 10:30 a.m.

Name	Representing	Email Address	Phone #	Address
Smith, Lawson D	Pulaski	react33@yahoo.com	573-774-7393	20876 Hampton Dr Dixon, MO 65459
Steve Long	St. Robert	slong@saintrobert.com	573-512-0761	160 Duffer Dr. Saint Robert, Mo. 65584
Doug Jacobson	Swedeborg School	doug2313@windstream.net	(573) 736-2735	17253 Resel Rd Crocker, MO 65452
Rick Hobbs	City of Richland	rhobbs@wrfpdmo.org	573 512 0066	PO Box 1225 Richland MO 65556
Ed Fowler	WRFPD	efowler@wrfpdmo.org	573-774-5449	1501 Ousley Rd Waynesville, MO 65583
John Wright	LifeCare of Waynesville	John_wright@lcca.com ~~John_wright@lcca.com~~	573-7746456	700 Birch lane Waynesville MO 65583
Doug Yurecko	WRFPD	1901@wrfpdmo.org	573-337-0445	1501 Ousley Rd Waynesville MO
Brian Lee	Richland School	blee@richlandbears.us	573-765-3241	1714 E Jefferson Richland 65556
Chris Berger	RVT	cberger@waynesville.k12.mo.us	573 855-2068	Plato? Waynesville Mo

Name	Representing	Email Address	Phone #	Address
David Ernst	Pulaski	Clerk@pulaski.[illegible].org	573-774-4701	301 Main [illegible]

For immediate release
April 22, 2020

For more information, contact
Tammy Snodgrass at (573) 265-2993

Public input being accepted on Pulaski County Hazard Mitigation Plan until May 15

PULASKI COUNTY—Public input is being accepted until May 15, 2020, on the Pulaski County Hazard Mitigation Plan. The public survey is available on Meramec Regional Planning Commission's website at http://www.meramecregion.org/surveys/.

The federal government requires all states and local governments to have hazard mitigation plans approved by the Federal Emergency Management Administration (FEMA) that are consistent with the Disaster Mitigation Act of 2000. Approved mitigation plans are required to maintain eligibility for certain types of federal Hazard Mitigation Assistance Grants.

One of the key components of a hazard mitigation plan is public input during the planning process. The planning committee, comprised of representatives from the Pulaski County Commission, the incorporated cities, emergency response agencies, utility providers and public school districts, will be evaluating information on the hazards that impact each jurisdiction within Pulaski County.

Formed in 1969, MRPC is a voluntary council of governments serving Crawford, Dent, Gasconade, Maries, Osage, Phelps, Pulaski and Washington counties and their respective cities. Gasconade County Presiding Commissioner Larry Miskel serves as chairman of the board. A professional staff of 34 offers technical assistance and services, such as grant preparation and administration, housing assistance, transportation planning, environmental planning, ordinance codification, business loans and other services to member communities.

If you have questions, please contact Tammy Snodgrass at MRPC at 573-265-2993 or by email at tsnodgrass@meramecregion.org.

To keep up with the latest MRPC news and events, visit the MRPC website at www.meramecregion.org or on Facebook at www.facebook.com/meramecregion.

May 8, 2020

Dear Pulaski County Hazard Mitigation Planning Committee Members:

I hope that this finds you all safe and well. I wanted to let you know that I am continuing to work on the plan despite the complications of COVID-19. I will continue to try to keep everyone informed and involved through email and phone calls so that we can continue to work to meeting the deadline at the end of September for submitting a draft to SEMA.

At the last committee meeting, I passed out copies of the action items and asked committee members to review the list and provide input. To date, I have not received any feedback. As there is still a lot of work that needs to be done on the plan, I have moved ahead and taken a stab at updating the action items based on the information I have and our discussions. Please review these recommendations closely and let me know your thoughts.

Specifically I need you to update the action items and work toward significantly reducing the number of action items. SEMA and FEMA have emphasized the need to only include achievable action items and the only requirement is that each jurisdiction have at least one action item assigned to it. Pulaski County had a total of 62 action items and I have reduced that number by 29 if you accept all my suggestions.

Here is what you need to keep in mind:

- What actions have been completed and can be removed from the list?
- What actions are repetitive or can be combined?
- What actions are not likely to be completed in the next five years (if ever) or just do not rise to the level of needing to be included in the plan

Please take note on how I marked up the document below. I really want folks to look this over closely and make sure I'm not removing something that needs to stay in the plan. At the same time, I want you to look at the items and let me know if some that I've left in the plan have been accomplished or if progress has been made on them. *I am required to note in the plan if progress has been made or if the action item has been completed.*

I have gone through the existing list and highlighted the ones I think can be removed in gray. These may be good activities, but (in my opinion) they do not rise to the level of being included in the plan; would not be an activity that hazard mitigation grant funds would be requested for; or are an on-going activity that is already imbedded in local policy and procedure.

Action items that are repetitive or can be combined are marked in aqua, with notes on what I did in red italic.

The action items that I believe the county has achieved, that can be taken off the list, I have highlighted in green.

Revisions to action items are marked in blue.

Thank you for your assistance and time. I've attached an in-kind match form for you to use as well.

Tammy Snodgrass
Meramec Regional Planning Commission
(573) 265-2993
tsnodgrass@meramecregion.org

GOALS AND ACTION ITEMS FROM CURRENT PLAN

Goal 1: Reduce risks and vulnerabilities of people in hazard-prone areas through current technology, better planning and hazard mitigation activities.

Goal 2: Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.

Goal 3: Promote education, outreach, research and development programs to improve the knowledge and awareness among the citizens and industry about hazards they may face, their vulnerability to identified hazards, and hazard mitigation alternatives that can reduce their vulnerabilities.

Goal 4: Strengthen communication and coordinate participation between public agencies, citizens, non-profit organizations, business, and industry to create a widespread interest in mitigation.

Goal 5: Establish priorities for reducing risks to the people and their property with emphasis on long-term and maximum benefits to the public rather than short-term benefit of special interests.

Goal 6: Secure resources for investment in hazard mitigation.

STAPLEE

FEMA's STAPLEE methodology was used to assess the costs and benefits, overall feasibility of mitigation actions, and other issues impacting project. During the prioritization process, the MPC worked together to review and assign scores. The process posed questions based on the STAPLEE elements as well as the potential mitigation effectiveness of each action. Scores were based on the responses to the questions as follows:

Definitely yes = 3 points
Maybe yes = 2 points
Probably no = 1
Definitely no = 0

The following questions were asked for each proposed action.

S: Is the action socially acceptable?
T: Is the action technically feasible and potentially successful?
A: Does the jurisdiction have the administrative capability to successfully implement this action?
P: Is the action politically acceptable?
L: Does the jurisdiction have the legal authority to implement the action?
E: Is the action economically beneficial?
E: Will the project have an environmental impact that is either beneficial or neutral? (score "3" if positive and "2" if neutral)

Will the implemented action result in lives saved?

Will the implanted action result in a reduction of disaster damage?

In addition to the STAPLEE process, each action item was also reviewed for Benefit/Cost. These two aspects of the prioritization process were scored as follows:

Benefit – two (2) points were added for each of the following avoided damages (8 points maximum = highest benefit)

- Injuries and/or casualties
- Property damages
- Loss-of-function/displacement impacts
- Emergency management costs/community costs

Cost – points were subtracted according to the following cost scale (-5 points maximum = highest cost)

- (-1) = Minimal – little cost to the jurisdiction involved
- (-3) = Moderate – definite cost involved but could likely be worked into operating budget
- (-5) = Significant – cost above and beyond most operating budgets; would require extra appropriations to finance or to meet matching funds for a grant

Note: For the Benefit/Cost Review, the benefit and cost of actions which used the word "encourage" were evaluated as if the action or strategy being encouraged was actually to be carried out.

In addition, the group considered the cost of mitigation versus the long-term savings in relation to potential lives saved and property damage avoided.

Total Score – The scores for the STAPLEE Review and Benefit/Cost Review were added to determine a Total Score for each action.

Priority Scale – To achieve an understanding of how a Total Score might be translated into a Priority Rating, a sample matrix was filled out for the possible range of ratings an action might receive on both the STAPLEE and Benefit/Cost Review. The possible ratings tested ranged between:

- A hypothetical action with "Half probably NO and half maybe YES" answers on STAPLEE (i.e. poor STAPLEE score) and Low Benefit/High Cost: Total Score = 7
- A hypothetical action with "All definitely YES" on STAPLEE and High Benefit/Little Cost: Total Score = 28

An inspection of the possible scores within this range led to the development of the following Priority Scale based on the Total Score in the STAPLEE- Benefit/Cost Review process:

20 – 28 points = High Priority

14-19 points = Medium Priority

13 points and below = Low Priority

Figure 4.1. Completed STAPLEE Benefit/Cost Spreadsheet		3 = Def YES 2 = Maybe YES			1 = Prob NO 0 = Def NO									
Action No.	Mitigation Actions	S	T	A	P	L	E	E	STAPLEE Total	Losses Avoided (2 pts. Each)	Benefit	Cost	B/C Total	Total	Priority
1.1.1	Implement an education program on personal emergency preparedness that teaches residents how to prepare emergency survival kits with water, blankets, flashlights, etc. and how to shut off their home utilities during emergencies; provides them with information on precautions to be taken during threats of natural disasters such as heat waves; and provide information on personal mitigation actions such as building tornado shelters and securing propane tanks. *Combined 1.1.1, 1.1.3,*	3	3	3	3	3	2	3	20	IC, PD, LF, EMCC	8	-1	7	27	H
1.1.2	Continue to educate residents about precautions that should be taken during threats of natural disasters such as heat waves and severe weather.	3	3	3	3	3	2	3	20	IC, LF, EMCC	6	-1	5	25	H
1.1.3	Provide information to citizens on individual mitigation activities such as building personal shelters and assuring that propane tanks are appropriately tied down.	3	3	2	3	3	2	3	19	IC, PD, LF EMCC	8	-1	7	26	H
1.1.4	Promote development of emergency plans by businesses and public entities. *Combine with 2.1.3*	3	3	3	3	3	2	3	20	IC, PD, LF, EMCC	8	-1	7	27	H
1.1.5	Educate school staff on natural hazards and make sure all staff are familiar with school emergency plan including evacuation and safety procedures.	3	3	3	3	3	3	3	21	IC, PD, LF EMCC	8	-1	7	28	H
1.1.6	Schools need to continue to conduct emergency preparedness exercises on a regular basis. *COMPLETE - remove*	3	3	3	3	3	2	3	20	IC, PD, LF, EMCC	8	-1	7	27	H
1.1.7	Regularly review and update school emergency plans *COMPLETE - remove*	3	3	3	3	3	3	3	21	IC, PD, LF, EMCC	8	-1	7	28	H
1.1.8	Encourage the designation of storm shelters and the construction of tornado safe rooms in every school that does not have one.	3	3	3	3	3	1	3	19	IC, EMCC	4	-5	-1	18	M
1.2.1	Continue to encourage local governments to budget for and obtain enhanced early warning systems and improved communications systems. *Combine with 5.1.2*	3	3	2	3	3	1	3	18	IC, PD, LF, EMCC	8	-3	5	23	H
1.2.2	Continue to promote use of weather radios by local residents and schools through press releases and brochures to insure advanced warning about threatening weather. .*Combine with 3.2.1*	3	3	3	3	3	3	3	21	IC,EMCC	4	-1	3	24	H
1.2.3	Continue to partner with local radio stations to ensure that appropriate warning of impending disasters is provided to all residents. *Remove?*	3	3	3	3	3	3	3	21	IC, EMCC	4	-1	3	24	H
1.2.4	Promote the installation of fire alarms/security systems in public buildings. *REMOVE?*	3	3	2	2	3	2	3	18	IC, PD, LF, EMCC	8	-3	5	23	H

1.2.5	Acquire backup generators to safeguard the availability of critical services such as electricity, water and emergency services. *Combine with 2.1.4*	3	3	3	3	3	2	3	20	LF, EMCC	4	-1	3	23	H
Figure 4.4 Prioritization of Mitigation Actions		**3 = Def YES** **2 = Maybe YES**				**1 = Prob NO** **0 = Def NO**									
Action No.	**Mitigation Actions**	**S**	**T**	**A**	**P**	**L**	**E**	**E**	**STAPLEE Total**	**Losses Avoided (2 pts. Each)**	**Benefit**	**Cost**	**B/C Total**	**Total**	**Priority**
1.2.6	Conduct a study of the Texas Road area to find mitigation solutions for flash flooding that has resulted in water rescues, damaged utilities and homes.	3	3	2	3	3	1	3	18	IC,PD, LF, EMCC	8	-5	3	21	H
1.2.7	Monitor developments in data availability concerning the impact of disasters such as dam failure, tornados, sinkholes, land subsidence and wildfire upon Pulaski County and all jurisdictions through local, state and federal agencies for use in hazard mitigation planning.	3	3	3	3	3	3	3	21	IC, PD, LF, EMCC	8	-1	7	28	H
1.3.1	Place water height gauges and signs near low water crossings *Remove?*	3	3	2	3	3	2	3	19	IC	2	-1	1	20	H
1.3.2	Continue to encourage tree trimming and dead tree removal programs by utility companies and local government. *Complete?? If yes - remove*	3	3	3	3	3	2	2	19	IC, PD, LF, EMCC	8	-3	5	24	H
1.3.3	Continue to examine road and bridge upgrades to improve drainage and reduce flooding and the risk to residents and property.	3	3	2	3	3	2	2	18	IC, PD, LF, EMCC	8	-1	7	25	H
1.3.4	Establish designated shelters for residents to be used during tornado threats, as cooling centers during extreme heat or power outages and/or as shelters during other disasters. *COMPLETE? If yes, remove*	3	3	3	3	3	3	3	21	IC, LF, EMCC	6	-1	5	26	H
1.3.5	Continue to work to increase availability (if necessary construction) of storm shelters for individual families and large groups, including near large employment centers and schools that currently do not have access to tornado safe rooms.. *.Combined with 5.2.1*	3	3	3	3	3	1	3	19	IC, EMCC	4	-5	-1	18	M
1.3.6	Encourage establishing road signage that directs people on I-44 to local storm shelters during storm warnings. *Remove?*	3	3	2	3	3	3	3	20	IC, PD, EMCC	6	-1	5	25	H
2.1.1	Continue to encourage a self-inspection program at critical facilities to assure that building infrastructure is earthquake and tornado resistant. *Remove?*	3	2	2	3	3	1	3	17	IC, PD, LF, EMCC	8	-5	3	20	H
2.1.2	Encourage the adoption of minimum standard building codes by all communities	2	2	2	1	3	2	3	15	IC, PD, LF, EMCC	8	-3	5	20	H
2.1.3	Continue to encourage businesses and public entities to develop and implement emergency plans. *Combined with 1.1.4*	3	3	3	3	3	3	3	21	IC, PD, LF, EMCC	8	-3	5	26	H
2.2.1	Educate residents, realtors and contractors about the dangers of floodplain	3	3	2	3	3	3	3	20	IC, PD, LF,	8	-1	7	27	H

	development and the benefits of the NFIP.									EMCC					
2.2.2	Encourage development of storm water management plans in those jurisdictions that do not currently have them and in all new residential and commercial development. *Combine with 5.1.3 and 5.1.5*	3	2	2	2	3	2	3	18	IC, PD, LF, EMCC	8	-3	5	23	H
Figure 4.4 Prioritization of Hazard Mitigation Actions		**3 = Def YES 1 = Prob NO 2 = Maybe YES 0 = Def NO**													
Action No.	**Mitigation Actions**	**S**	**T**	**A**	**P**	**L**	**E**	**E**	**STAPLEE Total**	**Losses Avoided (2 pts. Each)**	**Benefit**	**Cost**	**B/C Total**	**Total**	**Priority**
2.2.3	Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements in all existing and new development.	2	3	3	2	3	2	3	18	IC, PD, LF, EMCC	8	-3	5	23	H
2.3.1	Encourage local governments to develop and implement regulations for securing hazardous materials tanks and mobile homes to reduce hazards during storms and flooding.	2	2	2	2	3	3	3	17	IC, PD, LF, EMCC	8	-3	5	22	H
2.3.2	Monitor developments in data availability concerning the impact of dam failure, tornados, sinkholes, land subsidence and wildfire upon Washington County and all jurisdictions through local, state and federal agencies for use in hazard mitigation planning. *Duplicate - remove*	3	3	3	3	3	3	3	21	IC, PD, LF, EMCC	8	-1	7	28	H
2.3.3	Encourage the Mark Twain National Forest to levy stricter fines for persons causing fire hazards. *Remove?*	2	2	2	2	3	2	3	16	IC, PD, LF, EMCC	8	-1	7	23	H
3.1.1	Distribute SEMA brochures on natural disasters, preparedness and NFIP at public facilities and events. *Complete? If yes, remove*	3	3	2	3	3	3	3	20	IC, PD, LF, EMCC	8	-1	7	27	H
3.1.2	Distribute regular press releases from county and city EMD offices concerning hazards, where they strike, frequency, preparedness and how to mitigate. *If this is an established policy – then mark complete and remove.*	3	3	3	3	3	2	3	20	IC, PD, LF, EMCC	8	-1	7	27	H
3.2.1	Encourage local residents to purchase weather radios through press releases and brochures. *Combine with 1.2.2*	3	3	3	3	3	2	3	20	IC, EMCC	4	-1	3	23	H
3.2.2	Encourage meetings of EMD, city/county officials & SEMA to familiarize officials with mitigation planning, implementation & budgeting for mitigation projects. *Complete? If yes – remove*	3	3	3	2	3	2	3	19	IC, PD, LF, EMCC	8	-1	7	26	H
3.3.1	Re-evaluate the hazard mitigation plan, merge with other community planning and coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures.	3	2	2	2	3	1	3	16	IC, PD, LF, EMCC	8	-3	5	21	H
3.3.2	Distribute press releases by jurisdictions regarding adopted mitigation measures to keep public abreast of changes and/or new regulations. *Remove?*	3	3	2	3	3	2	3	19	IC, PD, LF, EMCC	8	-1	7	26	H

3.4.1	Encourage county health department and local Red Cross Chapter to use publicity campaigns that make residents aware of proper measures to take during times of threatening conditions (e.g. drought, heat wave) *Combine with 1.1.1*	3	3	2	3	3	2	3	19	IC, PD, LF, EMCC	8	-1	7	26	H
3.4.2	Publicize county or citywide drills. *Complete? If yes, remove.*	3	3	3	3	3	3	3	21	IC, PD, LF, EMCC	8	-1	7	28	H
Figure 4.4 Prioritization of Hazard Mitigation Actions		**3 = Def YES 1 = Prob NO 2 = Maybe YES 0 = Def NO**													
Action No.	**Mitigation Actions**	**S**	**T**	**A**	**P**	**L**	**E**	**E**	**STAPLEE Total**	**Losses Avoided (2 pts. Each)**	**Benefit**	**Cost**	**B/C Total**	**Total**	**Priority**
3.4.3	Encourage the development of a county-wide CERT, COAD, and/or VOAD program and educate the public on how they can benefit from these types of programs.	3	3	3	3	3	3	3	21	IC, PD, LF, EMCC	8	-1	7	28	H
4.1.1	Continue to encourage joint meetings of different organizations/agencies for mitigation related planning.	3	3	3	3	3	2	3	20	IC, PD, LF, EMCC	8	-1	7	27	H
4.1.2	Continue to encourage joint training (and drills) between agencies, public and private entities (including schools/businesses).	3	2	2	3	3	2	3	18	IC, PD, LF, EMCC	8	-1	7	25	H
4.1.3	Pool different agency resources to achieve widespread mitigation planning results.	3	2	2	2	3	2	3	17	IC, PD, LF, EMCC	8	-1	7	24	H
4.1.4	Maintain updated mutual aid agreements between emergency response agencies inside and outside the region.	3	3	2	3	3	3	3	20	IC, PD, LF, EMCC	8	-1	7	27	H
4.2.1	Re-evaluate the hazard mitigation plan, merge with other community planning and coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures.	3	2	2	2	3	1	3	16	IC, PD, LF, EMCC	8	-3	5	21	H
4.2.2	Encourage meetings between EMD, city/county and SEMA to familiarize officials with mitigation planning and implementation and budgeting for mitigation projects.	3	3	3	3	3	3	3	21	IC, PD, LF, EMCC	8	-1	7	26	H
5.1.1	Incorporate hazard mitigation into the long-range planning and development activities of the county and each jurisdiction.	3	3	3	3	3	3	3	21	IC, PD, LF, EMCC	8	-1	7	29	H
5.1.2	Encourage communities to budget for enhanced warning systems. *Combine with 1.2.1*	3	2	2	3	3	2	3	18	IC, LF EMCC	6	-3	3	21	H
5.1.4	Coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures. *Complete? If yes, remove.*	3	2	2	2	3	1	3	16	IC, PD, LF, EMCC	8	-3	5	21	H

5.1.5	Encourage cities to require contractor storm water management plans in all new development –both residential and commercial properties. *Combined with 2.2.2*	2	2	2	2	3	2	3	16	PD	2	-3	-1	15	M
5.2.1	Encourage the construction of storm shelters, especially tornado safe rooms near schools and large employment centers that currently do not have access to safe rooms. *Combine with 1.3.4*	3	3	3	3	3	1	2	18	IC, PD, EMCC	6	-5	1	19	M
Figure 4.4 Prioritization of Hazard Mitigation Actions		**3 = Def YES 1 = Prob NO 2 = Maybe YES 0 = Def NO**													
Action No.	**Mitigation Actions**	**S**	**T**	**A**	**P**	**L**	**E**	**E**	**STAPLEE Total**	**Losses Avoided (2 pts. Each)**	**Benefit**	**Cost**	**B/C Total**	**Total**	**Priority**
5.2.2	Encourage the designation of public buildings as safe shelters and develop accessibility plans for the public during times of need. *Complete? If yes, remove*	3	3	2	3	3	2	3	18	IC, EMCC	4	-1	3	21	H
5.3.1	Encourage local governments to purchase properties in the floodplain as funds become available and convert that land into public space/recreation area.	1	2	2	1	2	1	3	12	PD, EMCC	4	-5	-1	11	L
5.3.2	Encourage communities to discuss zoning repetitive loss properties in the floodplain as open space.	2	2	2	1	2	1	3	13	PD, EMCC	4	-1	3	16	M
6.1.1	Work with SEMA Region I coordinator to learn about new mitigation funding opportunities. *Complete? If yes, remove*	3	3	3	3	3	3	3	21	IC, PD, LF, EMCC	8	-1	7	28	H
6.1.2	Structure grant proposals for road/bridge upgrades so that hazard mitigation concerns are also met.	3	2	2	2	3	2	3	17	IC, PD, LF, EMCC	8	-1	7	24	H
6.1.3	Work with state/local/federal agencies to include mitigation in all economic and community development projects.	3	2	2	2	3	2	2	16	IC, PD, LF, EMCC	8	-1	7	23	H
6.1.4	Encourage local jurisdictions to budget for mitigation projects.	3	3	3	3	3	2	3	20	IC, PD, LF, EMCC	8	-5	3	23	H
6.2.1	Encourage cities and counties to implement cost-share programs with private property owners for hazard mitigation projects that benefit the community as a whole.	2	1	1	1	2	2	2	11	IC, PD, LF, EMCC	8	-5	3	14	M
6.2.2	Implement public awareness program about the benefits of hazard mitigation projects, both public and private through press releases and brochures.	3	3	2	3	3	2	3	19	IC, PD, LF, EMCC	8	-1	7	26	H
6.3.1	Prioritize mitigation projects, based on cost-effectiveness and starting with those sites facing the greatest threat to life, health and property. *Complete – in the hazmit plan*	3	3	2	2	3	2	3	18	IC, PD, LF, EMCC	8	-1	7	25	H

Dear Pulaski County Hazard Mitigation Planning Committee:

I would like to hold a planning meeting via Zoom and/or conference call on Tuesday, June 23rd at 10:00 a.m. An agenda is attached.

Here is the information on how to connect:

Join Zoom Meeting

https://us02web.zoom.us/j/89631652072?pwd=K1FSeDlzWmliRUZQUjlDb08xbVVyQT09

Meeting ID: 896 3165 2072

Password: 677900

Conference call: 1 (312) 626-6799

Meeting ID: 896 3165 2072

Password: 677900

If you have never participated in a Zoom call before, I recommend that you go to their website and make sure you have everything you need to participate loaded on your computer. I will email out handouts prior to the meeting and they will also be available through Zoom during the meeting.

Please let me know if you plan to participate.

Let me know if you have questions or need help getting set up with Zoom. I look forward to visiting with you all on the 23rd.

Best Regards,

Tamara F. Snodgrass
Assistant Director/Environmental Programs Manager
Meramec Regional Planning Commission
4 Industrial Drive
St. James, MO 65559
Phone: (573) 265-2993, extension 104
FAX: (573) 265-3550
tsnodgrass@meramecregion.org

Pulaski County
Multi-Jurisdictional Hazard Mitigation Plan Update
Planning Meeting

Tuesday, June 23, 2020 ~ 10:00 a.m.

Zoom Meeting: https://us02web.zoom.us/j/89631652072?pwd=K1FSeDlzWmliRUZQUjlDb08xbVVyQT09

Meeting ID: 896 3165 2072
Password: 677900
One tap mobile:
+1-929-205-6099,,89631652072#,,1#,677900# US (New York)
+1-301-715-8592,,89631652072#,,1#,677900# US (Germantown)

Conference Call: 1 (312) 626-6799
Meeting ID: 896 3165 2072
Password: 677900

AGENDA

I. Welcome/Introductions – Tammy Snodgrass, Assistant Director, Meramec Regional Planning Commission

II. Brief Review

III. Public Survey Update

IV. Participation Requirements/Status

V. Plan Update Format

VI. Sample Results of Countywide Risk Assessment Update

VII. Discuss Mitigation Action Updates – *(Which have been accomplished or had progress made; which are no longer high priority; which can be combined or eliminated)*

VIII. Next Steps

IX. Set Next Meeting Date(s)

NOTICE OF PUBLIC MEETING

Date and time of posting: **June 22, 2020 at 10:00 a.m.**
Notice is hereby given that the **Pulaski County Hazard Mitigation Planning Committee** will meet at 10:00 a.m. on **Tuesday, June 23, 2020** via Zoom and conference call. Instructions to join:

Zoom Meeting:
https://us02web.zoom.us/j/89631652072?pwd=K1FSeDlzWmliRUZQUjlDb08xbVVyQT09

Meeting ID: 896 3165 2072
Password: 677900
One tap mobile:
+1-929-205-6099,,89631652072#,,1#,677900# US (New York)
+1-301-715-8592,,89631652072#,,1#,677900# US (Germantown)

Conference Call: 1 (312) 626-6799
Meeting ID: 896 3165 2072
Password: 677900

The tentative agenda of this meeting includes:

- Welcome and Introductions
- Brief Review
- Public Survey Update
- Participation Requirements/Status
- Plan Update Format
- Sample Results of Countywide Risk Assessment Update
- Discuss Mitigation Action Updates
- Next Steps
- Setting of Date and Time for Next Meeting
- Adjourn

Representatives of the news media may obtain copies of this notice by contacting:

Tamara Snodgrass
#4 Industrial Drive
St. James, MO 65559

(573) 265-2993
tsnodgrass@meramecregion.org
If you require any accommodations (i.e. qualified interpreter, large print, hearing assistance) in order to attend this meeting, please notify this office at 573-265-2993 no later than 48 hours prior to the scheduled commencement of the meeting.

Pulaski County Hazard Mitigation Plan Review Meeting
June 23, 2020 ~ 10:00 a.m. Zoom

Name	Representing	Email Address	Phone #	Address
Gene Newkirk	Pulaski County			
Glenn Smith	Crocker			
Steve Lorio	St. Robert			
Brian Hicks	EMD			
Kathryn Hawes	MRPC			
Tammy Stephens	MRPC			
[illegible]	SEMA			
Doug Mueller	Waynesville Fire Dept			
Ed Fowler				

Name	Representing	Email Address	Phone #	Address
Kick Hobbs ?	EMS - Fire Richland			
Brian Lee	Richland R-W			
John Wright	Lifecare Hr Jonesville			
~~Steve~~	~~St. Rehab~~			
Dave Ernest	Pulaski			
Anita Ivey	St. Reh			

For immediate release
June 23, 2020

For more information, contact
Tammy Snodgrass at (573) 265-2993

Public input being accepted on Pulaski County Hazard Mitigation Plan until July 31

PULASKI COUNTY—Public input is being accepted until July 31, 2020, on the Pulaski County Hazard Mitigation Plan. The public survey is available on Meramec Regional Planning Commission's website at http://www.meramecregion.org/surveys/.

The federal government requires all states and local governments to have hazard mitigation plans approved by the Federal Emergency Management Administration (FEMA) that are consistent with the Disaster Mitigation Act of 2000. Approved mitigation plans are required to maintain eligibility for certain types of federal Hazard Mitigation Assistance Grants.

One of the key components of a hazard mitigation plan is public input during the planning process. The planning committee, comprised of representatives from the Pulaski County Commission, the incorporated cities, emergency response agencies, utility providers and public school districts, will be evaluating information on the hazards that impact each jurisdiction within Pulaski County.

Formed in 1969, MRPC is a voluntary council of governments serving Crawford, Dent, Gasconade, Maries, Osage, Phelps, Pulaski and Washington counties and their respective cities. Gasconade County Presiding Commissioner Larry Miskel serves as chairman of the board. A professional staff of 34 offers technical assistance and services, such as grant preparation and administration, housing assistance, transportation planning, environmental planning, ordinance codification, business loans and other services to member communities.

If you have questions, please contact Tammy Snodgrass at MRPC at 573-265-2993 or by email at tsnodgrass@meramecregion.org.

To keep up with the latest MRPC news and events, visit the MRPC website at www.meramecregion.org or on Facebook at www.facebook.com/meramecregion.

Dear Pulaski County Hazard Mitigation Planning Committee:

You should have received an Outlook invitation for the next planning meeting for the Pulaski County Hazard Mitigation Plan. This will be our final meeting as I plan to submit the first draft to SEMA next week. We will be going over the results of the public survey and discussing the draft of the plan. I will be sending out chapters for you to review this week. If you want to review the entire document – that is fine, but I really need you to review those pieces that apply to your jurisdiction to make sure that everything is correct.

I apologize for the late notice on the meeting, but we are getting close to deadline and I would like to touch base with everyone one more time. There will still be a comment period and an opportunity to make changes to the document in October, but I would like to get the draft as close to final as possible before submittal.

Thank you for your patience with me on having to twice postpone this meeting. I'm recovering from the medical issue I had last month and back to work full-time.

The information for joining the Zoom meeting is below. If you have any questions or concerns, please do not hesitate to contact me.

Join Zoom Meeting
https://us02web.zoom.us/j/82471996635?pwd=WC8vd2duZGhZOWlNMWpndkE0REtjdz09

Meeting ID: 824 7199 6635
Passcode: 849655
One tap mobile
+13017158592,,82471996635#,,,,,,0#,,849655# US (Germantown)
+13126266799,,82471996635#,,,,,,0#,,849655# US (Chicago)

Dial by your location
+1 312 626 6799 US (Chicago)
Meeting ID: 824 7199 6635
Passcode: 849655

Best Regards,

Tamara F. Snodgrass
Assistant Director/Environmental Programs Manager
Meramec Regional Planning Commission
4 Industrial Drive
St. James, MO 65559
Phone: (573) 265-2993, extension 104
FAX: (573) 265-3550
tsnodgrass@meramecregion.org

Pulaski County
Multi-Jurisdictional Hazard Mitigation Plan Update
Planning Meeting

Tuesday, September 29, 2020 ~ 10:30 a.m.

Join Zoom Meeting
https://us02web.zoom.us/j/85147064269?pwd=MjFSS0tDRHJEY0lZL29LTVRVK0h3dz09
Meeting ID: 851 4706 4269
Passcode: 340391
One tap mobile
+19292056099,,85147064269#,,,,,,0#,,340391# US (New York)
+13017158592,,85147064269#,,,,,,0#,,340391# US (Germantown)
Dial by your location
+1 312 626 6799 US (Chicago)
Meeting ID: 851 4706 4269
Passcode: 340391
Find your local number: https://us02web.zoom.us/u/keGdaKfO9s

AGENDA

I. Welcome/Introductions – Tammy Snodgrass, Assistant Director, Meramec Regional Planning Commission

II. Brief Review

III. Public Survey Update

IV. Participation Requirements/Status

V. Review and Discussion on Draft Chapters

VI. Plan Maintenance

VII. Adoption Process

VIII. Next Steps

IX. Adjourn

NOTICE OF PUBLIC MEETING

Date and time of posting: **September 23, 2020 at 2:30 p.m.**
Notice is hereby given that the **Pulaski County Hazard Mitigation Planning Committee** will meet at 1:30 p.m. on **Tuesday, September 29, 2020** via Zoom and conference call. Instructions to join:

Join Zoom Meeting
https://us02web.zoom.us/j/82471996635?pwd=WC8vd2duZGhZOWlNMWpndkE0REtjdz09

Meeting ID: 824 7199 6635
Passcode: 849655
One tap mobile
+13126266799,,82471996635#,,,,,,0#,,849655# US (Chicago)

Dial by your location
+1 312 626 6799 US (Chicago)
Meeting ID: 824 7199 6635
Passcode: 849655
Find your local number: https://us02web.zoom.us/u/kbitN7QYcJ

The tentative agenda of this meeting includes:

- Welcome and Introductions
- Brief Review
- Public Survey Update
- Participation Requirements/Status
- Review and discussion on draft chapters
- Plan Maintenance
- Adoption Process
- Next Steps
- Adjourn

Representatives of the news media may obtain copies of this notice by contacting:

Tamara Snodgrass
#4 Industrial Drive
St. James, MO 65559
(573) 265-2993
tsnodgrass@meramecregion.org

If you require any accommodations (i.e. qualified interpreter, large print, hearing assistance) in order to attend this meeting, please notify this office at 573-265-2993 no later than 48 hours prior to the scheduled commencement of the meeting.

Pulaski County Hazard Mitigation Plan Review Meeting
September 29, 2020 ~ 1:30 p.m. Zoom

Name	Representing	Email Address	Phone #	Address
David Ernest	Pulaski Co			
Ryan Hicks	" "			
Steve Long	St. Robert			
Brett Hendrix	SEMA			
Brian Lee	Richland School			
Billy Cobb	Waynesville R-VI			
Glenda Pennington	Dixon			
Tammy Snodgrass	MRPC			
Kathryn Howes	MRPC			

Name	Representing	Email Address	Phone #	Address
Mike Nuell	Mayor Dixon			

Postcard to Surrounding Jurisdictions

Meramec Regional Planning Commission
#4 Industrial Drive
St. James, MO 65559

Pulaski County
Hazard
Mitigation Plan is
Ready for Review!

9/30/20

Attention Members of the Pulaski County Hazard Mitigation Planning Committee and neighboring jurisdictions:

The first draft of the Pulaski County Hazard Mitigation Plan is now available for review on the MRPC website – http://www.meramecregion.org/publications/. A hard copy of the draft document is being mailed to the Pulaski County Courthouse for public viewing as well. Please take some time to review the planning document, especially sections that have specifics regarding your jurisdiction. We have submitted a draft to SEMA for review, but they are allowing us some time for public input. Please notify us no later than **October 23, 2020** with any recommended changes or corrections. Contact Tammy Snodgrass at (573) 265-2993 or via email at tsnodgrass@meramecregion.org.

Mailing list for surrounding jurisdictions:

Merlyn Johnson, Supt. St. james R-I 122 East Scioto Street St. James, MO 65559	Craig Hounsom, Supt. Rolla 31 500A Forum Dr. Rolla, MO 65401	John Fluhrer, Supt. Phelps County R-III 17790 State Route M Edgar Springs, MO 65462
Dr. Randy Caffey Newburg R-II P.O. Box C Newburg, MO 65550	Pres. Commissioner Randy Verkamp Phelps County Commission 200 N. Main St. Rolla, MO 65401	Mayor Billy Marton City of Doolittle 380 Eisenhower Doolittle, MO 65401
Mayor Terry Austin City of Edgar Springs P. O. Box 13 Edgar Springs, MO 65462	Mayor James Poucher City of Newburg P.O. Drawer K Newburg, MO 65550	Mayor Louis J. Magdits, IV City of Rolla P.O. Box 979 Rolla, MO 65402
Mayor Rick Krawiecki City of St. James 100 S. Jefferson St. St. James, MO 65559	Pres. Commissioner Tom Wright Miller County Commission P.O. Box 11 Tuscumbia, MO 65082	Eldon R-I School district Matt Davis, Supt. 112 South Pine Street Eldon, MO 65026
Lyndel Whittle, Supt. Iberia R-V School District 201 Pemberton Drive Iberia, MO 65486	Dr. Jason Price, Supt. Miller County R-III School District P.O. Box 1 Tuscumbia, MO 65082	Doug Kempker, Supt. St. Elizabeth R-IV School District 240 Church St. St. Elizabeth, MO 65075
Mayor Larry Henderson City of Eldon 101 S. Oak Eldon, MO 65026	Presiding Com. Ray Scwartze Maries County Courthouse P.O. Box 205 Vienna, MO 65582	Mayor Steve Vogt City of Belle P.O. Drawer 813 Belle, MO 65013
Mayor T.C. James City of Vienna P.O. Box 196 Vienna, MO 65582	Mark Parker, Supt. Maries County R-I P.O. Box 218 Vienna, MO 65582	Dr. Lenice Basham, Supt. Maries County R-II P.O. Box 819 Belle, MO 65013
Tim Hadfield, Supt. Camden R-III P.O. Box 1409 Camdenton, MO 65020	Caleb Petet, Supt. Climax Springs R-IV 571 Climax Ave Climax Springs, MO 65324	Dr. Joshua Phillips, Supt. Macks Creek R-V 245 State Road N Macks Creek, MO 65786
Presiding Com. Greg Hasty Camden County 1 Ct Cir NW Camdenton, MO 65020	Mayor John McNabb City of Camdenton 437 W US Highway 54 Camdenton, MO 65020	Mayor John Olivarri City of Osage Beach 1000 City Parkway Osage Beach, MO 65065
Dr. Jim Bogle, Supt. Gasconade C-4 32959 Highway 32 Falcon, MO 65470	Rachelle Jennings, Supt. Laclede County C-5 16050 Highway KK Lebanon, MO 65536	Mark Hedger, Supt. Laclede County R-1 726 Jefferson Conway, MO 65632

Dr. David Schmitz, Supt. Lebanon R-III 224 W Commercial St Lebanon, MO 65536	Presiding Com. Randy Angst Laclede County 200 North Adams Ave Lebanon, MO 65536	Mayor Jared Carr City of Lebanon 401 S Jefferson Ave Lebanon, MO 65536
Mayor Freddie Savage City of Conway P.O. Box 96 Conway, MO 65632	Dr. Laura Nelson, Supt. School of the Osage P.O. Box 1960 Lake Ozark, MO 65049	Dr. Karl Janson, Supt. Cabool R-IV 725 Main Street Cabool, MO 65689
Dr. Allen Moss, Supt. Houston R-I 423 W Pine Houston, MO 65483	Christina Wright, Supt. Licking R-VIII 125 College Ave Licking, MO 65542	Dr. Kimberly Hawk, Supt. Plato R-V P.O. Box A Plato, MO 65552
Dana Buschmann, Supt. Raymondville R-VIII P.O. Box 10 Raymondville, MO 65555	David Russell, Supt. Success R-VI 10341 Highway 17 Success, MO 65570	Dr. Rick Stark, Supt. Summersville R-II P.O. Box 198 Summersville, MO 65571
Mayor Donnie Wells City of Cabool 528 Spruce St Cabool, MO 65689	Presiding Com. Scott Long Texas County 210 North Grand Ave, Ste301 Houston, MO 65483	Mayor Willy Walker City of Houston 601 S Grand Ave Houston, MO 65483
Mayor Keith Cantrell City of Licking P.O. Box 89 Licking, MO 65542	Mayor Marilyn Howell City of Summersville 195 Rogers Ave Summersville, MO 65571	

For immediate release
October 5, 2020

For more information, contact
Tammy Snodgrass at (573) 265-2993

Public comment being accepted on Pulaski County Hazard Mitigation Plan until Oct. 23

PULASKI COUNTY—Public comment is being accepted until Oct. 23, 2020, on the Pulaski County Hazard Mitigation Plan. The plan update is available for review on Meramec Regional Planning Commission's website, http://www.meramecregion.org/publications/. The 2020 plan update is located under the Hazard Mitigation Plans by County along with the county's approved 2015 plan. A hard copy of the plan is also available at the Pulaski County Courthouse.

The purpose of the plan is to reduce or eliminate long-term risk to people and property from natural hazards. It is required that the county have this plan in place in order to be eligible for several Federal Emergency Management Agency grant programs.

Several entities participated in the planning process to update the plan, including the cities of Crocker, Dixon, Richland, St. Robert and Waynesville, as well as Dixon R-I, Crocker R-II, Swedeborg R-III, Richland R-IV, Laquey R-V, Waynesville R-VI, Waynesville Rural Fire Protection District, Tri-County Fire Protection District, Life Care of Waynesville and SEMA.

The Meramec Regional Planning Commission (MRPC) facilitated focus group meetings and assisted these entities in developing the plan. Following a public comment period, a final draft will be created and sent to FEMA and SEMA for review and approval.

Formed in 1969, MRPC is a voluntary council of governments serving Crawford, Dent, Gasconade, Maries, Osage, Phelps, Pulaski and Washington counties and their respective cities. Gasconade County Presiding Commissioner Larry Miskel serves as chairman of the board. A professional staff of 34 offers technical assistance and services, such as grant preparation and administration, housing assistance, transportation planning, environmental planning, ordinance codification, business loans and other services to member communities.

To keep up with the latest MRPC news and events, visit the MRPC website at *www.meramecregion.org* or on Facebook at *www.facebook.com/meramecregion/*.

If you need assistance locating the plan or have questions, please contact Tammy Snodgrass at MRPC at 573-265-2993 or by email at tsnodgrass@meramecregion.org.

To keep up with the latest MRPC news and events, visit the MRPC website at *www.meramecregion.org* or on Facebook at *www.facebook.com/meramecregion/*.

C: Public Survey

Public Survey: Pulaski County

Multi-jurisdictional Hazard Mitigation Plan

The federal government requires all states and local governments to have hazard mitigation plans approved by FEMA that are consistent with the Disaster Mitigation Act of 2000. Approved mitigation plans are required to maintain eligibility for certain types of federal Hazard Mitigation Assistance Grants.

A planning committee comprised of representatives from Pulaski County, the incorporated cities, and the public school districts is currently developing an update to the comprehensive Pulaski County Multi-jurisdictional Hazard Mitigation Plan with a strategy to reduce the vulnerability of people and property in the planning area to the impacts of hazards and to remain eligible for mitigation funding programs from FEMA.

One of the key components of a hazard mitigation plan is public input during the planning process. The planning committee will be evaluating information on the hazards that impact each jurisdiction within Pulaski County. The committee is seeking your input on the hazards that will be evaluated as well as your opinions on the types of activities that should be considered to reduce future impacts. Your comments will be considered by your community's representatives on the planning committee as the plan is developed. Please take a few moments to answer the following questions. Thank you for your participation.

1. Please select your jurisdiction from the list. You may only select one jurisdiction for each survey completed. If you belong to more than one jurisdiction in this list, please complete multiple surveys.

❑ Unincorporated Pulaski County	❑ City of Crocker	❑ City of Dixon
❑ City of Richland	❑ City of St. Robert	❑ City of Waynesville
❑ Dixon R-I School District	❑ Crocker R-II School District	❑ Swedeborg R-III School District
❑ Richland R-IV School District	❑ Laquey R-V School District	❑ Waynesville R-VI School District

2. The hazards addressed in the Multi-jurisdictional Hazard Mitigation Plan Update are listed below. Please indicate your opinion on the likelihood for each hazard to impact YOUR JURISDICTION (identified above). **Please rate <u>EACH</u> hazard 1 through 4 as follows:**

1=Unlikely, 2=Occasional, 3=Likely, 4=Highly Likely

- ❑ Flooding (Flash and River)
- ❑ Levee Failure
- ❑ Dam Failure
- ❑ Earthquake
- ❑ Land Subsidence / Sinkholes
- ❑ Drought
- ❑ Extreme Temperatures
- ❑ Severe Thunderstorms
- ❑ Severe Winter Weather
- ❑ Tornadoes
- ❑ Wildfire

3. Please indicate your opinion on the potential magnitude of each hazard's impact on YOUR JURISDICTION (identified above). **Please rate <u>EACH</u> hazard 1 through 4 as follows:**

1=Negligible, 2=Limited, 3=Critical, 4=Catastrophic

- ❑ Flooding (Flash and River)
- ❑ Levee Failure
- ❑ Dam Failure
- ❑ Earthquake
- ❑ Land Subsidence / Sinkholes
- ❑ Drought
- ❑ Extreme Temperatures
- ❑ Severe Thunderstorms
- ❑ Severe Winter Weather
- ❑ Tornadoes
- ❑ Wildfire

4. FEMA Hazard Mitigation Assistance Grants are administered by the State Emergency Management Agency. Listed below are some types of projects considered.

Please check all those that could benefit your jurisdiction, in your opinion:

- ❑ Flood-prone Property Acquisition & Structure Demolition /Relocation
- ❑ Flood-Prone Structure Elevation
- ❑ Dry Floodproofing of Historical Residential Structures and/or Non-residential Structures
- ❑ Minor Localized Flood Reduction Projects (storm water management or localized flood control projects)
- ❑ Structural Retrofitting of Existing Buildings to Add a Tornado Safe Room
- ❑ Storm Sirens
- ❑ Early warning systems such as phone/text/alerts
- ❑ Retrofitting of Existing Buildings, and Facilities from Wind Damage.
- ❑ New Tornado Safe Room Construction
- ❑ Electrical Utilities Infrastructure Retrofit
- ❑ Soil Erosion Stabilization
- ❑ Wildfire Mitigation
- ❑ Other (please specify)

_____

5. Please comment on any other issues that the Pulaski County Hazard Mitigation Planning Committee should consider in developing a strategy to reduce future losses caused by hazard events.

Return / Contact Information:

Tamara Snodgrass, Assistant Director
Meramec Regional Planning Commission
4 Industrial Drive
St. James, MO 65559
Phone: (573) 265-2993, Extension 104
FAX: (573) 265-3550
tsnodgrass@meramecregion.org

Pulaski County Public Survey Results

Number of responses: 4

Responses came from following jurisdictions:

- Waynesville - 1
- Crocker R-II School District -1
- Richland -1
- Unincorporated Pulaski County – 1

Hazards rated from Unlikely (1) to Highly Likely (4) to occur:

Flooding (flash and riverine) 4 2 3 4 average score: 3.25

Tornadoes 4 4 4 3 average score: 3.75

Dam Failure 1 1 1 1 average score: 1

Wildfire 3 4 3 1 average score: 2.75

Earthquake 1 4 3 3 average score: 2.75

Land Subsident/Sinkholes 1 4 4 2 average score: 2.75

Drought 2 4 4 3 average score: 3.25

Extreme Temperatures 3 4 4 4 average score: 3.75

Severe Thunderstorms 4 4 4 4 average score: 4

Severe Winter Weather 4 4 3 4 average score: 3.75

Hazard rated from Negligible (1) to Catastrophic (4):

Flooding (flash and riverine) 4 2 3 4 average score: 3.25

Tornadoes 3 4 4 4 average score: 3.75

Dam Failure 1 1 1 1 average score: 1

Wildfire 2 4 3 3 average score: 3

Earthquake 1 4 3 3 average score: 2.75

Land Subsident/Sinkholes 1 4 4 2 average score: 2.75

Drought 2 4 3 4 average score: 3.25

Extreme Temperatures 3 4 4 4 average score: 3.75

Severe Thunderstorms 3 4 4 4 average score: 3.75

Severe Winter Weather 3 4 3 4 average score: 3.5

Check all those types of projects that you believe could benefit your jurisdiction:

Flood-prone Property Acquisition & Structure Demolition /Relocation 1

Flood-Prone Structure Elevation 1

Dry Floodproofing of Historical Residential Structures and/or Non-residential Structures 0

Minor Localized Flood Reduction Projects (storm water management or localized flood control projects) 2

Structural Retrofitting of Existing Buildings to Add a Tornado Safe Room 3

Storm Sirens 2

Early Warning Systems such as phone/text alerts 4

Retrofitting of Existing Buildings, and Facilities from Wind Damage. 2

New Tornado Safe Room Construction 3

Electrical Utilities Infrastructure Retrofit 0

Soil Erosion Stabilization 0

Wildfire Mitigation 1

Other (please specify) 0

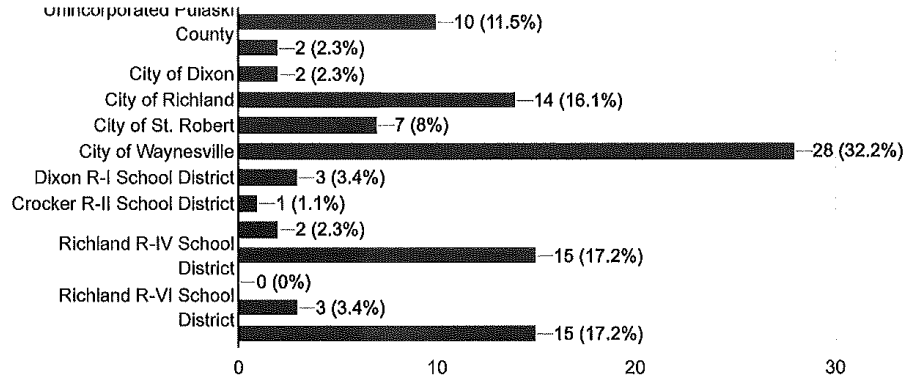
Public Survey: Pulaski County Multi-jurisdictional Hazard Mitigation Plan

87 responses

Publish analytics

Please select your jurisdiction from the list. You may only select one jurisdiction for each survey completed. If you belong to more than one jurisdiction in this list, please complete multiple surveys.

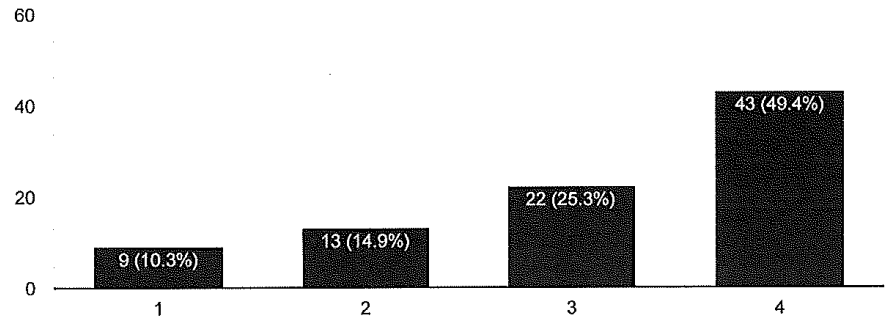
87 responses



The hazards addressed in the Multi-jurisdictional Hazard Mitigation Plan Update are listed below. Please indicate your opinion on the likelihood for each hazard to impact YOUR JURISDICTION (identified above). Please rate EACH hazard 1 through 4 as follows: 1 = Unlikely, 2 = Occasional, 3 = Likely, 4 = Highly Likely

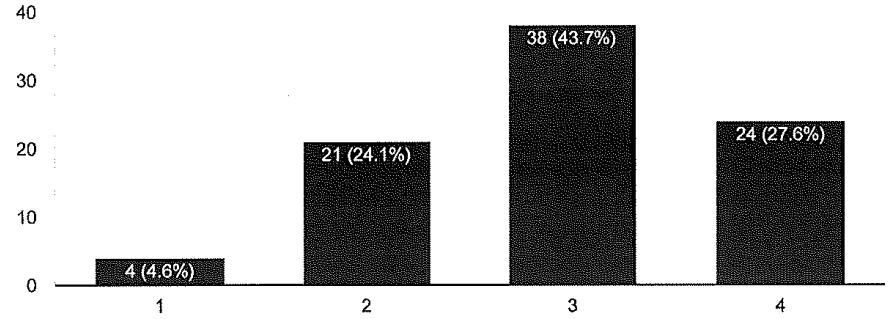
Flooding (Flash and River)

87 responses



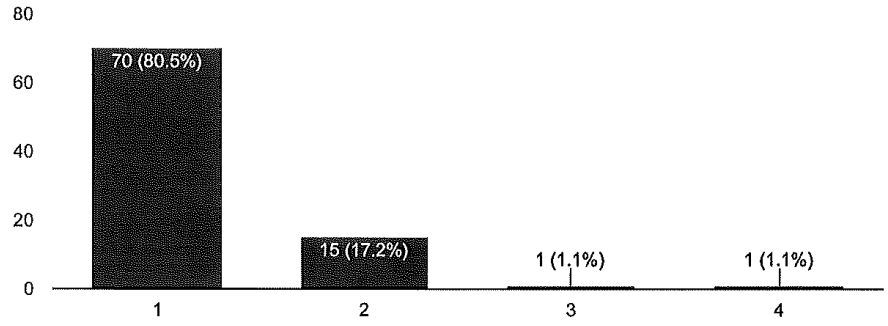
Tornadoes

87 responses



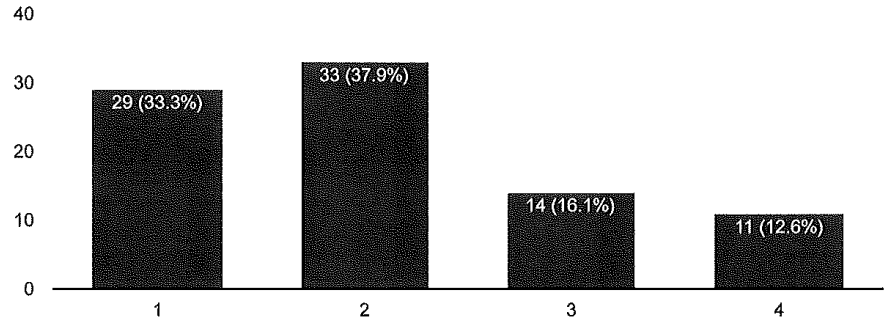
Dam Failure

87 responses



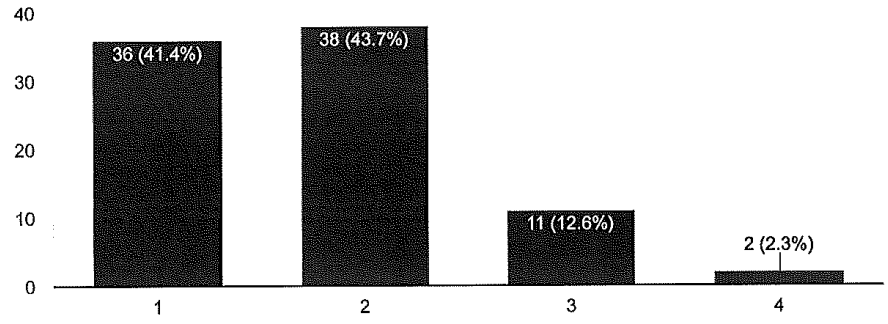
Wildfire

87 responses



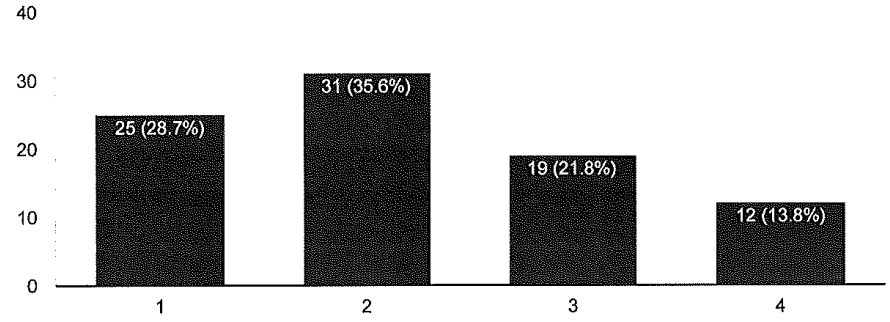
Earthquake

87 responses



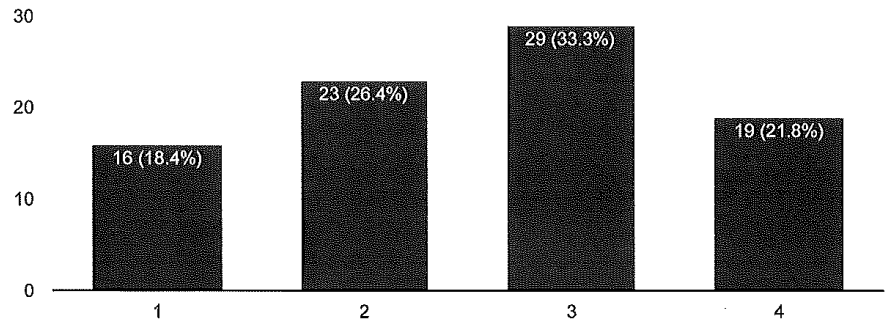
Land Subsidence/ Sinkholes

87 responses



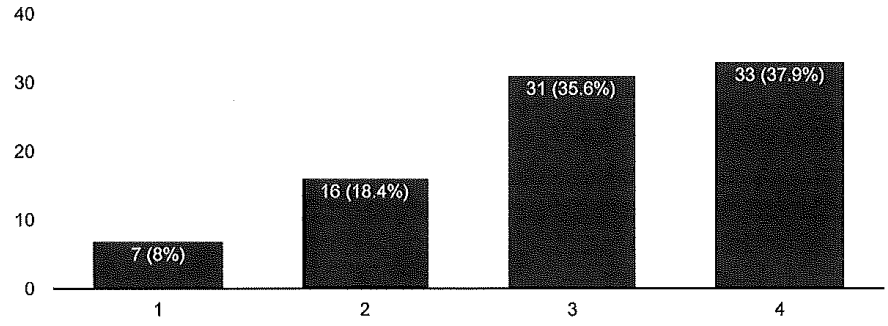
Drought

87 responses



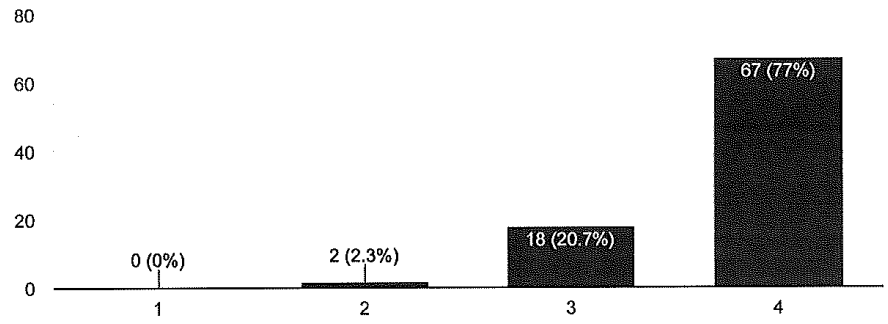
Extreme Temperatures

87 responses



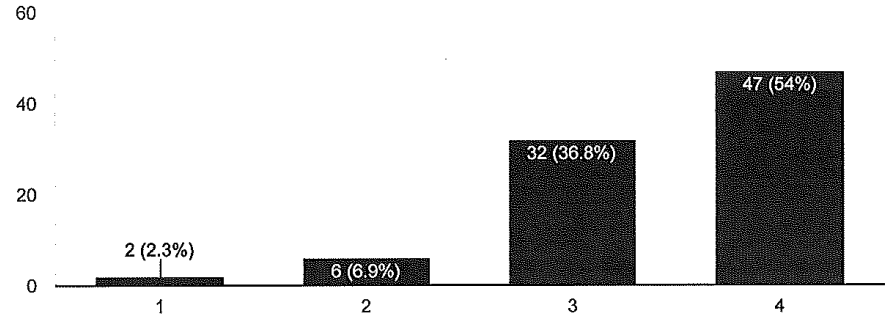
Severe Thunderstorms

87 responses



Severe Winter Weather

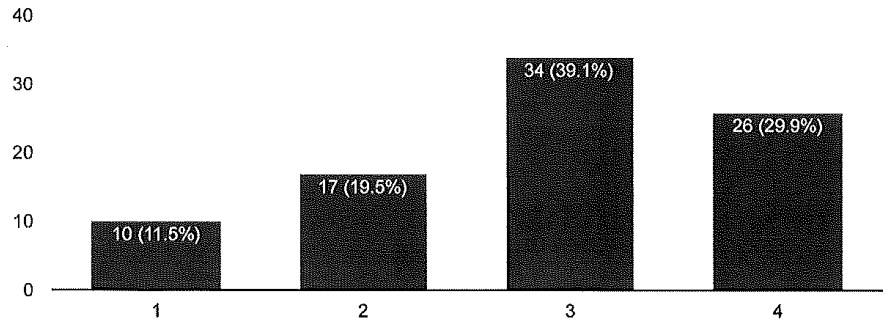
87 responses



Please indicate your opinion on the potential magnitude of each hazard's impact on YOUR JURISDICTION (identified above). Please rate EACH hazard 1 through 4 as follows: 1 = Negligible, 2 = Limited, 3 = Critical, 4 = Catastrophic

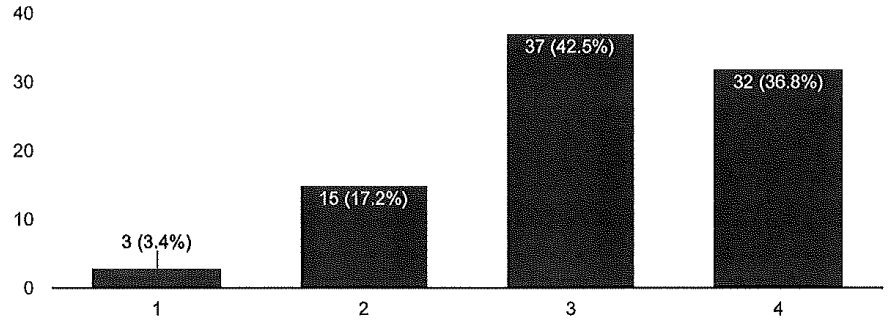
Flooding (Flash and River)

87 responses



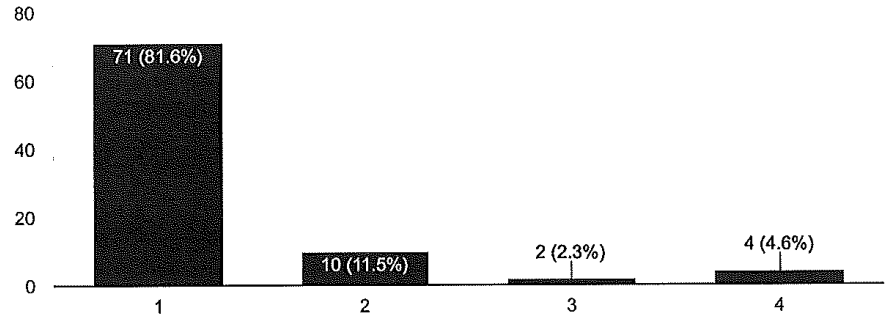
Tornadoes

87 responses



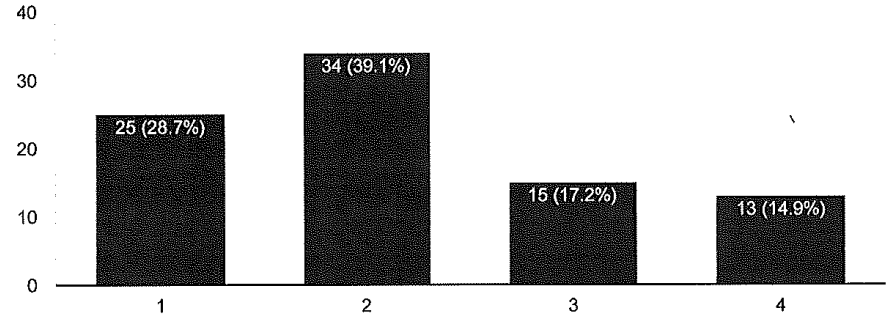
Dam Failure

87 responses



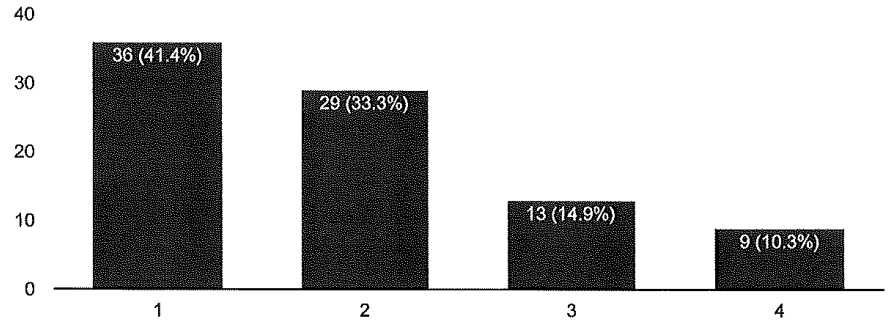
Wildfire

87 responses



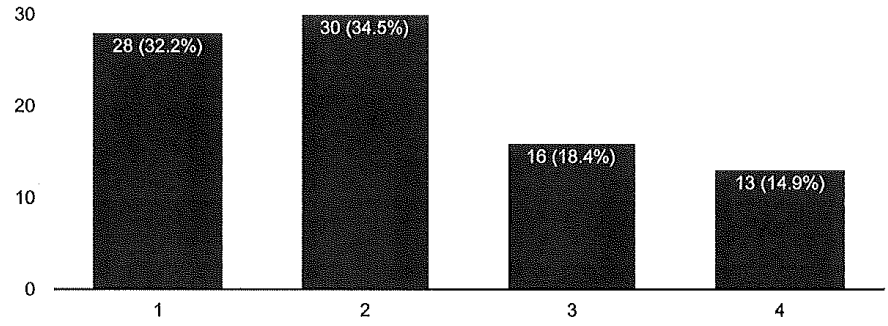
Earthquake

87 responses



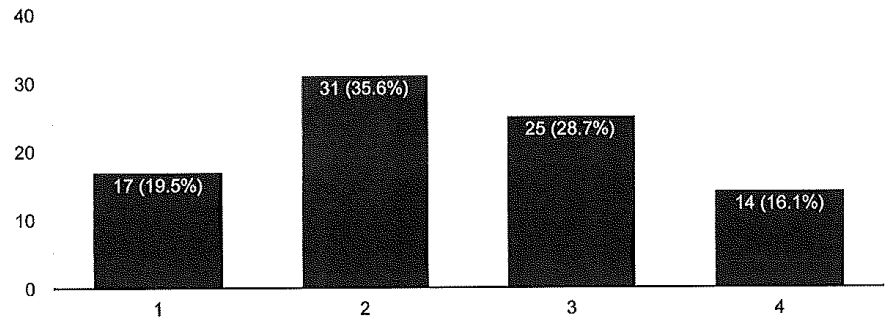
Land Subsidence/Sinkholes

87 responses



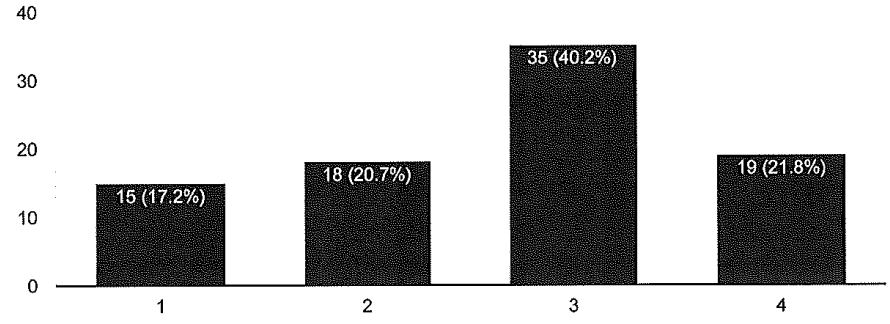
Drought

87 responses



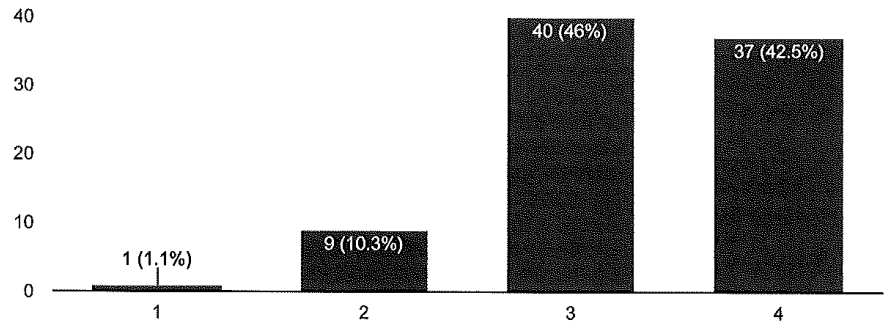
Extreme Temperatures

87 responses



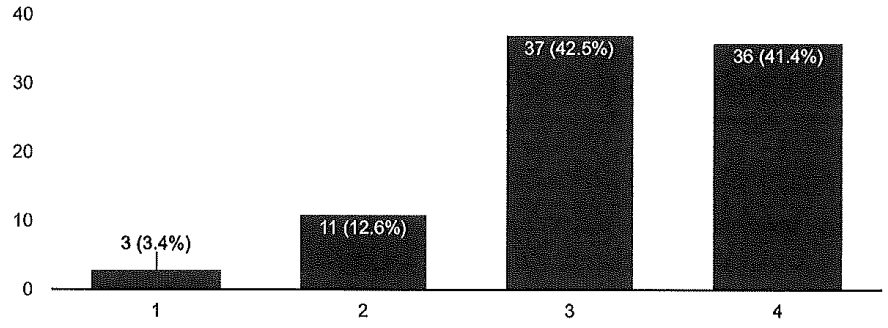
Severe Thunderstorms

87 responses



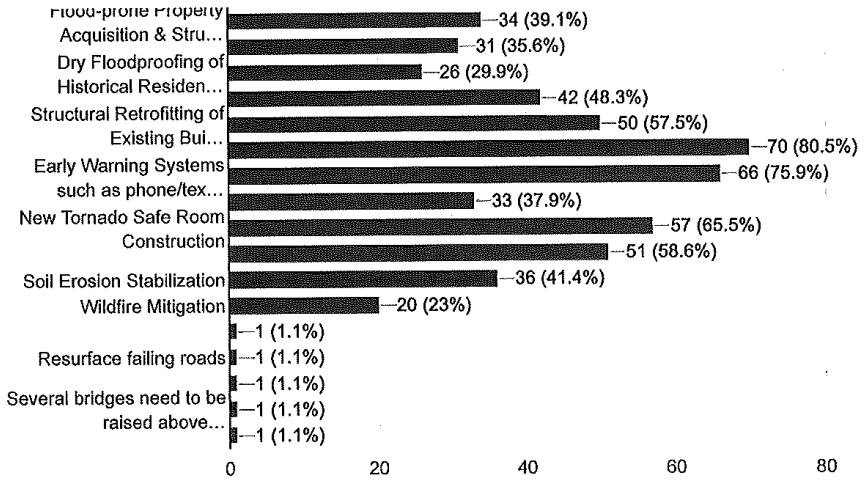
Severe Winter Weather

87 responses



FEMA Hazard Mitigation Assistance Grants are administered by the State Emergency Management Agency. Listed below are some types of projects considered. Please check all those that could benefit your jurisdiction, in your opinion:

87 responses



5. Please comment on any other issues that the Pulaski County Hazard Mitigation Planning Committee should consider in developing a strategy to reduce future losses caused by hazard events.

17 responses

Have every city have tornado sirens. Text/call isn't working right here in Waynesville.

The fragile infrastructure is the most significant thing that needs reinforcing in the unincorporated part of Pulaski County. The electrical grid and the communications grid is the most vulnerable to many of the emergency situations that may occur and it's the most needed during those emergency situations. There needs to be some reinforcement of that or some back up system put in place before it's needed. Perhaps a redundancy in the methods that are put in place to be planned.

Uniform siren system. Sometime they sound during thunderstorms,sometime at the end of tornado, there is a lot of confusion of when and why they are sounding

The city of Richland could use a community tornado shelter.

Resurface and fix Texas Road, True Drive, Twilight Drive —-inaccessible during flash floods, severe thunderstorms - no access for ambulance or helicopter - complete lack of maintenance

COMMENTS MADE ON THE PUBLIC SURVEY FOR PULASKI COUNTY HAZARD MITIGATION PLAN

- Have every city have tornado sirens. Text/call isn't working right here in Waynesville.
- The fragile infrastructure is the most significant thing that needs reinforcing in the unincorporated part of Pulaski County. The electrical grid and the communications grid is the most vulnerable to many of the emergency situations that may occur and it's the most needed during those emergency situations. There needs to be some reinforcement of that or some back up system put in place before it's needed. Perhaps a redundancy in the methods that are put in place to be planned.
- Uniform siren system. Sometime they sound during thunderstorms,sometime at the end of tornado, there is a lot of confusion of when and why they are sounding
- The city of Richland could use a community tornado shelter.
- Resurface and fix Texas Road, True Drive, Twilight Drive —inaccessible during flash floods, severe thunderstorms - no access for ambulance or helicopter - complete lack of maintenance
- Establish Early warning systems (phone/text messages) and tornado sirens for unincorporated Pulaski County residents.
- Fix the local warning sirens!
- Barry the power l ines
- Low water crossings need to be replaced by bridges that are above flood levels. Several bridges need to be raised above flood levels.
- Considering the many local and retirees that work on the military installation (who also happen to be essential personnel) it would be prudent to put in force no travel during hazardous conditions. We have a job to do, yes of course, but we have families and our safety that needs to be considered as well. It is important that we all realize how dangerous our roads can be in this area both in our monsoon season and our winter storms/ice storms.
- I would love for Mitchell Creek to be dug out more. My house isn't in the flood zone but my back yard is so I am required to pay 1500+ for insurance I will never use
- There is only one Richland School District (R-IV) = R-4
- There needs to be a plan to fix rural county roads affected by natural disasters. Pulaski County has a MAJOR problem just doing regular maintenance. All we hear is, It's FEMA's fault.
- Definitely need to fix and expand the tornado sirens. There are any outside of town but there are still neighborhoods that need that warning since the text alerts don't always come before the storms.
- Proactively address cleanout/cleanup of all streets, roadways, ditches, streams/creeks/waterways to ensure free flow of water to the Roubidoux and additional avenues of water flow/drainage to the Roubidoux to alleviate all of Waynesville storm water that floods through Mitchell Creek and Pearson Creek. It does not make sense to continue to build in Waynesville and have every bit of water drainage channeled through

these two creeks, especially with the City of Waynesville doing nothing to ensure that it is clean, until a life was lost in 2013 and then forgotten. They continue to allow building and land development without infrastructure considerations.

- Better plans on closing access to Fort Leonard Wood before employees and essential employees get stranded out there away from their children or worse their parents. (Parent of local child during Sept. 11. Praise the Good Lord there are no longer any local children bussed to attend school on the installation. Last I checked anyway.) But if the child is employed out on post there in lies a new situation with an inexperienced, anxiety fueled, and scared individual putting themselves and possibly others in danger.
- Repair county roads. Twilight Dr is getting very bad and multiple people are complaining to the county to come out and REPAVE the road. They just keep filling in the potholes but it isnt fixing the issue. My car has been getting tire damage due to the type of rock they are laying down to fill in the potholes. Please come fix the road.

D: Adoption Resolutions

Pulaski County Commission

Gene Newkirk, *Presiding Commissioner*
Lynn Sharp, *Eastern Commissioner*
Ricky Zweerink, *Western Commissioner*

Pulaski County Courthouse
301 Historic 66E, Ste. 101
Waynesville, MO 65583

Phone 573-774-4701
Fax 573-774-5601

RESOLUTION NO. 2020-03

A RESOLUTION TO ADOPT THE PULASKI COUNTY MULTI-JURISDICTION NATURAL HAZARDS MITIGATION PLAN

WHEREAS, Pulaski County recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 emphasizing the need for pre-disaster mitigation of potential hazards and made available hazard mitigation grants to state and local governments; and

WHEREAS, an adopted Multi-Jurisdiction Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

WHEREAS, Pulaski County Commission fully participated in the FEMA prescribed mitigation planning process to prepare this Mitigation Plan; and

WHEREAS, the Missouri State Emergency Management Agency and Federal Emergency Management Agency officials have reviewed the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and

WHEREAS, Pulaski County Commission desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Pulaski County Multi-Jurisdiction Natural Hazards Mitigation Plan; and

WHEREAS, adoption by the governing body of Pulaski County demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in this Mitigation Plan; and

WHEREAS, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

NOW, THEREFORE BE IT RESOLVED, that Pulaski County Commission adopts the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan as an official plan and will submit this Adoption Resolution to the Missouri Emergency Management Agency and the Federal Emergency Management Agency officials to enable the plan's final approval.

Certifying Official — Date: 10-1-20

Witness — Date: 10-1-2020

COUNTY COMMISSION SEAL PULASKI COUNTY, MISSOURI

RESOLUTION NO. 2020-003

A RESOLUTION TO ADOPT THE PULASKI COUNTY MULTI-JURISDICTION NATURAL HAZARDS MITIGATION PLAN

WHEREAS, the City of Crocker recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 emphasizing the need for pre-disaster mitigation of potential hazards and made available hazard mitigation grants to state and local governments; and

WHEREAS, an adopted Multi-Jurisdiction Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

WHEREAS, the City of Crocker fully participated in the FEMA prescribed mitigation planning process to prepare this Mitigation Plan; and

WHEREAS, the Missouri State Emergency Management Agency and Federal Emergency Management Agency officials have reviewed the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and

WHEREAS, the City of Crocker desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Pulaski County Multi-Jurisdiction Natural Hazards Mitigation Plan; and

WHEREAS, adoption by the governing body of the City of Crocker demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in this Mitigation Plan; and

WHEREAS, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

NOW, THEREFORE BE IT RESOLVED, that the City of Crocker adopts the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan as an official plan and will submit this Adoption Resolution to the Missouri Emergency Management Agency and the Federal Emergency Management Agency officials to enable the plan's final approval.

Certifying Official	15 Dec 2020 Date
Witness	Dec. 15, 2020 Date

RESOLUTION NO. 585

A RESOLUTION TO ADOPT THE PULASKI COUNTY MULTI-JURISDICTION NATURAL HAZARDS MITIGATION PLAN

WHEREAS, the City of Dixon recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 emphasizing the need for pre-disaster mitigation of potential hazards and made available hazard mitigation grants to state and local governments; and

WHEREAS, an adopted Multi-Jurisdiction Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

WHEREAS, the City of Dixon fully participated in the FEMA prescribed mitigation planning process to prepare this Mitigation Plan; and

WHEREAS, the Missouri State Emergency Management Agency and Federal Emergency Management Agency officials have reviewed the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and

WHEREAS, the City of Dixon desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Pulaski County Multi-Jurisdiction Natural Hazards Mitigation Plan; and

WHEREAS, adoption by the governing body of the City of Dixon demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in this Mitigation Plan; and

WHEREAS, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

NOW, THEREFORE BE IT RESOLVED, that the City of Dixon adopts the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan as an official plan and will submit this Adoption Resolution to the Missouri Emergency Management Agency and the Federal Emergency Management Agency officials to enable the plan's final approval.

Certifying Official — Date: 10/29/2020

Witness: Brenda Pennington — Date: 10/29/2020

EXHIBIT A

RESOLUTION NO. 963

A RESOLUTION TO ADOPT THE PULASKI COUNTY MULTI-JURISDICTION NATURAL HAZARDS MITIGATION PLAN

WHEREAS, the City of Richland recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 emphasizing the need for pre-disaster mitigation of potential hazards and made available hazard mitigation grants to state and local governments; and

WHEREAS, an adopted Multi-Jurisdiction Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

WHEREAS, the City of Richland fully participated in the FEMA prescribed mitigation planning process to prepare this Mitigation Plan; and

WHEREAS, the Missouri State Emergency Management Agency and Federal Emergency Management Agency officials have reviewed the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and

WHEREAS, the City of Richland desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Pulaski County Multi-Jurisdiction Natural Hazards Mitigation Plan; and

WHEREAS, adoption by the governing body of the City of Richland demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in this Mitigation Plan; and

WHEREAS, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

NOW, THEREFORE BE IT RESOLVED, that the City of Richland adopts the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan as an official plan and will submit this Adoption Resolution to the Missouri Emergency Management Agency and the Federal Emergency Management Agency officials to enable the plan's final approval.

Certifying Official — Date: 17 Dec 2020

Witness — Date: 12-17-2020

Bill Number 20-25 Ordinance Number 1337

AN ORDINANCE ADOPTING THE PULASKI COUNTY MULTI-JURISDICTION NATURAL HAZARDS MITIGATION PLAN

Be it ordained by the Board of Aldermen of the City of Richland as follows:

SECTION 1. The City has been presented with a Resolution adopting the Pulaski County Multi-Jurisdiction Natural Hazards Mitigation Plan.

SECTION 2. The Board of Aldermen finds that the interim City Counselor has informed them that an ordinance is necessary to legally effectuate the intended action.

SECTION 3. The Board of Aldermen has passed the Resolution, a copy of which is attached hereto as **Exhibit A** and which is incorporated herein by specific reference thereto.

SECTION 4. The provisions of the Resolution (**Exhibit A**) are agreed to and approved by the Richland Board of Aldermen.

SECTION 5. The Mayor is authorized to execute **Exhibit A** on behalf of the City and legally bind the City thereto.

SECTION 6. The Board of Aldermen is adopting the Resolution and adopting an empowering ordinance in an abundance of caution.

SECTION 7. This ordinance shall be in full force and effect from its date of passage and approval.

IT IS SO ORDAINED.

ROLL CALL VOTE (First Reading):

	AYE	NAY	ABSENT	ABSTAIN
Alderman CARMEN SUE DAUGHERTY	X			
Alderman MONA SHAW			X	
Alderman MARK HOWLETT	X			
Alderman NATASHA TANNER	X			
Alderman JOSHUA WONDER			X	
Alderman CARRIE TURNER	X			

ROLL CALL VOTE (Second Reading):

	AYE	NAY	ABSENT	ABSTAIN
Alderman CARMEN SUE DAUGHERTY	X			
Alderman MONA SHAW			X	
Alderman MARK HOWLETT	X			
Alderman NATASHA TANNER	X			
Alderman JOSHUA WONDER			X	
Alderman CARRIE TURNER	X			

READ TWO TIMES, PASSED AND APPROVED THIS 17th DAY OF DECEMBER ; 2020.

Dana Tanner, Mayor

ATTEST:

Susan Alexander, City Clerk

Bill Number: 20-131 Ordinance Number: 3592

AN ORDINANCE ADOPTING THE PULASKI COUNTY MULTI-JURISDICTION NATURAL HAZARDS MITIGATION PLAN

Be it ordained by the Board of Aldermen of the City of St. Robert as follows:

SECTION 1. The City has been presented with a Resolution adopting the Pulaski County Multi-Jurisdiction Natural Hazards Mitigation Plan.

SECTION 2. The Board of Aldermen finds that the interim City Counselor has informed them that an ordinance is necessary to legally effectuate the intended action.

SECTION 3. The Board of Aldermen has passed the Resolution, a copy of which is attached hereto as **Exhibit A** and which is incorporated herein by specific reference thereto.

SECTION 4. The provisions of the Resolution (**Exhibit A**) are agreed to and approved by the St. Robert Board of Aldermen.

SECTION 5. The Mayor is authorized to execute **Exhibit A** on behalf of the City and legally bind the City thereto.

SECTION 6. The Board of Aldermen is adopting the Resolution and adopting an empowering ordinance in an abundance of caution.

SECTION 7. This ordinance shall be in full force and effect from its date of passage and approval.

Mayor

Attest:

City Clerk

Read three times and approved by the Mayor on October 6, 2020.

Mayor

EXHIBIT A

RESOLUTION NO. 006-20

A RESOLUTION TO ADOPT THE PULASKI COUNTY MULTI-JURISDICTION NATURAL HAZARDS MITIGATION PLAN

WHEREAS, the City of St. Robert recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 emphasizing the need for pre-disaster mitigation of potential hazards and made available hazard mitigation grants to state and local governments; and

WHEREAS, an adopted Multi-Jurisdiction Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

WHEREAS, the City of St. Robert fully participated in the FEMA prescribed mitigation planning process to prepare this Mitigation Plan; and

WHEREAS, the Missouri State Emergency Management Agency and Federal Emergency Management Agency officials have reviewed the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and

WHEREAS, the City of St. Robert desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Pulaski County Multi-Jurisdiction Natural Hazards Mitigation Plan; and

WHEREAS, adoption by the governing body of the City of St. Robert demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in this Mitigation Plan; and

WHEREAS, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

NOW, THEREFORE BE IT RESOLVED, that the City of St. Robert adopts the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan as an official plan and will submit this Adoption Resolution to the Missouri Emergency Management Agency and the Federal Emergency Management Agency officials to enable the plan's final approval.

Certifying Official — Date: 10-7-20

Witness — Date: 10-7-20

Resolution #2020-08

A RESOLUTION TO ADOPT THE PULASKI COUNTY MULTI-JURISDICTION NATURAL HAZARDS MITIGATION PLAN

WHEREAS, the City of Waynesville recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 emphasizing the need for pre-disaster mitigation of potential hazards and made available hazard mitigation grants to state and local governments; and

WHEREAS, an adopted Multi-Jurisdiction Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

WHEREAS, the City of Waynesville fully participated in the FEMA prescribed mitigation planning process to prepare this Mitigation Plan; and

WHEREAS, the Missouri State Emergency Management Agency and Federal Emergency Management Agency officials have reviewed the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and

WHEREAS, the City of Waynesville desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Pulaski County Multi-Jurisdiction Natural Hazards Mitigation Plan; and

WHEREAS, adoption by the governing body of the City of Waynesville demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in this Mitigation Plan; and

WHEREAS, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF WAYNESVILLE, MISSOURI, AS FOLLOWS:

That the City of Waynesville adopts the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan as an official plan and will submit this Adoption Resolution to the Missouri Emergency Management Agency and the Federal Emergency Management Agency officials to enable the plan's final approval.

PASSED AND RESOLVED BY THE CITY COUNCIL OF THE CITY OF WAYNESVILLE THIS 20th DAY OF AUGUST, 2020.

By: Jerry W. Brown
Dr. Jerry Brown, Mayor

ATTEST:

Michele L. Brown
Michele Brown, City Clerk

RESOLUTION NO. _____

A RESOLUTION TO ADOPT THE PULASKI COUNTY MULTI-JURISDICTION NATURAL HAZARDS MITIGATION PLAN

WHEREAS, Dixon R-I School District recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 emphasizing the need for pre-disaster mitigation of potential hazards and made available hazard mitigation grants to state and local governments; and

WHEREAS, an adopted Multi-Jurisdiction Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

WHEREAS, Dixon R-I School District fully participated in the FEMA prescribed mitigation planning process to prepare this Mitigation Plan; and

WHEREAS, the Missouri State Emergency Management Agency and Federal Emergency Management Agency officials have reviewed the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and

WHEREAS, Dixon R-I School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Pulaski County Multi-Jurisdiction Natural Hazards Mitigation Plan; and

WHEREAS, adoption by the governing body of Dixon R-I School District demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in this Mitigation Plan; and

WHEREAS, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

NOW, THEREFORE BE IT RESOLVED, that Dixon R-I School District adopts the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan as an official plan and will submit this Adoption Resolution to the Missouri Emergency Management Agency and the Federal Emergency Management Agency officials to enable the plan's final approval.

Ivy R Porter — 12-17-2020

Certifying Official — Date

Witness MATTHEW S. MURRAY — 17 DEC 2020

Witness — Date

RESOLUTION NO. _____

A RESOLUTION TO ADOPT THE PULASKI COUNTY MULTI-JURISDICTION NATURAL HAZARDS MITIGATION PLAN

WHEREAS, Crocker R-II School District recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 emphasizing the need for pre-disaster mitigation of potential hazards and made available hazard mitigation grants to state and local governments; and

WHEREAS, an adopted Multi-Jurisdiction Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

WHEREAS, Crocker R-II School District fully participated in the FEMA prescribed mitigation planning process to prepare this Mitigation Plan; and

WHEREAS, the Missouri State Emergency Management Agency and Federal Emergency Management Agency officials have reviewed the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and

WHEREAS, Crocker R-II School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Pulaski County Multi-Jurisdiction Natural Hazards Mitigation Plan; and

WHEREAS, adoption by the governing body of Crocker R-II School District demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in this Mitigation Plan; and

WHEREAS, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

NOW, THEREFORE BE IT RESOLVED, that Crocker R-II School District adopts the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan as an official plan and will submit this Adoption Resolution to the Missouri Emergency Management Agency and the Federal Emergency Management Agency officials to enable the plan's final approval.

_____ 12/15/2020

Certifying Official — Date

_____ 12/15/2020

Witness — Date

RESOLUTION NO. _____

A RESOLUTION TO ADOPT THE PULASKI COUNTY MULTI-JURISDICTION NATURAL HAZARDS MITIGATION PLAN

WHEREAS, Swedeborg R-III School District recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 emphasizing the need for pre-disaster mitigation of potential hazards and made available hazard mitigation grants to state and local governments; and

WHEREAS, an adopted Multi-Jurisdiction Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

WHEREAS, Swedeborg R-III School District fully participated in the FEMA prescribed mitigation planning process to prepare this Mitigation Plan; and

WHEREAS, the Missouri State Emergency Management Agency and Federal Emergency Management Agency officials have reviewed the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and

WHEREAS, Swedeborg R-III School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Pulaski County Multi-Jurisdiction Natural Hazards Mitigation Plan; and

WHEREAS, adoption by the governing body of Swedeborg R-III School District demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in this Mitigation Plan; and

WHEREAS, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

NOW, THEREFORE BE IT RESOLVED, that Swedeborg R-III School District adopts the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan as an official plan and will submit this Adoption Resolution to the Missouri Emergency Management Agency and the Federal Emergency Management Agency officials to enable the plan's final approval.

Terry Jackson - Supt. 10/19/2020

Certifying Official Date

Jessica Rees - Board Secretary 10/19/2020

Witness Date

RESOLUTION NO. _____

A RESOLUTION TO ADOPT THE PULASKI COUNTY MULTI-JURISDICTION NATURAL HAZARDS MITIGATION PLAN

WHEREAS, Richland R-IV School District recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 emphasizing the need for pre-disaster mitigation of potential hazards and made available hazard mitigation grants to state and local governments; and

WHEREAS, an adopted Multi-Jurisdiction Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

WHEREAS, Richland R-IV School District fully participated in the FEMA prescribed mitigation planning process to prepare this Mitigation Plan; and

WHEREAS, the Missouri State Emergency Management Agency and Federal Emergency Management Agency officials have reviewed the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and

WHEREAS, Richland R-IV School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Pulaski County Multi-Jurisdiction Natural Hazards Mitigation Plan; and

WHEREAS, adoption by the governing body of Richland R-IV School District demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in this Mitigation Plan; and

WHEREAS, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

NOW, THEREFORE BE IT RESOLVED, that Richland R-IV School District adopts the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan as an official plan and will submit this Adoption Resolution to the Missouri Emergency Management Agency and the Federal Emergency Management Agency officials to enable the plan's final approval.

Jerry Pemberton — 10-19-20

Certifying Official — Date

Hal Walter — 10-19-2020

Witness — Date

RESOLUTION NO. _____

A RESOLUTION TO ADOPT THE PULASKI COUNTY MULTI-JURISDICTION NATURAL HAZARDS MITIGATION PLAN

WHEREAS, Laquey R-V School District recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 emphasizing the need for pre-disaster mitigation of potential hazards and made available hazard mitigation grants to state and local governments; and

WHEREAS, an adopted Multi-Jurisdiction Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

WHEREAS, Laquey R-V School District fully participated in the FEMA prescribed mitigation planning process to prepare this Mitigation Plan; and

WHEREAS, the Missouri State Emergency Management Agency and Federal Emergency Management Agency officials have reviewed the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and

WHEREAS, Laquey R-V School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Pulaski County Multi-Jurisdiction Natural Hazards Mitigation Plan; and

WHEREAS, adoption by the governing body of Laquey R-V School District demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in this Mitigation Plan; and

WHEREAS, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

NOW, THEREFORE BE IT RESOLVED, that Laquey R-V School District adopts the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan as an official plan and will submit this Adoption Resolution to the Missouri Emergency Management Agency and the Federal Emergency Management Agency officials to enable the plan's final approval.

_____ 19 OCT 2020
Certifying Official Date

_____ 19 Oct 2020
Witness Date

RESOLUTION NO. _____

A RESOLUTION TO ADOPT THE PULASKI COUNTY MULTI-JURISDICTION NATURAL HAZARDS MITIGATION PLAN

WHEREAS, Waynesville R-VI School District recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 emphasizing the need for pre-disaster mitigation of potential hazards and made available hazard mitigation grants to state and local governments; and

WHEREAS, an adopted Multi-Jurisdiction Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

WHEREAS, Waynesville R-VI School District fully participated in the FEMA prescribed mitigation planning process to prepare this Mitigation Plan; and

WHEREAS, the Missouri State Emergency Management Agency and Federal Emergency Management Agency officials have reviewed the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and

WHEREAS, Waynesville R-VI School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Pulaski County Multi-Jurisdiction Natural Hazards Mitigation Plan; and

WHEREAS, adoption by the governing body of Waynesville R-VI School District demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in this Mitigation Plan; and

WHEREAS, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

NOW, THEREFORE BE IT RESOLVED, that Waynesville R-VI School District adopts the Pulaski County Multi-Jurisdictional Natural Hazards Mitigation Plan as an official plan and will submit this Adoption Resolution to the Missouri Emergency Management Agency and the Federal Emergency Management Agency officials to enable the plan's final approval.

_____ 12/10/20
Certifying Official Date

_____ 12/10/20
Witness Date

E: Critical/Essential Facilities

The table below (**Table 6.1**) provides information for critical facilities in the planning area. Specific information includes a Hazus ID if applicable, jurisdiction, building name/owner, and address.

Table 6.1 Pulaski County Critical Facilities by Type and Jurisdiction

HazusID	Jurisdiction	Building Name	Address	City	State	Zip
Fire Department Facilities						
MO000551	Crocker	Crocker Fire Protection Dist. Bldg. 1	201 Keeth Rd	Crocker	MO	65452
	Crocker	Crocker Fire Protection Dist. Bldg. 2	111 10th St	Crocker	MO	65452
	Crocker	Crocker Fire Protection Dist. Bldg. 3	17180 Hwy T	Swedeborg	MO	65572
	Crocker	Crocker Fire Protection Dist. Bldg. 4	13572 Hwy BB	Crocker	MO	65452
MO000552	Dixon	Dixon Rural Fire Protection Dist.	203 S Walnut St	Dixon	MO	65459
	Richland	Hazelgreen Fire Protection District (Station #2)	33991 U.S. Route 66	Richland	MO	65556
MO000557	Richland	Tri-County Fire & Rescue Association	111 W Washington Ave	Richland	MO	65556
MO000553	St. Robert	Waynesville Rural Fire Prot. Dist. #3	20965 Hwy 28	St. Robert	MO	65584
MO000554	St. Robert	St. Robert City Fire & Rescue Bldg. 1	117 Plattner Ave	St. Robert	MO	65584
	St. Robert	St. Robert City Fire & Rescue Bldg. 2	116 Foxworth St	St. Robert	MO	65584
MO000556	Waynesville	Waynesville Rural Fire Prot. Dist. #1	1501 Ousley Rd	Waynesville	MO	65583
MO000558	Waynesville	Waynesville Rural Fire Prot. Dist. #2	25730 Red Oak Rd	Waynesville	MO	65583

HazusID	Jurisdiction	Building Name	Address	City	State	Zip
	Waynesville	Waynesville Rural Fire Prot. Bldg. 4	20854 Hwy T	Waynesville	MO	65583
Law Enforcement Facilities						
MO000088	Crocker	Crocker Police Dept.	108 S Commercial St	Crocker	MO	65452
MO000385	Dixon	Dixon Police Dept.	303 S Elm St.	Dixon	MO	65459
MO000254	Richland	Richland Police Dept.	201 S Chestnut	Richland	MO	65556
MO000140	St. Robert	St. Robert Police Dept.	194 Eastlawn Ave	St. Robert	MO	65584
MO000225	Waynesville	Waynesville Police Dept.	201 North St	Waynesville	MO	65583
MO000368	Pulaski County	Pulaski County Sheriff	301 Historic 66 E	Waynesville	MO	65583
School Facilities						
MO002225	Crocker	Crocker Elem	601 N Commercial	Crocker	MO	65452
MO002226	Crocker	Crocker High	601 N Commercial	Crocker	MO	65452
MO002227	Dixon	Dixon Elem	N Pine & W Sixth	Dixon	MO	65459
MO002228	Dixon	Dixon Middle	Hwy 28 East	Dixon	MO	65459
MO002229	Dixon	Dixon High	High School Dr	Dixon	MO	65459
MO002230	Laquey	Laquey R-V Elem.	27600 Hwy AA	Laquey	MO	65534
MO002231	Laquey	Laquey R-V High	27601 Hwy AA	Laquey	MO	65534
MO002232	Laquey	Laquey R-V Middle	27602 Hwy AA	Laquey	MO	65534
MO000913	Richland	Richland Elem.	714 E Jefferson	Richland	MO	65556

HazusID	Jurisdiction	Building Name	Address	City	State	Zip
MO000914	Richland	Richland High/Jr. High	715 E Jefferson	Richland	MO	65556
MO000916	Richland	Swedeborg Elem.	17507 Hwy T	Richland	MO	65556
	St. Robert	Freedom Elem.	286 Eastlawn Ave.	St. Robert	MO	65584
	Fort Leonard Wood	Partridge Elementary	2225 Young Street	FLW	MO	65473
	Fort Leonard Wood	Thayer Elementary	15392 Thayer Road	FLW	MO	65473
MO001142	Waynesville	Waynesville East Elem.	1501 State Rd F	Waynesville	MO	65583
MO001143	Waynesville	Waynesville Sr. High	200 GW Lane	Waynesville	MO	65583
MO001144	Waynesville	Waynesville Sixth Grade Center	810 Roosevelt St	Waynesville	MO	65583
MO001145	Waynesville	Waynesville Middle	1001 Historic 66 W	Waynesville	MO	65583
	Waynesville	Waynesville Career Center	400 GW Lane	Waynesville	MO	65583
Medical Facilities						
	Crocker	Pulaski County Health Dept.	101 12th St	Crocker	MO	65452
	Dixon	Rural Health Clinic	206 West Second	Dixon	MO	65459
	Richland	Central Ozarks Medical Center	304 W Washington St	Richland	MO	65556
	Richland	St. John's Clinic Richland	904 S Pine St	Richland	MO	65556
	St. Robert	St. John's Clinic St. Robert	608 City Route 66	St. Robert	MO	65584

HazusID	Jurisdiction	Building Name	Address	City	State	Zip
	Waynesville	Pulaski Medical Clinic	107 Ichord Ave	Waynesville	MO	65583
	Waynesville	Phelps Health Waynesville Medical Plaza	1000 GW Lane Street	Waynesville	MO	65583
Childcare Facilities						
	Crocker	Crocker Academy Inc.	324 S Commercial St.	Crocker	MO	65452
	Crocker	Gina's Daycare Learning Academy LLC	91B Ichord Ave	Crocker	MO	65452
	Dixon	Dixon Head Start Center	306 N Lang	Dixon	MO	65459
	Richland	Richland Head Start Center	306 S Pine	Richland	MO	65556
	St. Robert	Candyland	106 Bosa	St. Robert	MO	65584
	St. Robert	STM Christian Daycare/Preschool Academy	577 Old Route 66	St. Robert	MO	65584
	St. Robert	Young Minds Learning Academy LLC	121 Superior Road	St. Robert	MO	65584
	Waynesville	Gina's Daycare Learning Academy LLC	91B Ichord Ave	Waynesville	MO	65583
	Waynesville	New Beginnings Childcare Center	24665 Rocklin Dr	Waynesville	MO	65583
	Waynesville	Precious Jewels Christian Childcare LLC	704 W Historic Rte. 66	Waynesville	MO	65583
	Waynesville	Stonebrooke Kidz Academy	500 GW Lane Street	Waynesville	MO	65583
	Waynesville	Westside Christian Academy	801 Historic Rte. 66 W	Waynesville	MO	65583
	Waynesville	Wee Wonders Child Devel. Center of Waynesville	1702 Long Dr	Waynesville	MO	65583

HazusID	Jurisdiction	Building Name	Address	City	State	Zip
	Waynesville	Munchkinland	1809-A Historic Rte. 66 W	Waynesville	MO	65583
	Waynesville	Waynesville Head Start – MO Ozarks Community Action, Inc.	19778 Sackett Ln	Waynesville	MO	65583
	Waynesville	Waynesville United Methodist Parents Day Out	301 Highway T	Waynesville	MO	65583
Nursing Homes						
	Dixon	Dixon Nursing & Rehab	403 E 10th St	Dixon	MO	65459
	Richland	Richland Care Center, Inc.	400 Tri-County Lane	Richland	MO	65556
	Richland	Rosewood Manor	101 East Pulaski Street	Richland	MO	65556
	Waynesville	Pulaski County Adult Daycare	704 Historic Route 66, Suite 102	Waynesville	MO	65583
	Waynesville	Life Care Center of Waynesville	700 Birch Lane	Waynesville	MO	65583

Source: Meramec Region Community Data Mining for Hazard Mitigation Planning (2014)

F: MDC Wildfire Data Search

View	Discovered Date	County	Station	Cause	Acres Burned
2002-08519-000684	08/28/2002	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	1
2002-08519-000685	09/02/2002	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	5
2002-08519-000686	09/11/2002	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2002-08519-000687	09/14/2002	Pulaski	Crocker Rural Fire Protection District	Debris	1
2002-08519-000688	09/26/2002	Pulaski	Crocker Rural Fire Protection District	Debris	1
2002-08519-000689	10/05/2002	Pulaski	Crocker Rural Fire Protection District	Equipment	2
2002-08519-000690	11/28/2002	Pulaski	Crocker Rural Fire Protection District	Debris	3
2002-08519-000691	11/29/2002	Pulaski	Crocker Rural Fire Protection District	Debris	1
2002-08519-000692	11/29/2002	Pulaski	Crocker Rural Fire Protection District	Debris	1
2002-08519-000693	12/02/2002	Pulaski	Crocker Rural Fire Protection District	Debris	5
2002-08519-000694	12/03/2002	Pulaski	Crocker Rural Fire Protection District	Debris	2
2003-00005-001516	04/01/2003	Pulaski	MDC REPORTING REGION - OZARK	Arson	26
2003-00005-003067	04/14/2003	Pulaski	MDC REPORTING REGION - OZARK	Arson	48
2003-05324-001527	03/08/2003	Pulaski	Nebo Falcon Fire Protection District	Debris	15
2003-08518-001259	02/02/2003	Pulaski	Dixon Rural Fire Protection District	Debris	2
2003-08518-001263	02/02/2003	Pulaski	Dixon Rural Fire Protection District	Equipment	
2003-08518-001266	02/11/2003	Pulaski	Dixon Rural Fire Protection District	Debris	
2003-08518-001269	02/11/2003	Pulaski	Dixon Rural Fire Protection District	Debris	
2003-08518-001275	03/15/2003	Pulaski	Dixon Rural Fire Protection District	Debris	5
2003-08518-001276	05/24/2003	Pulaski	Dixon Rural Fire Protection District	Debris	.5
2003-08518-001279	03/26/2003	Pulaski	Dixon Rural Fire Protection District	Arson	2
2003-08518-001283	03/27/2003	Pulaski	Dixon Rural Fire Protection District	Debris	4.3
2003-08518-001285	04/11/2003	Pulaski	Dixon Rural Fire Protection District	Debris	1

2003-08518-001288	04/11/2003	Pulaski	Dixon Rural Fire Protection District	Debris	3
2003-08518-001291	04/12/2003	Pulaski	Dixon Rural Fire Protection District	Debris	3
2003-08518-001293	04/14/2003	Pulaski	Dixon Rural Fire Protection District	Debris	15
2003-08519-000695	01/16/2003	Pulaski	Crocker Rural Fire Protection District	Debris	20
2003-08519-000696	01/20/2003	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2004-08100-005710	06/29/2004	Pulaski	ROLLA FORESTRY	Miscellaneous	80
2004-08104-005906	02/26/2004	Pulaski	Duke Rural Fire Department	Debris	.25
2004-08512-004618	04/16/2004	Pulaski	St. Robert City Fire & Rescue	Unknown	2
2004-08512-004739	05/06/2004	Pulaski	St. Robert City Fire & Rescue	Unknown	.8
2004-08512-005944	10/02/2004	Pulaski	St. Robert City Fire & Rescue	Unknown	1
2004-08518-004479	04/06/2004	Pulaski	Dixon Rural Fire Protection District	Debris	
2004-08518-004480	03/12/2004	Pulaski	Dixon Rural Fire Protection District	Smoking	7.25
2004-08518-004481	04/03/2004	Pulaski	Dixon Rural Fire Protection District	Debris	
2004-08518-004483	04/02/2004	Pulaski	Dixon Rural Fire Protection District	Arson	3.1
2004-08518-004484	03/22/2004	Pulaski	Dixon Rural Fire Protection District	Arson	1
2004-08518-004492	03/20/2004	Pulaski	Dixon Rural Fire Protection District	Arson	
2004-08518-004493	03/20/2004	Pulaski	Dixon Rural Fire Protection District	Arson	
2004-08518-004494	03/12/2004	Pulaski	Dixon Rural Fire Protection District	Arson	.25
2004-08518-004495	03/08/2004	Pulaski	Dixon Rural Fire Protection District	Debris	.5
2004-08518-004496	02/07/2004	Pulaski	Dixon Rural Fire Protection District	Debris	1.5
2004-08518-004497	02/26/2004	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2004-08518-004499	02/26/2004	Pulaski	Dixon Rural Fire Protection District	Debris	1
2004-08518-004500	02/25/2004	Pulaski	Dixon Rural Fire Protection District	Debris	2
2004-08518-004537	02/19/2004	Pulaski	Dixon Rural Fire Protection District	Arson	2
2004-08518-004540	02/16/2004	Pulaski	Dixon Rural Fire Protection District	Equipment	50
2004-08518-004541	04/21/2004	Pulaski	Dixon Rural Fire Protection District	Debris	7.2
2004-08518-004542	02/27/2004	Pulaski	Dixon Rural Fire Protection District	Arson	1
2004-08518-004543	02/28/2004	Pulaski	Dixon Rural Fire Protection District	Debris	5
2004-08518-004544	02/29/2004	Pulaski	Dixon Rural Fire Protection District	Arson	2

2004-08518-008133	11/09/2004	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2004-08518-008135	11/09/2004	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2004-08518-008137	11/17/2004	Pulaski	Dixon Rural Fire Protection District	Unknown	.1
2005-08100-008106	03/30/2005	Pulaski	ROLLA FORESTRY	Unknown	47
2005-08100-008107	04/04/2005	Pulaski	ROLLA FORESTRY	Unknown	1
2005-08512-009875	07/02/2005	Pulaski	St. Robert City Fire & Rescue	Miscellaneous	.1
2005-08512-009876	07/04/2005	Pulaski	St. Robert City Fire & Rescue	Miscellaneous	.1
2005-08512-009976	11/22/2005	Pulaski	St. Robert City Fire & Rescue	Unknown	.1
2005-08518-008141	02/05/2005	Pulaski	Dixon Rural Fire Protection District	Not Reported	2
2005-08518-008153	03/12/2005	Pulaski	Dixon Rural Fire Protection District	Debris	9
2005-08518-008155	03/14/2005	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2005-08518-008157	03/16/2005	Pulaski	Dixon Rural Fire Protection District	Equipment	2.5
2005-08518-008159	03/16/2005	Pulaski	Dixon Rural Fire Protection District	Debris	.5
2005-08518-008161	03/17/2005	Pulaski	Dixon Rural Fire Protection District	Debris	1
2005-08518-008163	03/17/2005	Pulaski	Dixon Rural Fire Protection District	Debris	2
2005-08518-008167	04/02/2005	Pulaski	Dixon Rural Fire Protection District	Debris	1
2005-08518-008172	04/01/2005	Pulaski	Dixon Rural Fire Protection District	Debris	40
2005-08518-008173	04/02/2005	Pulaski	Dixon Rural Fire Protection District	Not Reported	1.5
2005-08518-008175	04/03/2005	Pulaski	Dixon Rural Fire Protection District	Not Reported	3
2005-08518-008176	04/10/2005	Pulaski	Dixon Rural Fire Protection District	Debris	250
2005-08518-008178	04/18/2005	Pulaski	Dixon Rural Fire Protection District	Debris	.5
2006-05300-025366	08/23/2006	Pulaski	LEBANON FORESTRY	Equipment	4
2006-08100-010013	01/07/2006	Pulaski	ROLLA FORESTRY	Unknown	50
2007-08100-030306	04/21/2007	Pulaski	ROLLA FORESTRY	Debris	40
2007-08518-034075	08/29/2007	Pulaski	Dixon Rural Fire Protection District	Unknown	5
2007-08518-034110	10/10/2007	Pulaski	Dixon Rural Fire Protection District	Debris	1
2007-08518-034111	10/30/2007	Pulaski	Dixon Rural Fire Protection District	Debris	1
2007-08518-034121	11/04/2007	Pulaski	Dixon Rural Fire Protection District	Unknown	.5
2007-08518-034149	11/11/2007	Pulaski	Dixon Rural Fire Protection District	Unknown	.5

2007-08518-034150	11/11/2007	Pulaski	Dixon Rural Fire Protection District	Unknown	.5
2007-08518-034151	11/16/2007	Pulaski	Dixon Rural Fire Protection District	Debris	.5
2007-08518-034210	04/12/2007	Pulaski	Dixon Rural Fire Protection District	Debris	200
2007-08518-034213	04/21/2007	Pulaski	Dixon Rural Fire Protection District	Unknown	60
2007-08518-034217	04/17/2007	Pulaski	Dixon Rural Fire Protection District	Debris	.5
2007-08518-034218	04/08/2007	Pulaski	Dixon Rural Fire Protection District	Debris	6
2007-08518-034219	03/31/2007	Pulaski	Dixon Rural Fire Protection District	Lightning	.5
2007-08518-034220	04/02/2007	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	4
2007-08518-034221	03/24/2007	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	20
2007-08518-034222	03/05/2007	Pulaski	Dixon Rural Fire Protection District	Debris	.5
2007-08518-034223	03/06/2007	Pulaski	Dixon Rural Fire Protection District	Unknown	.5
2007-08518-034224	03/05/2007	Pulaski	Dixon Rural Fire Protection District	Equipment	.5
2007-08518-034225	03/01/2007	Pulaski	Dixon Rural Fire Protection District	Unknown	1
2007-08518-034226	02/19/2007	Pulaski	Dixon Rural Fire Protection District	Unknown	8
2007-08518-034227	02/20/2007	Pulaski	Dixon Rural Fire Protection District	Arson	1
2007-08518-034228	02/22/2007	Pulaski	Dixon Rural Fire Protection District	Debris	10
2007-08518-034229	02/09/2007	Pulaski	Dixon Rural Fire Protection District	Unknown	.5
2007-08518-034230	02/10/2007	Pulaski	Dixon Rural Fire Protection District	Unknown	15
2007-08518-034231	02/07/2007	Pulaski	Dixon Rural Fire Protection District	Arson	1
2007-08518-034232	01/30/2007	Pulaski	Dixon Rural Fire Protection District	Unknown	.5
2007-08518-034233	01/26/2007	Pulaski	Dixon Rural Fire Protection District	Arson	3
2007-08518-034237	08/14/2007	Pulaski	Dixon Rural Fire Protection District	Debris	.5
2007-08518-034238	08/13/2007	Pulaski	Dixon Rural Fire Protection District	Debris	.5
2007-08518-034239	07/13/2007	Pulaski	Dixon Rural Fire Protection District	Unknown	.5
2007-08518-034240	05/20/2007	Pulaski	Dixon Rural Fire Protection District	Debris	.5
2007-08518-034243	04/29/2007	Pulaski	Dixon Rural Fire Protection District	Debris	2
2007-08518-034409	01/06/2007	Pulaski	Dixon Rural Fire Protection District	Debris	3
2008-05360-033266	01/18/2008	Pulaski	TRI COUNTY F&R	Debris	3
2008-05360-033268	01/21/2008	Pulaski	TRI COUNTY F&R	Debris	3

2008-05360-033270	01/28/2008	Pulaski	TRI COUNTY F&R	Debris	1
2008-08518-034410	01/20/2008	Pulaski	Dixon Rural Fire Protection District	Debris	1
2008-08518-034411	01/24/2008	Pulaski	Dixon Rural Fire Protection District	Debris	1
2008-08518-034513	01/26/2008	Pulaski	Dixon Rural Fire Protection District	Unknown	12
2008-08518-034514	01/27/2008	Pulaski	Dixon Rural Fire Protection District	Debris	15
2008-08518-034515	01/28/2008	Pulaski	Dixon Rural Fire Protection District	Debris	1
2008-08518-034516	02/28/2008	Pulaski	Dixon Rural Fire Protection District	Unknown	12
2008-08518-034517	03/01/2008	Pulaski	Dixon Rural Fire Protection District	Debris	10
2008-08518-034518	03/02/2008	Pulaski	Dixon Rural Fire Protection District	Unknown	1
2008-08518-034519	03/03/2008	Pulaski	Dixon Rural Fire Protection District	Debris	5
2008-08518-034520	03/09/2008	Pulaski	Dixon Rural Fire Protection District	Unknown	1
2008-08518-034521	03/09/2008	Pulaski	Dixon Rural Fire Protection District	Debris	2
2008-08518-034523	03/11/2008	Pulaski	Dixon Rural Fire Protection District	Debris	5
2008-08518-034524	03/13/2008	Pulaski	Dixon Rural Fire Protection District	Debris	2
2008-08518-034525	03/13/2008	Pulaski	Dixon Rural Fire Protection District	Debris	1.5
2008-08518-034526	03/14/2008	Pulaski	Dixon Rural Fire Protection District	Unknown	.5
2008-08518-034527	03/24/2008	Pulaski	Dixon Rural Fire Protection District	Unknown	2
2008-08518-036519	06/03/2008	Pulaski	Dixon Rural Fire Protection District	Equipment	.1
2008-08518-036520	07/07/2008	Pulaski	Dixon Rural Fire Protection District	Unknown	.5
2008-08518-036521	11/27/2008	Pulaski	Dixon Rural Fire Protection District	Unknown	.5
2008-08518-036522	11/27/2008	Pulaski	Dixon Rural Fire Protection District	Debris	.75
2008-08518-036523	11/27/2008	Pulaski	Dixon Rural Fire Protection District	Unknown	.5
2008-08518-036526	11/22/2008	Pulaski	Dixon Rural Fire Protection District	Unknown	.5
2008-08518-036529	11/23/2008	Pulaski	Dixon Rural Fire Protection District	Equipment	50
2008-08518-036532	11/26/2008	Pulaski	Dixon Rural Fire Protection District	Unknown	15
2009-05360-042940	11/13/2009	Pulaski	TRI COUNTY F&R	Debris	1
2009-05360-042981	11/12/2009	Pulaski	TRI COUNTY F&R	Debris	1
2009-05360-042984	08/20/2009	Pulaski	TRI COUNTY F&R	Debris	1
2009-05360-042992	03/09/2009	Pulaski	TRI COUNTY F&R	Debris	1

2009-05360-042994	01/22/2009	Pulaski	TRI COUNTY F&R	Debris	1
2009-05360-043001	11/07/2009	Pulaski	TRI COUNTY F&R	Debris	20
2009-05360-043002	04/11/2009	Pulaski	TRI COUNTY F&R	Debris	1
2009-05360-043021	01/24/2009	Pulaski	TRI COUNTY F&R	Debris	2
2009-05360-043026	01/01/2009	Pulaski	TRI COUNTY F&R	Debris	4
2009-08104-039653	03/31/2009	Pulaski	Duke Rural Fire Department	Arson	80
2009-08104-039656	04/03/2009	Pulaski	Duke Rural Fire Department	Arson	.5
2009-08104-039766	04/15/2009	Pulaski	Duke Rural Fire Department	Arson	1.5
2010-08101-045397	03/31/2010	Pulaski	Doolittle Rural Fire Protection District	Debris	80
2010-08518-052654	12/06/2010	Pulaski	Dixon Rural Fire Protection District	Debris	4
2010-08518-052655	12/08/2010	Pulaski	Dixon Rural Fire Protection District	Debris	12
2010-08518-052656	12/22/2010	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	.1
2010-08518-052657	12/23/2010	Pulaski	Dixon Rural Fire Protection District	Smoking	1
2010-08518-052667	12/03/2010	Pulaski	Dixon Rural Fire Protection District	Debris	1
2010-08518-052668	12/06/2010	Pulaski	Dixon Rural Fire Protection District	Debris	3
2010-08518-052681	11/03/2010	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	1
2010-08518-052682	11/05/2010	Pulaski	Dixon Rural Fire Protection District	Debris	1
2010-08518-052683	10/05/2010	Pulaski	Dixon Rural Fire Protection District	Debris	1
2010-08518-052685	11/08/2010	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	1
2010-08518-052686	11/19/2010	Pulaski	Dixon Rural Fire Protection District	Debris	20
2010-08518-052687	11/28/2010	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	1
2010-08518-052738	10/04/2010	Pulaski	Dixon Rural Fire Protection District	Debris	1
2010-08518-052772	10/22/2010	Pulaski	Dixon Rural Fire Protection District	Debris	25
2010-08518-052773	10/23/2010	Pulaski	Dixon Rural Fire Protection District	Arson	.5
2010-08518-052774	10/23/2010	Pulaski	Dixon Rural Fire Protection District	Arson	1
2010-08518-052781	10/24/2010	Pulaski	Dixon Rural Fire Protection District	Arson	.1
2010-08518-052802	10/30/2010	Pulaski	Dixon Rural Fire Protection District	Arson	1
2011-02059-062819	10/08/2011	Pulaski	TRI COUNTY FPD	Unknown	40
2011-02059-062918	10/31/2011	Pulaski	TRI COUNTY FPD	Debris	1

2011-02059-063001	10/29/2011	Pulaski	TRI COUNTY FPD	Unknown	15
2011-02059-063928	11/10/2011	Pulaski	TRI COUNTY FPD	Unknown	1
2011-02059-063931	11/17/2011	Pulaski	TRI COUNTY FPD	Debris	30
2011-02059-065297	12/31/2011	Pulaski	TRI COUNTY FPD	Unknown	175
2011-08518-052659	01/05/2011	Pulaski	Dixon Rural Fire Protection District	Debris	1
2011-08518-052660	01/03/2011	Pulaski	Dixon Rural Fire Protection District	Debris	1
2011-08518-054462	02/22/2011	Pulaski	Dixon Rural Fire Protection District	Debris	2
2011-08518-054463	01/14/2011	Pulaski	Dixon Rural Fire Protection District	Debris	3
2011-08518-054464	01/30/2011	Pulaski	Dixon Rural Fire Protection District	Debris	1
2011-08518-055175	03/11/2011	Pulaski	Dixon Rural Fire Protection District	Debris	35
2011-08518-055198	03/11/2011	Pulaski	Dixon Rural Fire Protection District	Debris	5
2011-08518-055199	03/11/2011	Pulaski	Dixon Rural Fire Protection District	Debris	20
2011-08518-055200	03/16/2011	Pulaski	Dixon Rural Fire Protection District	Debris	15
2011-08518-055201	03/19/2011	Pulaski	Dixon Rural Fire Protection District	Arson	3.5
2011-08518-056117	04/02/2011	Pulaski	Dixon Rural Fire Protection District	Debris	10
2011-08518-056128	04/03/2011	Pulaski	Dixon Rural Fire Protection District	Debris	30
2011-08518-056164	04/05/2011	Pulaski	Dixon Rural Fire Protection District	Arson	15
2011-08518-056302	04/07/2011	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	25
2011-08518-056304	04/09/2011	Pulaski	Dixon Rural Fire Protection District	Debris	1.5
2011-08518-056322	04/09/2011	Pulaski	Dixon Rural Fire Protection District	Debris	10
2011-08518-056323	04/09/2011	Pulaski	Dixon Rural Fire Protection District	Debris	1.25
2011-08518-056582	04/13/2011	Pulaski	Dixon Rural Fire Protection District	Debris	120
2011-08518-056583	04/17/2011	Pulaski	Dixon Rural Fire Protection District	Debris	230
2011-08518-060608	09/08/2011	Pulaski	Dixon Rural Fire Protection District	Debris	1
2011-08518-060632	09/06/2011	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	6
2011-08518-061361	10/08/2011	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	.1
2011-08518-062641	11/01/2011	Pulaski	Dixon Rural Fire Protection District	Arson	2
2011-08518-062642	10/29/2011	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	15
2011-08518-062661	11/17/2011	Pulaski	Dixon Rural Fire Protection District	Arson	2

2011-08518-062662	10/24/2011	Pulaski	Dixon Rural Fire Protection District	Debris	2
2011-08519-063543	11/25/2011	Pulaski	Crocker Rural Fire Protection District	Not Reported	1
2011-08519-078413	01/28/2011	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	2
2011-08519-078414	01/29/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	20
2011-08519-078415	01/29/2011	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	4
2011-08519-078416	02/12/2011	Pulaski	Crocker Rural Fire Protection District	Debris	1
2011-08519-078417	02/16/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2011-08519-078418	02/16/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2011-08519-078419	02/17/2011	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	1
2011-08519-078420	02/17/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	25
2011-08519-078422	03/01/2011	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	1
2011-08519-078423	03/03/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2011-08519-078424	03/11/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2011-08519-078425	03/12/2011	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	14
2011-08519-078426	03/12/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2011-08519-078427	03/12/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	15
2011-08519-078428	03/19/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	10
2011-08519-078429	03/21/2011	Pulaski	Crocker Rural Fire Protection District	Debris	1
2011-08519-078430	03/23/2011	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	10
2011-08519-078431	04/02/2011	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	15
2011-08519-078432	04/03/2011	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	15
2011-08519-078433	04/06/2011	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	1
2011-08519-078434	04/09/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2011-08519-078435	04/13/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	25
2011-08519-078436	04/13/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2011-08519-078437	04/14/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	5
2011-08519-078438	04/14/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2011-08519-078439	04/17/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	18
2011-08519-078441	05/10/2011	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	1

2011-08519-078442	06/18/2011	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	1
2011-08519-078443	06/25/2011	Pulaski	Crocker Rural Fire Protection District	Debris	1
2011-08519-078444	07/10/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2011-08519-078447	07/30/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	3
2011-08519-078448	07/31/2011	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	3
2011-08519-078449	08/01/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	27
2011-08519-078450	09/05/2011	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	1
2011-08519-078452	10/08/2011	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	70
2011-08519-078453	10/11/2011	Pulaski	Crocker Rural Fire Protection District	Debris	1
2011-08519-078454	10/29/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	25
2011-08519-078456	11/08/2011	Pulaski	Crocker Rural Fire Protection District	Debris	1
2011-08519-078457	11/10/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2011-08519-078459	12/31/2011	Pulaski	Crocker Rural Fire Protection District	Unknown	15
2012-02059-066821	01/02/2012	Pulaski	TRI COUNTY FPD	Unknown	10
2012-02059-066923	01/08/2012	Pulaski	TRI COUNTY FPD	Unknown	1
2012-02059-066945	01/15/2012	Pulaski	TRI COUNTY FPD	Unknown	1
2012-02059-070222	03/04/2012	Pulaski	TRI COUNTY FPD	Unknown	.5
2012-02059-070223	03/07/2012	Pulaski	TRI COUNTY FPD	Equipment	3
2012-02059-070612	03/29/2012	Pulaski	TRI COUNTY FPD	Debris	.5
2012-02059-074198	06/29/2012	Pulaski	TRI COUNTY FPD	Debris	3
2012-02059-075023	07/04/2012	Pulaski	TRI COUNTY FPD	Miscellaneous	.5
2012-02059-075402	07/16/2012	Pulaski	TRI COUNTY FPD	Unknown	1
2012-02059-076929	08/07/2012	Pulaski	TRI COUNTY FPD	Unknown	2
2012-02059-076932	08/09/2012	Pulaski	TRI COUNTY FPD	Equipment	1
2012-02059-076933	08/10/2012	Pulaski	TRI COUNTY FPD	Equipment	2
2012-02059-076934	08/11/2012	Pulaski	TRI COUNTY FPD	Unknown	17.5
2012-02059-077230	08/18/2012	Pulaski	TRI COUNTY FPD	Debris	2
2012-02059-080248	11/10/2012	Pulaski	TRI COUNTY FPD	Unknown	1
2012-05300-075643	08/10/2012	Pulaski	LEBANON FORESTRY	Equipment	.1

2012-08518-065808	01/03/2012	Pulaski	Dixon Rural Fire Protection District	Debris	30
2012-08518-065809	01/03/2012	Pulaski	Dixon Rural Fire Protection District	Debris	10
2012-08518-065810	01/04/2012	Pulaski	Dixon Rural Fire Protection District	Unknown	5
2012-08518-065811	01/05/2012	Pulaski	Dixon Rural Fire Protection District	Debris	.5
2012-08518-065812	01/09/2012	Pulaski	Dixon Rural Fire Protection District	Debris	3
2012-08518-065982	01/11/2012	Pulaski	Dixon Rural Fire Protection District	Arson	.5
2012-08518-067041	02/01/2012	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2012-08518-067042	02/22/2012	Pulaski	Dixon Rural Fire Protection District	Debris	1
2012-08518-067061	02/01/2012	Pulaski	Dixon Rural Fire Protection District	Unknown	2
2012-08518-068868	03/10/2012	Pulaski	Dixon Rural Fire Protection District	Debris	.5
2012-08518-068869	03/10/2012	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	.1
2012-08518-068870	03/10/2012	Pulaski	Dixon Rural Fire Protection District	Debris	10
2012-08518-068872	03/14/2012	Pulaski	Dixon Rural Fire Protection District	Debris	10
2012-08518-068890	03/14/2012	Pulaski	Dixon Rural Fire Protection District	Debris	12
2012-08518-071025	02/26/2012	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	.1
2012-08518-071026	02/28/2012	Pulaski	Dixon Rural Fire Protection District	Debris	4
2012-08518-071028	03/03/2012	Pulaski	Dixon Rural Fire Protection District	Debris	10
2012-08518-071031	04/07/2012	Pulaski	Dixon Rural Fire Protection District	Debris	2
2012-08518-071032	04/05/2012	Pulaski	Dixon Rural Fire Protection District	Debris	1
2012-08518-071064	03/04/2012	Pulaski	Dixon Rural Fire Protection District	Debris	1
2012-08518-071065	03/10/2012	Pulaski	Dixon Rural Fire Protection District	Unknown	1
2012-08518-071066	03/30/2012	Pulaski	Dixon Rural Fire Protection District	Debris	2
2012-08518-071068	04/04/2012	Pulaski	Dixon Rural Fire Protection District	Debris	1
2012-08518-074262	05/27/2012	Pulaski	Dixon Rural Fire Protection District	Debris	1
2012-08518-074264	06/27/2012	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	2
2012-08518-074265	06/28/2012	Pulaski	Dixon Rural Fire Protection District	Smoking	.1
2012-08518-074266	06/28/2012	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2012-08518-074281	06/27/2012	Pulaski	Dixon Rural Fire Protection District		30
2012-08518-074283	07/03/2012	Pulaski	Dixon Rural Fire Protection District	Debris	.1

2012-08518-074289	07/18/2012	Pulaski	Dixon Rural Fire Protection District	Arson	2
2012-08518-076871	08/14/2012	Pulaski	Dixon Rural Fire Protection District	Debris	1
2012-08518-076873	08/06/2012	Pulaski	Dixon Rural Fire Protection District	Equipment	2
2012-08518-076874	08/11/2012	Pulaski	Dixon Rural Fire Protection District	Unknown	15
2012-08518-076875	08/15/2012	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2012-08518-076876	08/16/2012	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2012-08518-076877	08/20/2012	Pulaski	Dixon Rural Fire Protection District	Arson	1.4
2012-08518-076882	07/24/2012	Pulaski	Dixon Rural Fire Protection District	Debris	1
2012-08518-076883	09/08/2012	Pulaski	Dixon Rural Fire Protection District	Debris	1
2012-08518-079063	11/04/2012	Pulaski	Dixon Rural Fire Protection District	Not Reported	10
2012-08518-079066	10/10/2012	Pulaski	Dixon Rural Fire Protection District	Debris	10
2012-08518-079067	10/25/2012	Pulaski	Dixon Rural Fire Protection District	Debris	5
2012-08518-079068	10/31/2012	Pulaski	Dixon Rural Fire Protection District	Unknown	.1
2012-08518-079069	09/10/2012	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	.1
2012-08518-079070	09/19/2012	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	.1
2012-08519-065624	01/03/2012	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	2
2012-08519-065625	01/05/2012	Pulaski	Crocker Rural Fire Protection District	Debris	1
2012-08519-065642	01/03/2012	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	35
2012-08519-065643	01/07/2012	Pulaski	Crocker Rural Fire Protection District	Debris	1
2012-08519-065646	01/08/2012	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	5
2012-08519-067497	02/22/2012	Pulaski	Crocker Rural Fire Protection District	Not Reported	10
2012-08519-067500	02/28/2012	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	2
2012-08519-067662	03/01/2012	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	2
2012-08519-068202	03/06/2012	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	2
2012-08519-068203	03/06/2012	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	25
2012-08519-068204	03/06/2012	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	5
2012-08519-068224	03/05/2012	Pulaski	Crocker Rural Fire Protection District	Not Reported	20
2012-08519-069042	03/10/2012	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	1
2012-08519-069043	03/13/2012	Pulaski	Crocker Rural Fire Protection District	Unknown	1

2012-08519-069062	03/10/2012	Pulaski	Crocker Rural Fire Protection District	Debris	4
2012-08519-071401	05/28/2012	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2012-10714-069800	03/07/2012	Pulaski	Licking Fire Dept.	Unknown	25
2013-02059-089304	07/05/2013	Pulaski	TRI COUNTY FPD	Equipment	.1
2013-02059-090702	09/02/2013	Pulaski	TRI COUNTY FPD	Debris	.1
2013-02059-092844	12/20/2013	Pulaski	TRI COUNTY FPD	Debris	1
2013-02059-092943	12/28/2013	Pulaski	TRI COUNTY FPD	Unknown	1
2013-02059-093144	12/31/2013	Pulaski	TRI COUNTY FPD	Debris	5
2013-08518-084846	02/06/2013	Pulaski	Dixon Rural Fire Protection District	Debris	2
2013-08518-087243	04/06/2013	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2013-08518-087245	04/25/2013	Pulaski	Dixon Rural Fire Protection District	Unknown	70
2013-08518-092051	10/09/2013	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2013-08518-092052	11/08/2013	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2013-08518-092054	11/10/2013	Pulaski	Dixon Rural Fire Protection District	Debris	3
2013-08518-092057	11/17/2013	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2013-08518-092058	11/24/2013	Pulaski	Dixon Rural Fire Protection District	Debris	3
2013-08518-092062	05/15/2013	Pulaski	Dixon Rural Fire Protection District	Arson	1
2013-08519-083822	01/18/2013	Pulaski	Crocker Rural Fire Protection District	Debris	2
2013-08519-085102	02/16/2013	Pulaski	Crocker Rural Fire Protection District	Unknown	2
2013-08519-101682	01/23/2013	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2013-08519-101683	01/26/2013	Pulaski	Crocker Rural Fire Protection District	Unknown	15
2013-08519-101684	01/26/2013	Pulaski	Crocker Rural Fire Protection District	Debris	1
2013-08519-111082	01/31/2013	Pulaski	Crocker Rural Fire Protection District	Not Reported	1
2013-08519-111083	02/03/2013	Pulaski	Crocker Rural Fire Protection District	Unknown	25
2013-08519-111084	03/15/2013	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2013-08519-111087	04/03/2013	Pulaski	Crocker Rural Fire Protection District	Unknown	2
2013-08519-111089	04/06/2013	Pulaski	Crocker Rural Fire Protection District	Not Reported	5
2013-08519-111090	05/11/2013	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2013-08519-111091	05/14/2013	Pulaski	Crocker Rural Fire Protection District	Unknown	1

2013-08519-111092	05/19/2013	Pulaski	Crocker Rural Fire Protection District	Not Reported	1
2013-08519-111093	09/14/2013	Pulaski	Crocker Rural Fire Protection District	Not Reported	1
2013-08519-111094	11/10/2013	Pulaski	Crocker Rural Fire Protection District	Equipment	1
2013-08519-111095	11/11/2013	Pulaski	Crocker Rural Fire Protection District	Not Reported	1
2013-08519-111096	11/14/2013	Pulaski	Crocker Rural Fire Protection District	Unknown	3
2013-08519-111097	11/17/2013	Pulaski	Crocker Rural Fire Protection District	Unknown	3
2013-08519-111098	11/29/2013	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2013-08519-111099	12/18/2013	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2014-02059-094204	01/16/2014	Pulaski	TRI COUNTY FPD	Unknown	1
2014-02059-094347	01/24/2014	Pulaski	TRI COUNTY FPD	Unknown	.1
2014-02059-094348	01/24/2014	Pulaski	TRI COUNTY FPD	Unknown	20
2014-02059-094351	01/25/2014	Pulaski	TRI COUNTY FPD	Unknown	3
2014-02059-094352	01/25/2014	Pulaski	TRI COUNTY FPD	Debris	2
2014-02059-094354	01/26/2014	Pulaski	TRI COUNTY FPD	Debris	1
2014-02059-104262	02/24/2014	Pulaski	TRI COUNTY FPD	Unknown	5
2014-02059-106643	03/10/2014	Pulaski	TRI COUNTY FPD	Unknown	75
2014-02059-106664	03/11/2014	Pulaski	TRI COUNTY FPD	Unknown	5
2014-02059-108062	04/10/2014	Pulaski	TRI COUNTY FPD	Debris	1
2014-02059-108142	04/17/2014	Pulaski	TRI COUNTY FPD	Equipment	2
2014-02059-108323	04/20/2014	Pulaski	TRI COUNTY FPD	Unknown	1
2014-02059-108543	05/03/2014	Pulaski	TRI COUNTY FPD	Railroad	1
2014-02059-114811	11/03/2014	Pulaski	TRI COUNTY FPD	Unknown	1
2014-02059-115071	11/13/2014	Pulaski	TRI COUNTY FPD	Unknown	1
2014-02059-115121	11/30/2014	Pulaski	TRI COUNTY FPD	Unknown	1.5
2014-08518-093329	01/01/2014	Pulaski	Dixon Rural Fire Protection District	Debris	4
2014-08518-093807	01/20/2014	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2014-08518-093809	01/24/2014	Pulaski	Dixon Rural Fire Protection District	Debris	1.5
2014-08518-093810	01/26/2014	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2014-08518-093812	01/27/2014	Pulaski	Dixon Rural Fire Protection District	Debris	1

2014-08518-095055	02/24/2014	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2014-08518-095059	03/07/2014	Pulaski	Dixon Rural Fire Protection District	Debris	1.5
2014-08518-095231	03/10/2014	Pulaski	Dixon Rural Fire Protection District	Unknown	50
2014-08518-096504	03/20/2014	Pulaski	Dixon Rural Fire Protection District	Debris	1
2014-08518-096803	03/23/2014	Pulaski	Dixon Rural Fire Protection District	Unknown	5
2014-08518-097842	03/29/2014	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	.25
2014-08518-107422	04/23/2014	Pulaski	Dixon Rural Fire Protection District	Unknown	.5
2014-08518-117916	10/27/2014	Pulaski	Dixon Rural Fire Protection District	Unknown	35
2014-08518-117917	11/03/2014	Pulaski	Dixon Rural Fire Protection District	Debris	1
2014-08518-117918	11/30/2014	Pulaski	Dixon Rural Fire Protection District	Debris	3
2014-08518-117919	09/23/2014	Pulaski	Dixon Rural Fire Protection District	Debris	1
2014-08519-096584	01/24/2014	Pulaski	Crocker Rural Fire Protection District	Not Reported	10
2014-08519-096585	01/24/2014	Pulaski	Crocker Rural Fire Protection District	Smoking	1
2014-08519-096602	02/23/2014	Pulaski	Crocker Rural Fire Protection District	Unknown	3
2014-08519-096603	02/28/2014	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2014-08519-096604	03/07/2014	Pulaski	Crocker Rural Fire Protection District	Unknown	4
2014-08519-096943	03/07/2014	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2014-08519-096945	03/10/2014	Pulaski	Crocker Rural Fire Protection District	Debris	50
2014-08519-096946	03/10/2014	Pulaski	Crocker Rural Fire Protection District	Debris	3
2014-08519-096949	03/15/2014	Pulaski	Crocker Rural Fire Protection District	Debris	3
2014-08519-096950	03/16/2014	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	1
2014-08519-096951	03/18/2014	Pulaski	Crocker Rural Fire Protection District	Debris	25
2014-08519-096952	03/23/2014	Pulaski	Crocker Rural Fire Protection District	Debris	4
2014-08519-096957	03/29/2014	Pulaski	Crocker Rural Fire Protection District	Equipment	30
2014-08519-096958	03/30/2014	Pulaski	Crocker Rural Fire Protection District	Not Reported	1
2014-08519-098882	04/05/2014	Pulaski	Crocker Rural Fire Protection District	Debris	15
2014-08519-100362	04/11/2014	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	15
2014-08519-100363	04/11/2014	Pulaski	Crocker Rural Fire Protection District	Unknown	15
2014-08519-101643	04/12/2014	Pulaski	Crocker Rural Fire Protection District	Debris	1

2014-08519-101648	04/17/2014	Pulaski	Crocker Rural Fire Protection District	Debris	1
2014-08519-103282	04/18/2014	Pulaski	Crocker Rural Fire Protection District	Debris	1
2014-08519-103302	04/20/2014	Pulaski	Crocker Rural Fire Protection District	Debris	1
2014-08519-108842	05/04/2014	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	1
2014-08519-108843	05/05/2014	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	1
2014-08519-108844	08/05/2014	Pulaski	Crocker Rural Fire Protection District	Not Reported	35
2014-08519-112250	11/08/2014	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	1
2014-08519-113330	11/21/2014	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	1
2014-08519-114113	11/28/2014	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2014-10735-096615	02/19/2014	Pulaski	Roby Fire Department Inc.	Debris	1
2015-02059-119832	01/18/2015	Pulaski	TRI COUNTY FPD	Debris	4
2015-02059-124150	03/08/2015	Pulaski	TRI COUNTY FPD	Debris	50
2015-02059-125250	03/22/2015	Pulaski	TRI COUNTY FPD	Unknown	20
2015-02059-126010	04/05/2015	Pulaski	TRI COUNTY FPD	Unknown	1
2015-02059-126172	04/12/2015	Pulaski	TRI COUNTY FPD	Debris	1
2015-02059-128310	06/11/2015	Pulaski	TRI COUNTY FPD	Unknown	1
2015-02059-130934	10/13/2015	Pulaski	TRI COUNTY FPD	Debris	1
2015-02059-131262	10/17/2015	Pulaski	TRI COUNTY FPD	Unknown	.1
2015-02059-131263	10/17/2015	Pulaski	TRI COUNTY FPD	Equipment	.2
2015-02059-131264	10/19/2015	Pulaski	TRI COUNTY FPD	Arson	5
2015-02059-131291	10/20/2015	Pulaski	TRI COUNTY FPD	Debris	2
2015-02059-131292	10/21/2015	Pulaski	TRI COUNTY FPD	Debris	1
2015-02059-131312	10/25/2015	Pulaski	TRI COUNTY FPD	Unknown	2
2015-05300-129337	10/14/2015	Pulaski	LEBANON FORESTRY	Arson	3
2015-08518-117915	01/24/2015	Pulaski	Dixon Rural Fire Protection District	Debris	2
2015-08518-125190	04/27/2015	Pulaski	Dixon Rural Fire Protection District	Debris	1
2015-08518-125191	04/20/2015	Pulaski	Dixon Rural Fire Protection District	Debris	.5
2015-08518-125192	04/17/2015	Pulaski	Dixon Rural Fire Protection District	Debris	5
2015-08518-125194	03/22/2015	Pulaski	Dixon Rural Fire Protection District	Debris	1

2015-08518-129497	07/13/2015	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2015-08518-129498	07/31/2015	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2015-08518-129499	08/31/2015	Pulaski	Dixon Rural Fire Protection District	Equipment	.1
2015-08518-129502	09/28/2015	Pulaski	Dixon Rural Fire Protection District	Unknown	3
2015-08518-129503	09/29/2015	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2015-08518-129505	10/04/2015	Pulaski	Dixon Rural Fire Protection District	Arson	1
2015-08518-129507	10/06/2015	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2015-08518-129510	10/13/2015	Pulaski	Dixon Rural Fire Protection District	Equipment	.1
2015-08518-129515	10/17/2015	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2015-08518-129517	10/17/2015	Pulaski	Dixon Rural Fire Protection District	Debris	2
2015-08518-129519	10/22/2015	Pulaski	Dixon Rural Fire Protection District	Unknown	1
2015-08518-129520	10/22/2015	Pulaski	Dixon Rural Fire Protection District	Unknown	.1
2015-08518-130634	10/25/2015	Pulaski	Dixon Rural Fire Protection District	Unknown	1
2015-08518-130635	10/24/2015	Pulaski	Dixon Rural Fire Protection District	Debris	1
2015-08518-130637	11/11/2015	Pulaski	Dixon Rural Fire Protection District	Unknown	1
2015-08518-130638	11/12/2015	Pulaski	Dixon Rural Fire Protection District	Unknown	15
2015-08519-117130	01/08/2015	Pulaski	Crocker Rural Fire Protection District	Equipment	1
2015-08519-117131	01/18/2015	Pulaski	Crocker Rural Fire Protection District	Unknown	2
2015-08519-117192	01/24/2015	Pulaski	Crocker Rural Fire Protection District	Unknown	3
2015-08519-118291	02/08/2015	Pulaski	Crocker Rural Fire Protection District	Equipment	1
2015-08519-118292	02/08/2015	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2015-08519-118293	02/08/2015	Pulaski	Crocker Rural Fire Protection District	Unknown	3
2015-08519-118294	02/09/2015	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2015-08519-118295	02/10/2015	Pulaski	Crocker Rural Fire Protection District	Equipment	3
2015-08519-118330	02/14/2015	Pulaski	Crocker Rural Fire Protection District	Debris	1
2015-08519-120690	03/08/2015	Pulaski	Crocker Rural Fire Protection District	Debris	1
2015-08519-120691	03/17/2015	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2015-08519-121190	03/22/2015	Pulaski	Crocker Rural Fire Protection District	Debris	40
2015-08519-121191	03/23/2015	Pulaski	Crocker Rural Fire Protection District	Debris	20

2015-08519-121192	03/23/2015	Pulaski	Crocker Rural Fire Protection District	Debris	5
2015-08519-121550	03/30/2015	Pulaski	Crocker Rural Fire Protection District	Equipment	2
2015-08519-124290	04/17/2015	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2015-08519-124310	05/03/2015	Pulaski	Crocker Rural Fire Protection District	Miscellaneous	1
2015-08519-127930	09/01/2015	Pulaski	Crocker Rural Fire Protection District	Equipment	1
2015-08519-127931	06/02/2015	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2015-08519-128775	09/21/2015	Pulaski	Crocker Rural Fire Protection District	Debris	2
2015-08519-130171	10/30/2015	Pulaski	Crocker Rural Fire Protection District	Debris	3
2015-08519-130172	11/03/2015	Pulaski	Crocker Rural Fire Protection District	Debris	.5
2016-02059-132817	11/15/2015	Pulaski	TRI COUNTY FPD	Unknown	2
2016-02059-133132	12/06/2015	Pulaski	TRI COUNTY FPD	Equipment	1
2016-02059-133136	12/08/2015	Pulaski	TRI COUNTY FPD	Unknown	1
2016-02059-133138	12/09/2015	Pulaski	TRI COUNTY FPD	Debris	.1
2016-02059-133139	12/10/2015	Pulaski	TRI COUNTY FPD	Unknown	1
2016-02059-133140	12/10/2015	Pulaski	TRI COUNTY FPD	Equipment	.1
2016-02059-135111	01/28/2016	Pulaski	TRI COUNTY FPD	Debris	1
2016-02059-136649	02/05/2016	Pulaski	TRI COUNTY FPD	Unknown	1
2016-02059-136653	02/06/2016	Pulaski	TRI COUNTY FPD	Debris	4
2016-02059-136654	02/06/2016	Pulaski	TRI COUNTY FPD	Unknown	15
2016-02059-136671	02/13/2016	Pulaski	TRI COUNTY FPD	Unknown	3
2016-02059-136672	02/13/2016	Pulaski	TRI COUNTY FPD	Debris	.1
2016-02059-136711	02/18/2016	Pulaski	TRI COUNTY FPD	Unknown	1
2016-02059-137119	03/06/2016	Pulaski	TRI COUNTY FPD	Debris	4
2016-02059-137719	03/17/2016	Pulaski	TRI COUNTY FPD	Miscellaneous	1
2016-02059-137751	03/21/2016	Pulaski	TRI COUNTY FPD	Equipment	1
2016-02059-137753	03/22/2016	Pulaski	TRI COUNTY FPD	Debris	1
2016-08518-139251	05/12/2016	Pulaski	Dixon Rural Fire Protection District	Arson	1
2016-08519-132832	01/27/2016	Pulaski	Crocker Rural Fire Protection District	Unknown	5
2016-08519-132833	01/28/2016	Pulaski	Crocker Rural Fire Protection District	Unknown	1

2016-08519-132834	01/30/2016	Pulaski	Crocker Rural Fire Protection District	Debris	1
2016-08519-132836	01/31/2016	Pulaski	Crocker Rural Fire Protection District	Debris	4
2016-08519-134172	02/06/2016	Pulaski	Crocker Rural Fire Protection District	Unknown	5
2016-08519-134173	02/27/2016	Pulaski	Crocker Rural Fire Protection District	Debris	5
2016-08519-134178	02/27/2016	Pulaski	Crocker Rural Fire Protection District	Debris	3
2016-08519-134179	02/28/2016	Pulaski	Crocker Rural Fire Protection District	Unknown	.5
2016-08519-134180	02/28/2016	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2016-08519-134258	03/02/2016	Pulaski	Crocker Rural Fire Protection District	Equipment	1
2016-08519-134259	03/06/2016	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2016-08519-134617	03/17/2016	Pulaski	Crocker Rural Fire Protection District	Debris	10
2016-08519-135153	03/28/2016	Pulaski	Crocker Rural Fire Protection District	Debris	1
2016-08519-135154	03/29/2016	Pulaski	Crocker Rural Fire Protection District	Debris	1
2016-08519-135692	04/13/2016	Pulaski	Crocker Rural Fire Protection District	Debris	.3
2016-08519-136611	05/06/2016	Pulaski	Crocker Rural Fire Protection District	Unknown	2
2017-02059-150391	11/17/2016	Pulaski	TRI COUNTY FPD	Debris	3
2017-02059-151651	01/10/2017	Pulaski	TRI COUNTY FPD	Miscellaneous	10
2017-02059-151653	01/10/2017	Pulaski	TRI COUNTY FPD	Miscellaneous	1
2017-02059-151671	01/10/2017	Pulaski	TRI COUNTY FPD	Unknown	5
2017-02059-151875	02/05/2017	Pulaski	TRI COUNTY FPD	Debris	.25
2017-02059-151882	02/19/2017	Pulaski	TRI COUNTY FPD	Unknown	5
2017-02059-151883	02/19/2017	Pulaski	TRI COUNTY FPD	Debris	10
2017-02059-152453	03/19/2017	Pulaski	TRI COUNTY FPD	Unknown	250
2017-02059-152471	03/20/2017	Pulaski	TRI COUNTY FPD	Unknown	100
2017-02059-152491	03/23/2017	Pulaski	TRI COUNTY FPD	Debris	20
2017-02059-152492	03/23/2017	Pulaski	TRI COUNTY FPD	Debris	300
2017-02059-154431	04/24/2017	Pulaski	TRI COUNTY FPD	Debris	1
2017-02059-155073	05/18/2017	Pulaski	TRI COUNTY FPD	Debris	1
2017-02059-164571	11/28/2017	Pulaski	TRI COUNTY FPD	Unknown	50
2017-02059-164572	11/29/2017	Pulaski	TRI COUNTY FPD	Unknown	1

2017-02059-164885	12/12/2017	Pulaski	TRI COUNTY FPD	Unknown	1
2017-08518-145631	05/03/2016	Pulaski	Dixon Rural Fire Protection District	Debris	.1
2017-08518-145632	04/25/2016	Pulaski	Dixon Rural Fire Protection District	Debris	1
2017-08518-145633	04/23/2016	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	1
2017-08518-145634	04/23/2016	Pulaski	Dixon Rural Fire Protection District	Debris	5
2017-08518-145635	04/13/2016	Pulaski	Dixon Rural Fire Protection District	Debris	4
2017-08518-145636	04/06/2016	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	.1
2017-08518-145638	03/15/2016	Pulaski	Dixon Rural Fire Protection District	Railroad	1.5
2017-08518-145639	03/06/2016	Pulaski	Dixon Rural Fire Protection District	Miscellaneous	2
2017-08518-145642	02/28/2016	Pulaski	Dixon Rural Fire Protection District	Debris	1
2017-08518-145643	02/20/2016	Pulaski	Dixon Rural Fire Protection District	Debris	1
2017-08518-145645	02/18/2016	Pulaski	Dixon Rural Fire Protection District	Unknown	2
2017-08518-145647	02/08/2016	Pulaski	Dixon Rural Fire Protection District	Equipment	3
2017-08518-145649	02/06/2016	Pulaski	Dixon Rural Fire Protection District	Debris	2
2017-08518-145651	02/04/2016	Pulaski	Dixon Rural Fire Protection District	Debris	2
2017-08518-145652	01/30/2016	Pulaski	Dixon Rural Fire Protection District	Debris	3
2017-08518-145655	01/10/2017	Pulaski	Dixon Rural Fire Protection District	Unknown	50
2017-08519-146657	05/13/2016	Pulaski	Crocker Rural Fire Protection District	Unknown	.1
2017-08519-146660	01/26/2017	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2017-08519-146661	01/31/2017	Pulaski	Crocker Rural Fire Protection District	Debris	.1
2017-08519-146662	01/31/2017	Pulaski	Crocker Rural Fire Protection District	Debris	.1
2017-08519-146663	02/02/2017	Pulaski	Crocker Rural Fire Protection District	Unknown	.3
2017-08519-146664	02/05/2017	Pulaski	Crocker Rural Fire Protection District	Debris	.3
2017-08519-146665	02/05/2017	Pulaski	Crocker Rural Fire Protection District	Unknown	.3
2017-08519-146666	02/05/2017	Pulaski	Crocker Rural Fire Protection District	Unknown	3
2017-08519-146751	02/12/2017	Pulaski	Crocker Rural Fire Protection District	Debris	.5
2017-08519-146752	02/13/2017	Pulaski	Crocker Rural Fire Protection District	Debris	3
2017-08519-146755	02/20/2016	Pulaski	Crocker Rural Fire Protection District	Debris	1.5
2017-08519-146756	02/25/2017	Pulaski	Crocker Rural Fire Protection District	Unknown	1

2017-08519-146757	02/25/2017	Pulaski	Crocker Rural Fire Protection District	Debris	4
2017-08519-146758	02/27/2016	Pulaski	Crocker Rural Fire Protection District	Debris	60
2017-08519-146759	03/03/2017	Pulaski	Crocker Rural Fire Protection District	Debris	.5
2017-08519-147595	03/08/2016	Pulaski	Crocker Rural Fire Protection District	Debris	.2
2017-08519-148357	03/19/2017	Pulaski	Crocker Rural Fire Protection District	Unknown	75
2017-08519-148358	03/20/2017	Pulaski	Crocker Rural Fire Protection District	Unknown	150
2017-08519-148359	03/22/2017	Pulaski	Crocker Rural Fire Protection District	Not Reported	2
2017-08519-149451	03/23/2017	Pulaski	Crocker Rural Fire Protection District	Unknown	25
2017-08519-149452	03/23/2017	Pulaski	Crocker Rural Fire Protection District	Debris	25
2017-08519-158511	03/24/2017	Pulaski	Crocker Rural Fire Protection District	Unknown	25
2017-08519-158512	04/15/2017	Pulaski	Crocker Rural Fire Protection District	Debris	15
2017-08519-158513	07/24/2017	Pulaski	Crocker Rural Fire Protection District	Debris	1
2017-08519-161171	10/19/2017	Pulaski	Crocker Rural Fire Protection District	Unknown	7
2017-08519-164711	12/12/2017	Pulaski	Crocker Rural Fire Protection District	Unknown	1
2018-02059-176146	01/06/2018	Pulaski	TRI COUNTY FPD	Debris	.9
2018-02059-176199	01/30/2018	Pulaski	TRI COUNTY FPD	Unknown	.18
2018-02059-176497	03/02/2018	Pulaski	TRI COUNTY FPD	Unknown	7.01
2018-02059-177180	04/21/2018	Pulaski	TRI COUNTY FPD	Unknown	134.98
2018-02059-177196	05/12/2018	Pulaski	TRI COUNTY FPD	Unknown	8.86
2018-02059-178049	08/12/2018	Pulaski	TRI COUNTY FPD	Debris	2.79
2019-02059-178137	12/22/2018	Pulaski	TRI COUNTY FPD	Unknown	.13
2019-02059-178622	01/31/2019	Pulaski	TRI COUNTY FPD	Unknown	.45
2019-02059-178990	03/19/2019	Pulaski	TRI COUNTY FPD	Unknown	260.72
2019-02059-178991	03/23/2019	Pulaski	TRI COUNTY FPD	Debris	.01
2019-02059-178995	03/23/2019	Pulaski	TRI COUNTY FPD	Debris	.14
2020-02059-179846	11/16/2019	Pulaski	TRI COUNTY FPD	Debris	.88
2020-02059-179884	12/07/2019	Pulaski	TRI COUNTY FPD	Arson	.89
2020-06632-230684	02/08/2018	Pulaski	Iberia Rural Fire Protection District	Debris	21.66