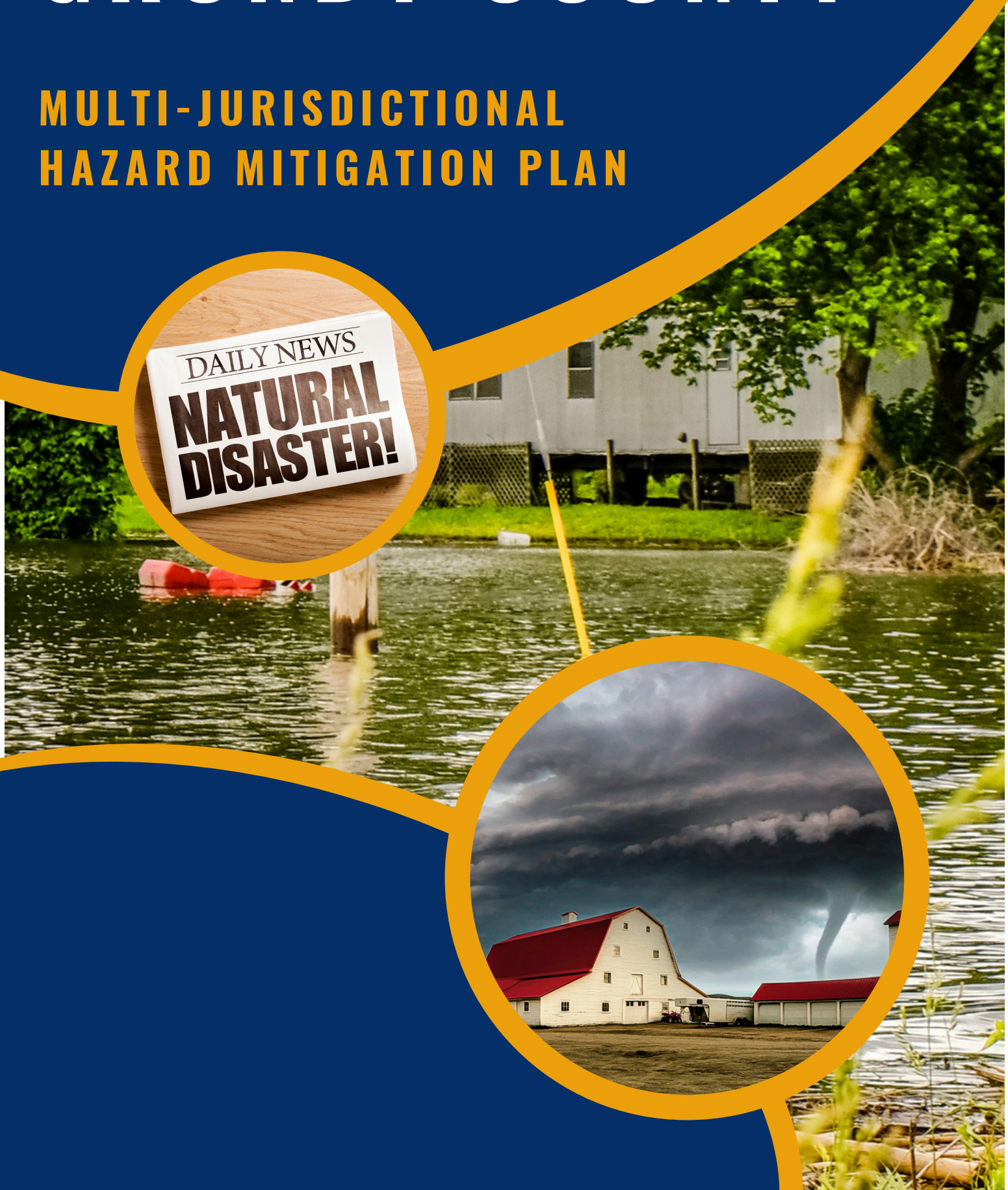
GRUNDY COUNTY

MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN



CONTRIBUTORS

Mitigation Planning Committee

Jurisdictional Representatives

Name	Title	Department	Jurisdiction
Phillip Ray	Presiding Commissioner	County Commission	Grundy County
Bryan Johnson	County Commission	County Commission	Grundy County
Mercedes Scobee	City Clerk	Administration	City of Galt/ City of Laredo
Frank Hayden	Wright Memorial Hospital	Administration	City of Trenton
Ryan Clark	Nestle	n/a	City of Trenton
Matthew D. Walker	Ambulance Director	Emergency Services	City of Trenton
Lenny Klaver	NCMC President	Administration	NCMC
Erica Eakes	Superintendent	Administration	Spickard R-II School District
Kelli Hillerman	Grundy County Health Department	Administration	Grundy County Health Dept.
Anita Ewing	City Clerk	Administration	City of Trenton
Brandon Gibler	Trenton Fire Department	Fire District	City of Trenton
Jacky Soptic	Mayor	City Government	City of Trenton
Courtney Campbell	County Clerk	County Commission	Grundy County
Kevin Ireland	County Commissioner	County Commission	Grundy County
Cindy Edwards	Alderman	City Board	City of Spickard
Alan Tharp	Mayor	City Government	City of Spickard
Daniel Chapman	Alderman	City Board	City of Spickard
Maggie George	Alderman	City Board	City of Spickard
Rebecca King	City Clerk	City Government	City of Spickard

Stakeholder Representatives

Name	Title	Department	Jurisdiction
Phillip Ray	Presiding Commissioner	County Commission	Grundy County
Bryan Johnson	County Commission	County Commission	Grundy County
Mercedes Scobee	City Clerk	Administration	City of Galt/ City of Laredo
Frank Hayden	Wright Memorial Hospital	Administration	City of Trenton
Ryan Clark	Nestle	n/a	City of Trenton
Matthew D. Walker	Ambulance Director	Emergency Services	City of Trenton
Lenny Klaver	NCMC President	Administration	NCMC
Erica Eakes	Superintendent	School Administration	Spickard R-II School District
Kelli Hillerman	Grundy County Health Department	Administration	Grundy County Health Dept.
Anita Ewing	City Clerk	City Government	City of Trenton
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Alan Tharp	Mayor	City Government	City of Spickard
Daniel Chapman	Alderman	City Board	City of Spickard
Maggie George	Alderman	City Board	City of Spickard
Rebecca King	City Clerk	City Government	City of Spickard

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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. Grundy County and participating jurisdictions and school/special districts developed this multi-jurisdictional local hazard mitigation plan update to reduce future losses from hazard events to the County and its communities and school/special districts. This plan is an update of the previous plan that was approved by FEMA on [insert date]. The plan and the update were prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 to result in eligibility for the Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance Grant Programs.

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

- Unincorporated Grundy County
- City of Galt
- City of Laredo
- City of Spickard
- City of Trenton
- Grundy County R-V
- Pleasantview R-VI
- Spickard R-II
- Trenton R-IX
- NCMC

The Laredo R-VII School District and the Village of Tindall were invited to participate in the planning process. Since they did not meet the requirements to be a plan participant, they will be ineligible for hazard mitigation assistance grants. When the future five-year update is underway, they will be again invited to participate.

Grundy County and the entities listed above followed a plan update process using a methodology in accordance with FEMA guidance, which began with the formation of a Mitigation Planning Committee (MPC) comprised of representatives from Grundy County and participating jurisdictions. The MPC updated the risk assessment that identified and profiled hazards that pose a risk to Grundy County and analyzed jurisdictional vulnerability to these hazards. The MPC also examined the capabilities in place to mitigate the hazard damages, with emphasis on changes that have occurred since the previously approved plan was adopted. 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, lightning, high winds), and tornados are among the hazards that historically have had a significant impact.

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

- Goal 1: Eliminate loss of life, minimize injuries and reduce property damage caused by tornadoes, severe thunderstorms including high winds, hail, and lightning.
- Goal 2: Minimize property damage due to flooding, levee failure, and dam failure;

including high hazard potential dams (HHPD).
- Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire.
- Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather.
- Goal 5: Minimize injuries and property damage due to seismic and/or geological events.

To advance the identified goals, the MPC developed recommended mitigation actions, as summarized in the table on the following pages. The MPC developed an implementation plan for each action, which identifies priority level, background information, ideas for implementation, responsible agency, timeline, cost estimate, potential funding sources, and more. These additional details are provided in Chapter 4.

Table I. Mitigation Action Matrix

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
Structure and Infrastructure Projects								
County 2025.2	Snow removal	Grundy Co	Low	4	Severe winter weather	X	X	
County 2025.3	Weather Alerts, Sirens and education	Grundy Co	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
County 2025.4	Tree trimming/Maintenance	Grundy Co.	Medium	1	Severe thunderstorm, Severe winter weather	X	X	
County 2025.5	Flood warning systems	Grundy Co	Medium	2	Flooding	X	X	
County 2025.7	Structure improvement grants	Grundy Co	High	2	Flooding	X	X	
County 2025.8	Food reduction projects	Grundy Co	High	2	Flooding	X	X	X
County 2025.11	Critical facilities backups	Grundy Co	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
County 2025.12	Debris removal	Grundy Co	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CG 2025.2	Weather Alerts, Sirens and education	Galt	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CG 2025.3	Critical facilities backups	Galt	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CG 2025.4	Debris removal	Galt	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CG 2025.5	Storm shelters and safe rooms	Galt	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CL 2025.2	Weather Alerts, Sirens and education	Laredo	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CL 2025.3	Critical facilities backups	Laredo	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CL 2025.4	Debris removal	Laredo	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CL 2025.5	Storm shelters and safe rooms	Laredo	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CS 2025.2	Weather Alerts, Sirens and education	Spickard	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CS 2025.3	Critical facilities backups	Spickard	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CS 2025.4	Debris removal	Spickard	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CS 2025.5	Storm shelters and safe rooms	Spickard	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CT 2025.2	Weather Alerts, Sirens and education	Trenton	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CT 2025.3	Critical facilities backups	Trenton	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CT 2025.4	Debris removal	Trenton	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CT 2025.5	Storm shelters and safe rooms	Trenton	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
GSD 2025.2	Storm shelters and safe rooms	Grundy Co. R-V	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
GSD 2025.3	Generators	Grundy Co. R-V	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
LSD 2025.2	Storm shelters and safe rooms	Laredo R-VII	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
LSD 2025.3	Generators	Laredo R-VII	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
PVSD 2025.2	Storm shelters and safe rooms	Pleasant View R-VI	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
PVSD 2025.3	Generators	Pleasant View R-VI	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
SSD 2025.2	Storm shelters and safe rooms	Spickard R-II	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
SSD 2025.3	Generators	Spickard R-II	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
TSD 2025.3	Generators	Trenton R-IX	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
NCMC 2025.2	Structure demolition program	North Central Missouri College	High	1 4 5	Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		
NCMC 2025.3	Generators	North Central Missouri College	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
Natural Systems Protection								
County 2025.4	Tree trimming/Maintenance	Grundy Co.	Medium	1	Severe thunderstorm, Severe winter weather	X	X	
County 2025.5	Flood warning systems	Grundy Co	Medium	2	Flooding	X	X	
County 2025.8	Flood reduction projects	Grundy Co	High	2	Flooding	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
County 2025.12	Debris removal	Grundy Co	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
County 2025.14	Participation in the NFIP	Grundy Co	High	2	Flooding	X	X	X
CG 2025.4	Debris removal	Galt	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CG 2025.6	Participation in the NFIP	Galt	High	2	Flooding	X	X	X
CL 2025.4	Debris removal	Laredo	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CS 2025.4	Debris removal	Spickard	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CT 2025.4	Debris removal	Trenton	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CT 2025.7	Participation in the NFIP	Trenton	High	2	Flooding	X	X	X
Planning and Regulation								
County 2025.10	Survey of flood plain areas	Grundy Co	Low	2	Flooding	X	X	X
County 2025.14	Participation in the NFIP	Grundy Co	High	2	Flooding	X	X	X
CG 2025.6	Participation in the NFIP	Galt	High	2	Flooding	X	X	X
CT 2025.7	Participation in the NFIP	Trenton	High	2	Flooding	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
Education and Outreach								
County 2025.1	Mitigation education	Grundy Co	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	X
County 2025.3	Weather Alerts, Sirens and education	Grundy Co	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
County 2025.9	Weather spotter training	Grundy Co.	High	1	Severe thunderstorm, Tornado	X	X	
CG 2025.1	Mitigation education	Galt	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	X
CG 2025.2	Weather Alerts, Sirens and education	Galt	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CL 2025.1	Mitigation education	Laredo	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CL 2025.2	Weather Alerts, Sirens and education	Laredo	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CL 2025.6	Vulnerable population identification	Laredo	High	3	Extreme Temperatures	X	X	
CS 2025.1	Mitigation education	Spickard	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	X
CS 2025.2	Weather Alerts, Sirens and education	Spickard	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CS 2025.6	Vulnerable population identification	Spickard	High	3	Extreme Temperatures	X	X	
CT 2025.1	Mitigation education	Trenton	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
CT 2025.2	Weather Alerts, Sirens and education	Trenton	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CT 2025.6	Weather spotter training	Trenton.	High	1	Severe thunderstorm, Tornado	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
GSD 2025.1	Mitigation education	Grundy Co. R-V	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
LSD 2025.1	Mitigation education	Laredo R-VII	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
PVSD 2025.1	Mitigation education	Pleasant View R-VI	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
SSD 2025.1	Mitigation education	Spickard R-II	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
TSD 2025.1	Mitigation education	Trenton R-IX	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
NCMC 2025.1	Mitigation education	North Central Missouri College	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
Emergency Services								
County 2025.6	Disaster drills and exercises	Grundy Co	High	1,2,3,4,5	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
County 2025.9	Weather spotter training	Grundy Co.	High	1	Severe thunderstorm, Tornado	X	X	
CL 2025.6	Vulnerable population identification	Laredo	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CS 2025.6	Vulnerable population identification	Spickard	High	3	Extreme Temperatures	X	X	
CT 2025.6	Weather spotter training	Trenton.	High	1	Severe thunderstorm, Tornado	X	X	

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/special districts. The documentation of each adoption is included in Appendix E, and a model resolution is included on the following page.

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

Model Resolution

(*LOCAL GOVERNING BODY/SCHOOL DISTRICT*), Missouri RESOLUTION NO. _____

A RESOLUTION OF THE (*LOCAL GOVERNING BODY /SCHOOL DISTRICT*) ADOPTING THE (*PLAN NAME*)

WHEREAS the (local governing body/school district) recognizes the threat that natural hazards pose to people and property within (local government); and

WHEREAS the (*local government/school district*) has prepared a multi-hazard mitigation plan, hereby known as (*title and date of mitigation plan*) in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and

WHEREAS (*title and date of mitigation plan*) identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in (*local government/school district*) from the impacts of future hazards and disasters; and

WHEREAS adoption by the (*local governing body/school district*) demonstrates its commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY THE (*LOCAL GOVERNMENT/SCHOOL DISTRICT*), in the State of Missouri, THAT:

Section 1. In accordance with (*local rule for adopting resolutions*), the (*local governing body/school district*) adopts the (title and date of mitigation plan). While content related to (*local government/school district*) may require revisions to meet the plan approval requirements, changes occurring after adoption will not require (*local government/school district*) to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

ADOPTED by a vote of_____in favor and__against, and__abstaining, this_____day of _____,_____.

By (Sig): _____
Print name: _____

ATTEST:
By (Sig.): _____
Print name: _____

APPROVED AS TO FORM:
By (Sig.): _____
Print name: _____

1 INTRODUCTION AND PLANNING PROCESS

1.1 PURPOSE

Hazard mitigation is defined as “any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards”. While natural hazards will continue to occur and at their worst will result in death and destruction of both property and infrastructure, this plan was undertaken to minimize the impact that these hazards will have on the people and property of Grundy County. Grundy County and the participating jurisdictions and school districts developed this multi-jurisdictional local hazard mitigation plan update to reduce future losses from inevitable hazardous events.

The jurisdictions participating in this plan are the unincorporated areas of Grundy County, the jurisdictions participating in this plan understand that adopting the plan is a prerequisite for mitigation grant eligibility and understand that failure to adopt this plan will make them ineligible for mitigation grants.

The following legislation gives FEMA authority to require these plans: Robert T Stafford Disaster and Emergency Act (Public Law 93-288) as amended by the Disaster Mitigation Act of 2000 (Public Law 106-390), The implementing regulations set forth by the Interim Final Rule published in the *Federal Register* on February 26, 2002, (44 CFR §201.6) and finalized on October 31, 2007.

The following publications from FEMA were used as guidance in the development of this hazard mitigation plan for Daviess County. FEMA’s Local Mitigation Planning Handbook, May 2023, FEMA’s Local Mitigation Plan Review Guide, October 1, 2011, and the Local Mitigation Planning Policy Guide April 19, 2023. The previous Daviess County Hazard Mitigation Plan, which was approved on 3/30/2021, was also used in the development of this update.

1.2 BACKGROUND AND SCOPE

The Grundy County Hazard Mitigation Plan is an update of a plan that was approved on May 3, 2021. Hazard Mitigation Plans must be renewed every five years and then must be adopted by the participating jurisdictions within the plan. Both the plan and the update were prepared pursuant to the requirements of the Disaster Mitigation Act of 2000. This plan once completed and adopted will result in eligibility for the Federal Emergency Management Agency (FEMA)

Hazard Mitigation Assistance Grant Programs.

The following local governments and school districts participated in both the original plan as well as the plan updates. This will allow them to adopt the plan and secure eligibility for Hazard Mitigation Grant Funding.

- Grundy County
- Galt
- Laredo
- Spickard
- Trenton
- Grundy County R-V
- Pleasantview R-VI
- Spickard R-II
- Trenton R-IX
- NCMC

Grundy County and the participating entities listed above developed a Multi-Jurisdictional Hazard Mitigation Plan that was approved by FEMA in May of 2021 (hereafter referred to as the 2021 Hazard Mitigation Plan). This current planning effort serves to update that previously approved plan.

The information that is contained in the Grundy County Hazard Mitigation Plan will be used to help guide and coordinate mitigation activities for local land use policy and decisions in the future.

1.3 PLAN ORGANIZATION

The latest (2025) updated version of the Grundy County Hazard Mitigation Plan involves review, evaluation, and amendment of the existing plan. It addresses the same natural hazards that were addressed in the original plan, with changes outlined in the table below (See Table 1.1 below). Following is a breakdown of the organization of the 2025 Grundy County Hazard Mitigation Plan Update.

- Chapter 1: Introduction and Planning Process
  This section of the plan provides an introduction to the multi-jurisdictional planning process and a detailed look at the participation of the local jurisdictions and school districts. It also detailed the purpose of local hazard mitigation planning and outlined the requirements enacted by the Federal Emergency Management Agency.
- Chapter 2: Planning Area Profile and Capabilities
  This section of the plan provides general background information and demographic statistics for Grundy County and its various jurisdictions as well as the disaster response and recovery capabilities found in the county. This section identifies key personnel, organizational leaders, and outlines existing emergency plans. Additionally, it provides a brief assessment of each municipality's readiness regarding hazard mitigation.
- Chapter 3: Risk Assessment
  This section of the plan, the risk assessment, identifies and explores the types of natural hazards that pose a risk to the county, and the likelihood that each hazard will occur. It provides a profile of identified hazards and explains the impact to the County and the various jurisdictions should such hazards occur.
- Chapter 4: Mitigation Strategy

This section of the plan presents the multi-jurisdiction mitigation strategies in response to the risk assessment. This chapter outlines the overall goals to reduce a disaster's impact, specific objectives toward achieving those goals, and implementation plans for the county to complete.

- Chapter 5: Plan Implementation and Maintenance
  The final chapter outlines the Hazard Mitigation Plan maintenance procedures.
- Appendix A: Sources
- Appendix B: Planning Documentation & Invitations
- Appendix C: Questionnaires, Surveys, Public Comment, and STAPLEE Worksheets
- Appendix D: List of Critical Facilities (Redacted from Public View)
- Appendix E: Resolutions of Adoptions

The following table identifies significant changes in the 2026 update of the Hazard Mitigation Plan for Grundy County.

Table 1.1. Changes Made in Plan Update

Plan Section	Summary of Updates
Executive Summary	• Added Mitigation Action Matrix Table • Revised the executive summary and resolution to match order of template • Updated goals from previous plan to better reflect hazards mitigated by current proposed actions
Chapter 1 - Introduction and Planning Process	• Updated members of the Mitigation Planning Committee (MPC) and participating jurisdictions formally adopted the MPC.
Chapter 2 - Planning Area Profile and Capabilities	• Changes include updating maps, identifying most current state plan, and updating demographic data using 2020 Census and American Community Survey Information • Inviting neighboring jurisdictions to participate. • Updated charts, graphs, tables, maps, and other information where necessary
Chapter 3 - Risk Assessment	• Combined extreme heat and extreme cold into one hazard: extreme temperatures. • Updated section with current Census information, agricultural summary, and confirming that current data is correct. • Incorporated information from the current 2023 Missouri State Hazard Mitigation Plan • Previous events updated for each hazard
Chapter 4 - Mitigation Strategy	• 2021 mitigation goals and strategies reviewed by planning committee and updated • The mitigation category of each action was added to the action worksheets

Chapter 5 - Plan Implementation and Maintenance	• Updated the MPC meeting for evaluating and updating the plan to annually

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.

Grundy County, Missouri contracted with the Green Hills Regional Planning Commission (GHRPC) to facilitate and coordinate the update of the multi-jurisdictional, local hazard mitigation plan. In fulfillment of the role, GHRPC:

- Assisted in establishing a Mitigation Planning Committee (MPC) as defined by the Disaster Mitigation Act (DMA),
- Assessed whether there was adherence to the process set forth in the previously approved plan for maintenance (example, did the MPC meet regularly as specified in the previously approved plan), and explain how adherence occurred, and/or why it did not occur,
- Ensured the updated plan meets the DMA requirements as established by federal regulations and follows the most current planning guidance of the Federal Emergency Management Agency (FEMA),
- Facilitated the entire plan development process,
- Identified the data that MPC participants could provide and conduct the research and documentation necessary to augment that data,
- Assisted in soliciting public input,
- Produced the draft and final plan update in a FEMA-approvable document and coordinate the Missouri State Emergency Management Agency (SEMA) and (FEMA) plan reviews.

This plan was developed after the release of *FEMA's Local Mitigation Planning Policy Guide, Effective 2025*.

The following table (**Table 1.2)** shows the MPC members and the entities they represent, along with their titles. Each of the following representatives participated directly with the development of the plan. They attended the meetings and actively participated in the development of the plan. The MPC was comprised of representatives from each jurisdiction on a voluntary basis rather than as an official act by any of the jurisdictions. Each member of the MPC was actively involved in the meetings and the decisions for the Hazard Mitigation Plan. These members were either present at the public meetings or met individually with the GHRPC staff member in charge of developing the plan. All jurisdictions met their responsibilities for the planning process by:

- Attending at least one meeting
- Completing the Data Questionnaire to the best of their ability
- Reviewing and returning the Action Worksheets
- Returning the Adoption Resolution (Found in Appendix E)

Table 1.2. Jurisdictional Representatives of Gundy County Mitigation Planning Committee

Name	Title	Department	Jurisdiction
Phillip Ray	Presiding Commissioner	County Commission	Grundy County
Bryan Johnson	County Commission	County Commission	Grundy County
Mercedes Scobee	City Clerk	Administration	City of Galt/ City of Laredo
Frank Hayden	Wright Memorial Hospital	Administration	City of Trenton
Ryan Clark	Nestle	n/a	City of Trenton
Matthew D. Walker	Ambulance Director	Emergency Services	City of Trenton
Lenny Klaver	NCMC President	Administration	NCMC
Erica Eakes	Superintendent	Administration	Spickard R-II School District
Kelli Hillerman	Grundy County Health Department	Administration	Grundy County Health Dept.
Anita Ewing	City Clerk	Administration	City of Trenton
Brandon Gibler	Trenton Fire Department	Fire District	City of Trenton
Jacky Soptic	Mayor	City Government	City of Trenton
Courtney Campbell	County Clerk	County Commission	Grundy County
Kevin Ireland	County Commissioner	County Commission	Grundy County
Cindy Edwards	Alderman	City Board	City of Spickard
Alan Tharp	Mayor	City Government	City of Spickard
Daniel Chapman	Alderman	City Board	City of Spickard
Maggie George	Alderman	City Board	City of Spickard
Rebecca King	City Clerk	City Government	City of Spickard

Table 1.3. MPC Capability with Six Mitigation Categories

Community Department/Office	Preventive Measures	Structure and Infrastructure Projects		Natural Resource Protection	Public Information	Emergency Services
		Property Protection	Structural Flood Control Projects			
Grundy County Commission	✓	✓	✓	✓		
Grundy County EMD	✓	✓			✓	✓
City of Galt		✓	✓	✓		
City of Laredo		✓	✓	✓		
City of Trenton	✓	✓	✓	✓		
City of Spickard				✓	✓	
Trenton Fire Department	✓	✓				✓
Grundy County Health Department	✓				✓	✓
Spickard-II School District	✓	✓			✓	
NCMC	✓	✓			✓	
Wright Memorial Hospital	✓				✓	✓

1.4.1 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.

The Disaster Mitigation Act requires that each jurisdiction participate in the planning process and officially adopt the plan. Minimum criteria for participation were determined at the planning meeting that each jurisdiction must attend one meeting to be considered a "participant." These plan participation requirements include:

- Designation of a representative to serve on the MPC;
- Participation in at least one meeting, including planning, MPC meetings, by either direct participation or authorized representation, or one-on-one with planning staff;
- Provision of sufficient information to support plan development by completion and return of Data Collection Questionnaires and validating/correcting critical facility inventories;
- Provision of progress reports on mitigation actions from the previously approved plan and identified additional mitigation actions for the plan;
- Eliminate from further consideration those actions from the previously approved plan that were not implemented because they were impractical, inappropriate, not cost-effective, or were otherwise not feasible;
- Review and comment on plan drafts;
- Actively solicit input from the public, local officials, and other interested parties about the planning process and provide an opportunity for them to comment on the plan;
- Provide documentation to show time donated to the planning effort; and
- Formally adopt the mitigation plan.

Data for the plan was gathered in part through a series of meetings held within Grundy County. The planning process for the Grundy County Hazard Mitigation Plan began during the summer of 2025, with discussions involving elected officials, community members, and other interested parties, and the planning committee was formed. (See Table 1.2 and Table 1.4).

Participants that were involved were asked to identify critical infrastructure, rank the likelihood of disaster occurrence, perform a susceptibility analysis based on these factors, and determine appropriate mitigation strategies for each individual disaster. This data was recorded and assimilated into this plan by GHRPC staff. The MPC membership showed a range of knowledge and abilities to address the mitigation categories shown in Table 1.3.

In accordance with Missouri's "sunshine law" (RSMo 610.010, 610.020, 610.023, and 610.024), the public was notified each time the plan was presented for review. Input from each public official (city and county) was solicited by email or mailing an explanatory letter with notice of the posted draft on the Green Hills Planning Commission's website. These were disbursed on a schedule that allowed officials sufficient time to review the draft prior to the next public County Commission or City Council meeting. Participation was solicited by letter or email from each of the following jurisdictions:

- Grundy County
- Village of Brimson
- City of Galt
- City of Laredo

- City of Spickard
- City of Tindall
- City of Trenton
- Grundy County R-V
- Laredo R-VII
- Pleasantview R-VI
- Spickard R-II
- Trenton R-IX
- NCMC

Finally, city and county officials were encouraged to invite others from any county, state, or federal agency as well as local businesses that had interest in contributing to the planning process. Input from the public was solicited through reminders at public gatherings, press releases, letters to various businesses and community organizations, and a Public Survey. Surrounding and participating jurisdictions were invited to review the county's plan draft via the GHRPC website. The plan draft was available for review for 30 days.

Table 1.5 below shows the representation of each participating jurisdiction at the planning meetings, the provision of responses to the Data Collection Questionnaire, and update or development of mitigation actions. Sign-in sheets and other documentation for participation are in Appendix B.

Table 1.4. Jurisdictional Participation in Planning Process

Jurisdiction	Kick-off Meeting	Meeting #2	Meeting #3	Data Collection Questionnaire Response	Update/Develop Mitigation Actions
Grundy County	X	X		X	X
City of Galt	X			X	X
City of Laredo	X			X	X
City of Spickard	Phone Call & Special Meeting			X	X
City of Trenton R-IX		X	X	X	X
Grundy County R-V	Phone Call			X	X
Pleasantview R-VI	Phone Call			X	X
Spickard R-II		X	X	X	X
NCMC		X		X	X
Grundy County Health Dept.	X	X	X	X	X

1.4.2 The Planning Steps

The sources utilized for the plan and development process used the following: FEMA's Local Mitigation Planning Handbook (May 2023), Local Mitigation Plan Review Guide (October 1, 2011), Local Mitigation Planning Policy Guide (April 19, 2023), and Integrating Hazard Mitigation Into Local Planning: Case Studies and Tools for Community Officials (March 1, 2013). The United States Census Bureau, the United States Geological Society, the United States Army Corps of Engineers, the Missouri Department of Natural Resources, the Missouri Department of Conservation, the Center for Agriculture, Resources and Environmental Systems at the University of Missouri-Columbia, Grundy County HAZUS data, the National Climatic Data Center, and the Missouri State Hazard Mitigation Plan provided additional information regarding severe thunderstorm and winter

weather, wildfire, tornado, earthquake, and flood hazards effecting Grundy County. Other sources utilized for this plan are included in Section 3.

The development of this plan update followed the 10-step planning process adapted from FEMA's Community Rating System (CRS) and Flood Mitigation Assistance programs, so to ensure funding eligibility requirements for the Hazard Mitigation Grant Program, Building Resilient Infrastructure and Communities, Community Rating System, and Flood Mitigation Assistance Program.

Table 1.5. County Mitigation Plan Update Process

Community Rating System (CRS) Planning Steps (Activity 510)	Local Mitigation Planning Handbook (2023) 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)(1)
Step 3. Coordinate	Task 5: Review Community Capabilities 44 CFR 201.6(b)(2) & (3)
Step 4. Assess the hazard	Task 4: 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)(ii); and 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, and 5)

- Both initial "Meeting #1" in Grundy County occurred in the City of Trenton as follows:
  - City of Trenton: August 26th, 2025, in the Annex building at the Health Department from 1:30-3:00pm.
  - The first virtual meeting for Grundy County occurred over zoom. Grundy County HMP Meeting (Virtual) from 10:00am-12:00pm August 27th, 2025.
- Both the in-person and the virtual meeting #1 covered the basics of hazard mitigation planning, which needs updates every 5 years, and the requirements for HMGP Grants. The planning process was outlined, detailing 3 in-person meetings and 3 virtual meetings, with the first meeting focused on outreach and hazard identification. The requirement for the jurisdictions to participate is to fill out the Jurisdictional Questionnaire, attend at least one meeting, offer suggestions, develop actions, and

adopt the plan. GHRPC had sent out letters, emails, and made phone calls to potential stakeholders, encouraging those who fill out the survey to share with the public. Each attendee was emailed a detailed copy of “Hazard Identification for Grundy County”. The meeting ended with an open floor for any other existing questions. (See Appendix B for planning process documentation)

- Jurisdictional Questionnaires and links to the public opinion survey were distributed to jurisdictions participating in the planning process.
- Meeting #2 occurred as follows:
    - In person meeting in the Annex building at the Health Department (City of Trenton) on September 10th, 2025, from 1:30-3:00pm.
    - Virtual meeting via Zoom was held at 10:00-12:00pm on September 11, 2025.
- Both the in-person and virtual meeting #2 addressed hazard mitigation and risk assessment in Grundy County. Attendees from various organizations discussed prevention, protection, mitigation, response, and recovery measures. They ranked and charted regional hazards and worked on identifying vulnerable assets.
- Meeting #3 occurred as follows:
    - In person meeting at the Annex building at the Health Department (City of Trenton) on October 7, 2025, from 1:30-2:30pm.
    - Virtual Meeting via Zoom on October 8, 2025, from 10-10:15am.
- The focus of the Meeting #3, both in-person and virtual, was action prioritization. Attendees were given STAPLEE worksheets for each action in their jurisdiction. Once attendees completed STAPLEE worksheets for the actions, they were encouraged to discuss hazards that had not been mitigated, and new actions were discussed if desired.
- The Data Collection Questionnaires, STAPLEE worksheets, Survey, and Survey Results can be found in Appendix C.
- There were no comments made during this period of planning or after plan was published on GHRPC’s website on January 1, 2026, and until submission to SEMA on February 3, 2026.
- During the planning process, in addition to the public meetings, there were also numerous phone calls, emails, and in person conversations with jurisdictions to help with plan requirements, to answer questions, to encourage participation, and to confirm meeting times.
- In addition to scheduled meetings, informal communication regarding the planning process was conducted in person, by phone calls, and by email.
- There were 2 special meetings in Grundy County.
    - October 28, 2025: GHRPC staff meet with the county commissioners and county clerk to discuss specific actions for the plan update at their request.
    - January 12, 2026: GHRPC staff meet with the City of Spickard at a council meeting to discuss the plan and prioritize actions. At this meeting the City of Spickard adopted the plan. (Plan adoption can be found in Appendix E).
- All meeting documentation can be found in Appendix B.

Table 1.6. Schedule of MPC Meetings

Meeting	Topic	Date
Planning Meeting #1/ Kick-off Meeting	Outreach & Hazard Identification	August 26, 2025 August 27, 2025

Planning Meeting #2	Risk Assessment & Mitigation Strategies	Sept. 10, 2025 & Sept. 11, 2025
Planning Meeting #3	Action Prioritization, Adopting the Plan, & Plan Maintenance	Oct. 7, 2025 & Oct. 8, 2025

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.

During each of the planning meetings attendees were provided with time to comment on plan development.

- Meeting #1 provided attendees with the opportunity to provide information about hazards, previous events, and considerations of vulnerabilities to natural hazards.
- Meeting #2 specifically addressed the vulnerabilities of the participating jurisdictions and discussion about addressing said vulnerabilities. Additionally, meeting #2 also addressed which hazards would pose the most risk in terms of frequency, past damage, and specific risks posed to participating jurisdictions.
- Finally, meeting #3 provided opportunity for jurisdictions to discuss hazards, potential projects, and create new actions with the intent of mitigating future damages.

A Survey Monkey public survey was created to solicit public comments. The link and the QR code were made available to all jurisdictions, published on social media, and published on the flyers that were sent to all jurisdictions.

The draft of the Grundy County Hazard Mitigation Plan was published on Green Hills Regional Planning Commission's website on January 1, 2026. Contact information was provided to any individual that wanted to make a comment on the plan and the ability to make a comment was enabled on the GHRPC website.

All participating jurisdictions were made aware that the plan was available for public comment, and were provided with, at minimum, 30 days to review and/or comment on the plan. The availability of the plan for public comment or review was advertised on local social media pages and a press release was sent to area media outlets. All participants were also advised in person or via email of the review period.

The public survey received 16 responses. The data collected can be found in Appendix C. The plan was available for public comment after being published on GHRPC website for 30 days. Notice of the plan was published on community and GHRPC Facebook pages and a press release was issued in local outlets. (See Appendix B for documentation) There were no comments received on the plan.

Step 3: Coordinate with Other Departments and Agencies and Incorporate Existing Information
(Handbook Task 2)

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.

In the interest of involving stakeholders throughout the planning area, the following organizations and businesses were invited to participate in the hazard mitigation planning process for Grundy County.

In addition to the invitations sent out to various stakeholders throughout the planning area, meeting notices were provided to all jurisdictions as well as flyers and social media posts that were used to promote the meetings. The information was also made available on GHRPC's website and Facebook page. A copy of the address labels, invitations, flyers, and social media posts can be found in Appendix B of the plan.

Additionally, the neighboring communities, located outside of the county, but with populations and structures located within Grundy County were also invited to attend. (Please see Appendix B for a complete list of people and organizations invited to attend, envelop scans, and social media posts from GHRPC's Facebook account).

There are a few organizations that are multijurisdictional in nature whose interests relate to hazard mitigation planning in Grundy County. These groups were included in the invitation list for the meetings. Ideally, national organizations like the Red Cross should come to the table for this exercise, but Grundy County is too small to have a local chapter. Additionally, in small communities, local officials wear many hats out of necessity. A volunteer firefighter might also be a city clerk, or an alderman may also serve on the school board.

In the interest of involving stakeholders throughout the planning area, invitations, flyers, and the QR Code for the public survey were sent to the following organizations and businesses inviting them to participate in the hazard mitigation planning process for Grundy County, by either attending the meetings and/or completing the survey.

The following is a list of all potential stakeholders that were invited to participate in the planning process:

- Neighboring Communities:
    - City of Jamesport
    - City of Gilman City
- Local and regional agencies involved in hazard mitigation activities:
    - E.L.B Rural Fire Department
    - Laredo Fire Protection District
    - Galt Fire Protection District
    - Grundy County Rural Fire District
    - Spickard Fire Protection District
    - Trenton Fire Department
    - Jamesport Rural Fire Protection District

    - Grundy County Sheriff's Office
    - Wright Memorial Physician's Group
    - Mosaic Life Care
    - Saint Luke's Green Hills Medical Clinic
    - Wright Memorial Hospital
    - Grundy County Emergency Manager
- Agencies with the authority to regulate development:
    - City of Galt
    - City of Laredo
    - City of Spickard
    - Village of Tindall
    - City of Trenton
- Businesses & Academia
    - Grundy County R-V
    - Laredo R-VII
    - Pleasant View R-VI
    - Spickard R-II
    - Trenton R-IX
    - NCMC
    - Nestle
    - Modine Manufacturing
    - Mid-State Services
    - MFA Agri Services
    - Hy-Vee
    - Pettijohn Ford
    - MTO
    - Dollar General
    - Cobblestone Inn & Suites
- Other private and non-profit interests, including undeserved/vulnerable populations:
    - Sunnyview Nursing Home & Apt
    - Eastview Manor Care Center
    - Community Food Pantry-Grundy
    - Grundy County senior Center
    - Serve Link Home Care
    - Edinburg Baptist Church
    - Wesley United Methodist
    - Hodge Presbyterian Church
    - First Christian Church
    - First Assembly of God Church
    - St. Philip's Episcopal
    - Amazing Grace Baptist Church
    - Rural Dale Baptist Church
    - St. Joseph Parish
    - Seventh-day Adventist Church

In addition to the invitations sent out to various stakeholders throughout the planning area, meeting notices were provided to all jurisdictions as well as flyers and social media posts that were used to promote the meetings. This information was also made available on GHRPCs website and Facebook page. A copy of the address labels, invitations, flyers, and social media posts can be found in Appendix B of the plan.

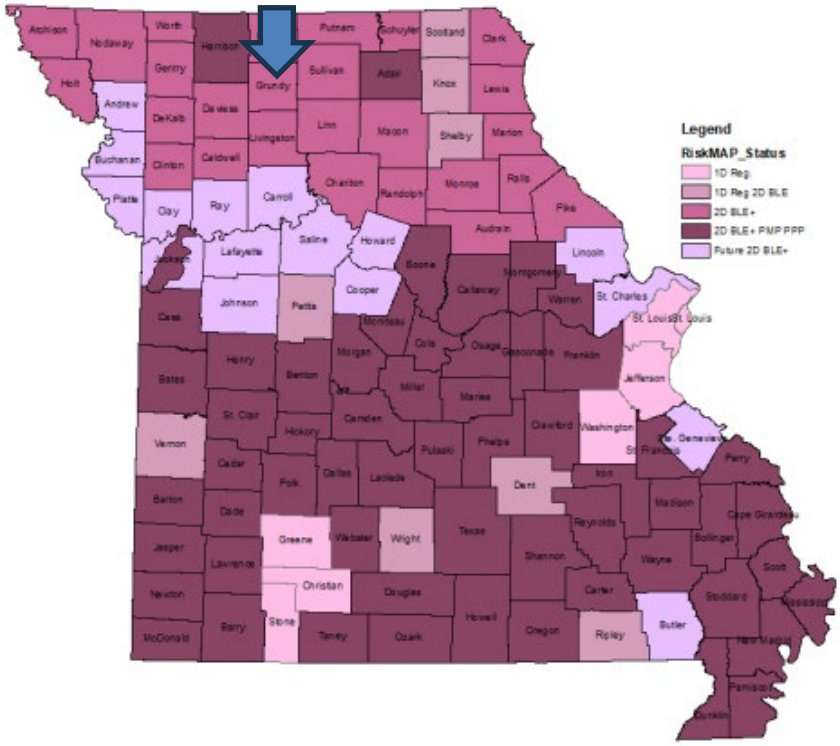
A Survey Monkey public survey was created to solicit public comments. The link and the QR code were made available to all jurisdictions, published on social media, and published on the flyers that were sent to all jurisdictions.

The draft of the Grundy County Hazard Mitigation Plan was published on Green Hills Regional Planning Commission's website on January 1, 2026. Contact information was provided to any individual that wanted to make a comment on the plan and the ability to make a comment was enabled on the GHRPC website. There were no public comments received on the plan.

Coordination with FEMA Risk MAP Project

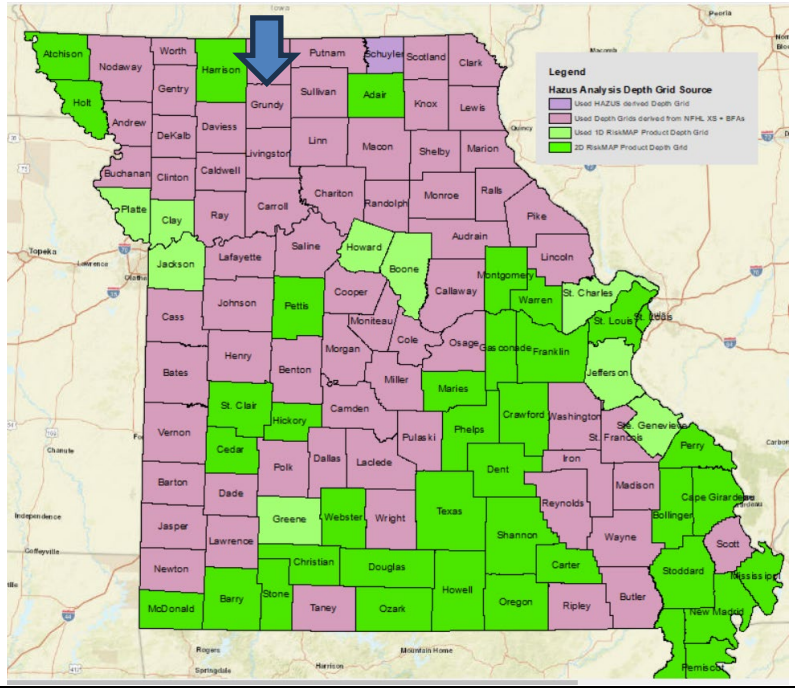
- The most current RISK Map was downloaded from FEMA's website and was available at the 2nd planning meeting.
- The following figure (Figure 1.1) was taken from the Missouri State Hazard Mitigation Plan, 2023.

Figure 1.1. RiskMAP Study Status Map



The following figure indicates which analysis was performed per county. According to the Missouri Hazard Mitigation Plan 2023, the analysis of Grundy County was conducted as follows. For counties with 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.

Figure 1.2. RiskMAP, DFIRM, and HAZUS Based Depth Grids Used in HAZUS Analysis



Source: the Missouri Hazard Mitigation Plan 2023

Integration of Other Data, Reports, Studies, and Plans

- In order to complete the Grundy County Hazard Mitigation Plan the following sources were implemented: the 2023 Missouri State Hazard Mitigation Plan, Hazard Mitigation Plans from areas near the planning area, the University of Missouri Extension Reports, Flood Insurance Studies (FIS), Flood Insurance Rate Maps (FIRMs), State Department of Natural Resources (DNR) dam information, the National Inventory of Dams (NID), dam inspection reports, state fire reports, Wildland/Urban Interface and Intermix areas from the SILVIS Lab - Department of Forest Ecology and Management - University of Wisconsin, local comprehensive plans, economic development plans, capital improvement plans, US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics, and local budgets.
- Relevant data from the above-mentioned sources was included in the plan where applicable. These sources were used to identify risks, previous losses, vulnerabilities, and provide additional information in the "risk assessment" for potential hazards. (See Chapter 3).

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

- To adequately assess the issues, resources available on the Internet, existing reports and plans, information provided by jurisdictions on the Data Questionnaires, and HAZUS Data was utilized to compile information about each identified hazard. Each of the hazards was revised to include the most recent location data, previous occurrences, probability of future occurrence, and magnitude/severity. Losses were estimated using a combination of resources, including HAZUS data and information available from local resources. The data collection questionnaires, the 2023 Missouri State Hazard Mitigation Plan, and the 2021 Grundy County Hazard Mitigation Plan were also utilized to assess the hazards.
- Meeting #1 discussed the hazards present in each jurisdiction. The MPC determined that the hazards included in the Grundy County Hazard Mitigation Plan would be natural hazards only.
- During Meeting #3 the MPC was asked to review the completed data collection questionnaires, the survey results, and additional information provided by plan participants. Any additional information provided through the questionnaires was incorporated into the plan.

Step 5: Assess the Problem: Identify Assets and Estimate Losses
(Handbook Task 4)

- During Meeting #2 the participants and GHRPC staff rated hazards on frequency and degree of impact. This risk assessment was used to determine which hazards had the most impact in terms of financial losses, frequency of occurrences, injuries, and/or deaths related to the hazards.
- Also, during Meeting #2 each jurisdiction was asked to provide information about vulnerable assets to said jurisdiction. Included were people, structures, economic assets, natural, historic, and cultural resources, critical facilities and infrastructure, community activities, and other assets.
- In cases where vulnerability estimates were unavailable, data from the 2023 Missouri State Hazard Mitigation Plan was utilized as the best and most recent data available SEMA was also able to share some preliminary data from the 2023 State Plan update.
- The following information was used to determine the assets and estimate losses in Grundy County: census, GIS data, HAZUS, and the Data Collection Questionnaire.
- Losses were estimated using the Missouri State Hazard Mitigation Plan and available HAZUS data for Grundy County.

Step 6: Set Goals
(Handbook Task 6)

At the 2nd planning meeting the MPC reviewed the goals of the previously approved plan, they made the determination to update the goals to better address the specific hazards to the region and make implementation and planning more efficient. The goals can be found in Section 4 of the Grundy County Hazard Mitigation Plan. They were listed as follows:

- Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorms/high winds, hail, and lightning.
- Goal 2: Minimize property damage due to flooding, levee failure, and dam failure.
- Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures, and wildfire.
- Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather.

- Goal 5: Minimize injuries and property damage due to seismic and/or geological events.

Step 7: Review Possible Mitigation Actions and Activities
(Handbook Task 6)

At the #3 Meeting the MPC reviewed the mitigation strategy from the previously approved plan and the updated risk assessment and proposed new actions, if any.

- Each jurisdiction was provided with a Previous Actions Worksheet. This allowed them to report on progress made on previous actions, and determine which actions would be retained, modified, or deleted. MPC members were encouraged to continue forward only those actions that substantively addressed long-term risks identified in the risk assessment.
- Each jurisdiction was made aware that they were required to have at least one mitigation action for each identified hazard.
- The FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013)* was made available to the planning committee. It was suggested that this would be a valuable resource in guiding the planning activities to mitigate hazards in the planning area.
- Participants were encouraged to focus on long-term mitigation solutions and consideration was given to the potential cost of each project in relation to the anticipated future cost savings.
- The Grundy County Hazard Mitigation Planning Committee utilized the STAPLEE method for evaluating the priority and effectiveness of each action. The completed STAPLEE worksheets can be found in Appendix C.

Step 8: Draft an Action Plan
(Handbook Task 6)

The action worksheets, including the plan for implementation, submitted by each jurisdiction for the updated Mitigation Strategy are included in Chapter 4.

Step 9: Adopt the Plan
(Handbook Task 8)

Each jurisdiction was made aware that they must adopt the plan prior to submission to SEMA. Each jurisdiction will document the adoption of the plan. This documentation can be found in Appendix E.

Step 10: Implement, Evaluate, and Revise the Plan
(Handbook Tasks 7 & 9)

At the 3rd planning meeting, where actions were scored and decided upon, the MPC along with the GHRPC Planner agreed to meet at least annually to determine if actions were ongoing or completed. It was determined that the Hazard Mitigation Committee would utilize the existing emergency committee meetings once annually to discuss any needed updates, changes, or progress on the plan's actions. It was determined that at these meetings, any amendments that were needed in the plan would be discussed and undertaken if necessary. There is more detailed information about the strategy for plan maintenance in Chapter 5 of the Grundy County Hazard Mitigation Plan.

2 PLANNING AREA PROFILE AND CAPABILITIES

2.1 GRUNDY COUNTY PLANNING AREA PROFILE

According to google, Grundy County, Missouri is a county in the northwestern part of the state. Its county seat is Trenton, and the county was formed in 1841 from part of Livingston County. As of the 2020 census, the population was 9,808. The county is named after Felix Grundy, a Tennessee senator and United States Attorney General.
Grundy County is classified as a third-class county with a township form of government.

Figure 2.1. Map of Grundy County

Figure 2.2. Map of Missouri with Grundy County Highlighted

2.1.1 Geography, Geology and Topography

Grundy County, Missouri, is situated in the northwestern part of the state. The county spans a total area of 438 square miles (1,130 km²), with 435 square miles (1,130 km²) being land and 2.8 square miles (7.3 km²) being water.

Grundy County features a landscape characterized by rolling hills, valleys, and plains.

The Thompson River is a significant feature, forming part of the county's western boundary and contributing to its drainage system, alongside several other streams and rivers.

The Geology of Grundy County, Missouri is composed of Alluvial deposits found close to the surface, typically less than 50-60 feet thick. The region also contains surficial deposits of glacial drift.

Important aquifers in northern Missouri, including Grundy County, consist of alluvial valley deposits, surficial glacial drift deposits, the Mississippian aquifer, and the Cambrian-Ordovician aquifer. Groundwater in the rock aquifers is under hydrostatic pressure.

Limestone is prevalent throughout Missouri, both exposed at the surface and buried. It is a major component of the state's geology due to historical cycles of ocean rise and fall that deposited sediment.

The planning area is mostly comprised of rural land that is used for agriculture.

2.1.2 Climate

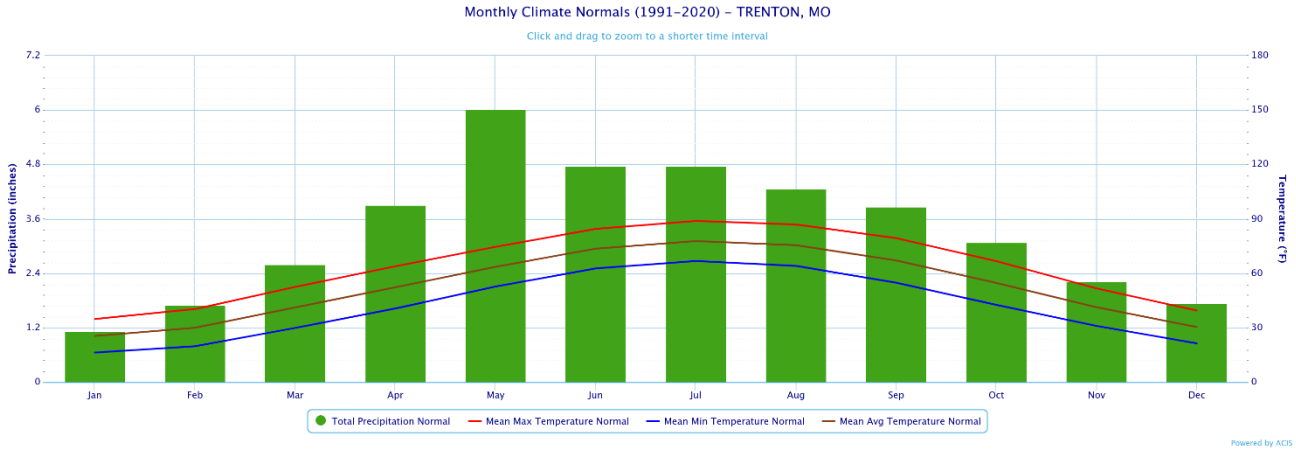
Grundy County, Missouri, experiences a humid continental climate characterized by distinct seasons. Consisting of hot Summes, with July typically being the hottest month, averaging a high of 89°F and a low of 67°F. and Cold Winters, with January being the coldest month, averaging a high of 35°F and a low of 16°F.

Precipitation is seasonal, with the spring months (March through May) being the wettest.

Annual average precipitation varies across Missouri, with the northern part of the state generally receiving more snowfall. Grundy County receives an average of around 20 inches of snow annually, Rainfall averages around 35 inches per year. Thunderstorms are common, occurring 40-50 days per year. Some thunderstorms can be severe, producing large hail and damaging winds.

Winds are generally light, with average speeds of 5-10 mph, but is often higher in the Spring and Fall months. Sunshine: The area experiences an average of 210 days of sunshine annually. Note: The information above provides a general climate summary for Grundy County. Local variations in weather patterns may occur depending on specific location and time of year

Figure 2.3 Climate chart of Grundy County



Source: https://xmacis.rcc-acis.org/ -- NOAA Data – June 2025

Table 2.1. Climate table for Trenton – Grundy County

Month	Total Precipitation Normal (inches)	Mean Max Temperature Normal (°F)	Mean Min Temperature Normal (°F)	Mean Avg Temperature Normal (°F)
January	1.13	34.8	16.3	25.5
February	1.70	40.3	19.8	30.0
March	2.60	52.5	29.9	41.2
April	3.90	63.9	40.6	52.3
May	6.02	74.6	52.7	63.6
June	4.76	84.5	62.7	73.6
July	4.77	88.9	66.8	77.8
August	4.27	86.9	64.1	75.5
September	3.88	79.4	54.8	67.1
October	3.08	66.7	42.6	54.7
November	2.22	51.7	31.0	41.3
December	1.74	39.5	21.4	30.4
Annual	40.07	63.6	41.9	52.8

Source: https://xmacis.rcc-acis.org/ -- NOAA Data – June 2025

2.1.3 Population/Demographics

Grundy County, Missouri, has a relatively small population, with the latest estimates indicating around 9,822 residents as of 2023. While the county experienced a slight decline in population between 2022 and 2023, its demographic makeup shows a strong predominance of White (Non-Hispanic) individuals, accounting for 92.6% of the population. Other significant ethnic groups include those identifying as Two or More Races. The county's population has generally seen a decrease over the past decade, with a 4.1% decline between 2010 and 2022. However, some demographic shifts are evident, such as a slight increase in racial and ethnic diversity since 2010, driven by growth in the Hispanic/Latino population. The median age in 2020 was 41.6 years, indicating a slightly older population compared to the national average, with the 65 and older age group being the fastest growing between 2010 and 2022.

Table 2.2. Grundy County Population 2010-2020 by Jurisdiction

Jurisdiction	2010 Population	2020 Population	2023 Annual Population Estimate or ACS Population	# Change (2010-2023)	% Change (2010-2023)
Grundy County	10,261	9,808	9,822	-439	4.3%
Grundy County Unincorporated	3,478	3,607	3,678	200	5.7%
City of Galt	253	168	168	-85	33.6%
City of Laredo	198	156	97	-101	51.0%
City of Spickard	254	222	268	-14	5.6%
Village of Tindall	77	46	69	-8	10.3%
City of Trenton	6,001	5,609	5,542	-459	7.6%

Source: U.S. Bureau of the Census, Decennial Census, annual population estimates/ 5-Year American Community Survey 2023;
*population includes the portions of these cities in adjacent counties

Table 2.3. Population of Grundy County under 5 and Over 65

Jurisdiction	Population Under 5	% Population Under 5	Population 65 and over	% Population 65 and over
Grundy County	692	7.1%	2191	22.3%
City of Galt	11	6.5%	48	28.6%
City of Laredo	12	7.7%	30	19.2%
City of Spickard	12	5.4%	45	20.3%
Village of Tindall	2	4.3%	16	34.8%
City of Trenton	352	6.3%	1301	23.2%

Source: U.S. Census Bureau, Profile of General Population and Housing Characteristics (DP1)

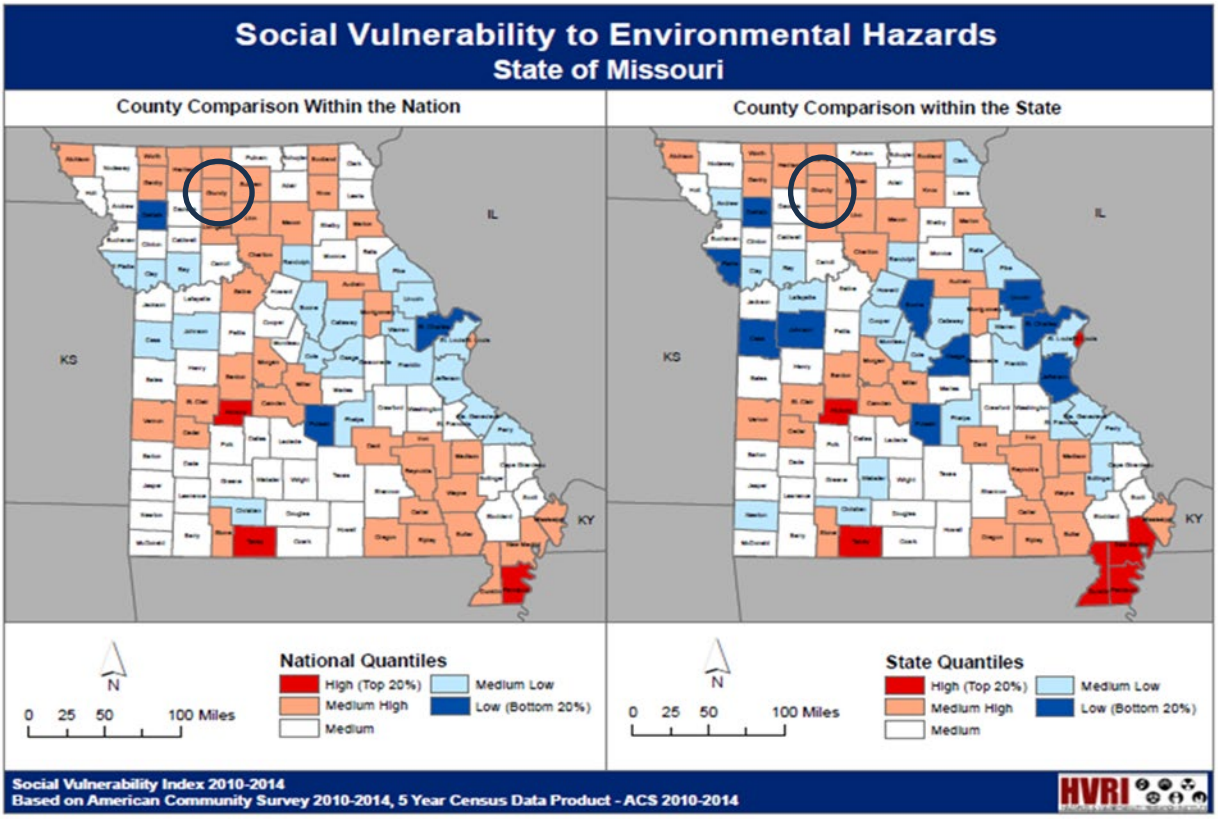
The University of South Carolina developed an index to evaluate and rank the ability to respond to, cope with, recover from, and adapt to disasters. The index synthesizes 29 socioeconomic variables which research literature suggests contribute to reduction in a community's ability to prepare for, respond to, and recover from hazards. SoVI ® data sources include primarily those from the United States Census Bureau.

To visually compare the SoVI® scores at a state and national level, they are mapped using quantiles. Scores in the top 20% of the United States are more vulnerable counties (red) and scores

in the bottom 20% of the United States indicate the least vulnerable counties (blue). A low SoVI score number means that the county is more resilient to hazard events, and a high SoVI score number means the county is less resilient. Grundy County has a medium SoVI score.

Figure 2.4 below shows the SoVI scores for Grundy County from 2019 at the state and level. Grundy County has a medium high SoVI score of as compared to the other counties in the state, and with other counties in the Nation.

Figure 2.4 Social Vulnerability to Environmental Hazards, State of Missouri



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

Table 2.4. Unemployment, Poverty, Education, and Language Percentage Demographics, Grundy County, Missouri

Jurisdiction	Total in Labor Force	Percent of Population Unemployed	Percent of Families Below the Poverty Level	Percentage of Population (High School graduate)	Percentage of Population (Bachelor's degree or higher)	Percentage of population with spoken language other than English
Grundy County	4,105	1.5%	16.8%	38.0%	10.6%	5.2%
City of Galt	57	1.4%	28.6%	60.5%	6.2%	0.0%
City of Laredo	47	2.2%	30.9%	53.9%	5.3%	3.1%
City of Spickard	88	1.3%	28.0%	42.5%	1.4%	1.6%
Village of Tindall	38	0.0%	30.4%	23.5%	0.0%	0.0%
City of Trenton	2,296	1.7%	16.6%	38.1%	12.0%	2.5%
State of Missouri	3,195,524	2.2%	12.0%	29.4%	20.2%	7.0%
Nationwide	173,038,795	2.7%	12.5%	25.9%	21.8%	22.5%

Source: U.S. Census, 2023 American Community Survey, 5-year Estimates.

2.1.4 History

Grundy County, Missouri, was established in 1841 and named after Felix Grundy, a US Attorney General. The area's recorded history dates back to the early 1800s, with the first white settlers arriving in the 1830s, leading to the formation of "Moore's Settlement". Trenton became the county seat in 1857. Mining played a significant role in the county's economy from 1873 to 1943. The current courthouse, built in 1903, stands as a testament to the county's continued growth. Today, Grundy County is a third-class county with a township form of government.

Several notable events shaped Grundy County, Missouri's history. The arrival of the first white settlers in 1833, including General W.P. Thompson, marked the beginning of recorded settlement. In 1836, the county experienced the "Heatherly War," a false alarm about Indian attacks instigated by the Heatherly family to conceal their own criminal activities. The founding of Trenton as the county seat in 1857 was a significant step in the area's development. Mining, particularly coal, was a crucial industry from 1873 to 1943, playing a vital role in the local economy. The Diamond Mine Disaster in 1883 highlighted the dangers associated with mining, where 80 men and boys drowned after a mine flooded. These events showcase Grundy County's evolution from a frontier settlement to a place with important industrial activity and notable historical occurrences.

The first school district in the county was organized in Trenton Township in 1840. Over the years, many other districts were formed across the county. Trenton became a focal point for education, establishing its first high school in 1865. Higher education also played a significant role, with institutions like Grand River College, founded in 1850, pioneering coeducation, and Trenton Junior College, established in 1925, evolving into today's North Central Missouri College. While the county currently has several school districts, such as Trenton R-IX and Grundy County R-V, its history reveals a legacy of valuing and developing educational opportunities for its residents.

2.1.5 Occupations

Grundy County, Missouri, has historically relied on a mix of industries to support its economy. From 1873 to 1943, mining, particularly coal extraction, was a significant occupation, aided by the presence of a railroad. However, the economy also had a strong agricultural basis, evident in the numerous farms and related businesses. In more recent times, the most common employment sectors for Grundy County residents include Manufacturing, Retail Trade, and Health Care & Social Assistance, reflecting a shift towards more diverse industries. These occupations have played a vital role in the county's development and continue to shape its economy.

As of recent data, Grundy County, Missouri, has experienced a slight decline in overall employment, dropping from 4.01k employees in 2022 to 3.99k in 2023, representing a decrease of −0.573%. However, within this trend, certain industries remain prominent employers, including Manufacturing, Retail Trade, and Health Care & Social Assistance. Common occupations within the county include Office & Administrative Support, Production, and Management. While statewide data suggests overall job growth and a tight labor market, these trends may vary at the local level.

Table 2.5. Occupation Statistics, Grundy 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
Grundy County	1,237	671	827	406	850
City of Galt	16	6	10	6	17
City of Laredo	14	12	4	3	12
City of Spickard	15	26	13	7	24
Village of Tindall	18	7	0	7	6
City of Trenton	625	469	460	201	470

Source: U.S. Census, 2023 American Community Survey, 5-year Estimates.

2.1.6 Agriculture

The 2022 Census of Agriculture for Grundy County shows that the county has 564 farms covering 214,652 acres of land. The average farm size is 381 acres.

The total market value of products sold was $110,246,000. The dominant crops grown include soybeans (69,851 acres) and corn for grain (34,675 acres). Cattle and calves are a significant part of the county's livestock production, with 17,242 reported.

The total net cash farm income was $39,678,000.

2.1.7 FEMA Hazard Mitigation Assistance (HMA) Grants in Planning Area

According to data obtained from FEMA there have been no Hazard Mitigation projects in Grundy County.

2.1.8 FEMA Public Assistance (PA) Grants in Planning Area

The following table provides information about previous public assistance grants awarded in Grundy County from 2002-2025.

Table 2.6. FEMA PA Grants in Grundy County from 1993-2024

Disaster Declaratio	Project Type	Project Size	Project Total
1412	Roads and Bridges	Small	$4,149.00
1412	Roads and Bridges	Small	$2,190.00
1412	Roads and Bridges	Small	$26,955.50
1412	Roads and Bridges	Small	$17,592.68
1412	Roads and Bridges	Small	$2,493.00
1412	Roads and Bridges	Small	$3,048.00
1412	Roads and Bridges	Small	$5,192.00
1412	Roads and Bridges	Small	$2,144.00
1412	Roads and Bridges	Small	$1,521.00
1412	Roads and Bridges	Small	$5,609.00
1412	Roads and Bridges	Small	$4,602.00
1412	Roads and Bridges	Small	$11,525.00
1412	Roads and Bridges	Small	$5,497.00

1412	Roads and Bridges	Small	$6,904.00
1412	Roads and Bridges	Small	$1,577.57
1412	Roads and Bridges	Small	$12,193.08
1412	Roads and Bridges	Small	$1,484.75
1412	Roads and Bridges	Small	$2,223.00
1412	Roads and Bridges	Small	$3,042.00
1412	Roads and Bridges	Small	$1,831.50
1412	Roads and Bridges	Small	$3,795.00
1412	Roads and Bridges	Small	$4,752.00
1412	Roads and Bridges	Small	$4,921.00
1412	Roads and Bridges	Small	$5,931.00
1412	Roads and Bridges	Small	$7,496.48
1412	Roads and Bridges	Small	$1,664.00
1412	Roads and Bridges	Small	$1,521.00
1412	Roads and Bridges	Small	$2,844.00
1412	Roads and Bridges	Small	$5,020.15
1412	Roads and Bridges	Small	$33,013.95
1708	Roads and Bridges	Small	$4,403.40
1708	Roads and Bridges	Small	$2,063.63
1708	Roads and Bridges	Small	$7,058.70
1708	Roads and Bridges	Small	$11,947.00
1708	Roads and Bridges	Small	$3,566.00
1708	Roads and Bridges	Small	$9,428.00
1708	Roads and Bridges	Small	$2,796.38
1708	Roads and Bridges	Small	$7,129.60
1708	Roads and Bridges	Small	$2,919.00
1708	Roads and Bridges	Small	$5,830.25
1708	Roads and Bridges	Small	$5,770.00
1708	Roads and Bridges	Small	$1,513.70
1708	Roads and Bridges	Small	$2,735.63
1708	Roads and Bridges	Small	$10,311.75
1708	Roads and Bridges	Small	$1,650.38
1708	Roads and Bridges	Small	$4,527.95
1708	Roads and Bridges	Small	$2,192.30
1708	Debris Removal	Small	$24,111.19
1736	Utilities	Small	$11,535.62
1736	Utilities	Large	$88,619.90
1736	Emergency Protective Measures	Small	$1,033.60
1736	Utilities	Large	$160,912.46
1736	Emergency Protective Measures	Small	$2,607.79
1736	Debris Removal	Small	$18,117.63
1736	Debris Removal	Small	$1,204.00
1736	Emergency Protective Measures	Small	$4,714.67
1736	Utilities	Small	$5,417.33
1736	Emergency Protective Measures	Small	$6,570.49
1736	Utilities	Large	$233,506.28
1773	Debris Removal	Small	$17,880.00
1773	Roads and Bridges	Small	$6,733.62
1773	Roads and Bridges	Small	$10,404.38
1773	Roads and Bridges	Small	$15,005.71
1773	Roads and Bridges	Small	$25,356.48
1773	Roads and Bridges	Small	$10,064.56
1773	Roads and Bridges	Small	$16,783.10
1773	Roads and Bridges	Small	$3,496.66
1773	Roads and Bridges	Small	$3,154.07
1773	Roads and Bridges	Small	$2,394.73
1773	Roads and Bridges	Small	$7,013.21
1773	Roads and Bridges	Small	$3,867.71
1773	Roads and Bridges	Small	$29,088.69
1773	Roads and Bridges	Small	$13,140.28

1773	Roads and Bridges	Small	$6,391.54
1773	Roads and Bridges	Small	$9,446.42
1773	Roads and Bridges	Small	$6,772.12
1773	Roads and Bridges	Small	$26,202.66
1773	Roads and Bridges	Small	$17,553.76
1773	Roads and Bridges	Small	$54,860.00
1773	Roads and Bridges	Small	$22,663.00
1773	Roads and Bridges	Small	$2,867.50
1773	Roads and Bridges	Small	$20,331.99
1773	Roads and Bridges	Small	$15,291.96
1773	Roads and Bridges	Small	$27,580.56
1773	Roads and Bridges	Small	$4,696.39
1773	Roads and Bridges	Small	$5,324.10
1773	Roads and Bridges	Small	$18,866.85
1773	Roads and Bridges	Small	$22,951.30
1773	Utilities	Small	$8,704.00
1773	Buildings and Equipment	Small	$5,000.00
1773	Roads and Bridges	Small	$26,957.27
1773	Roads and Bridges	Small	$35,999.12
1773	Roads and Bridges	Small	$9,812.25
1773	Roads and Bridges	Small	$5,872.38
1773	Roads and Bridges	Small	$5,631.00
1773	Roads and Bridges	Small	$8,274.75
1773	Roads and Bridges	Small	$2,098.71
1773	Roads and Bridges	Small	$2,924.94
1773	Roads and Bridges	Small	$9,492.70
1773	Roads and Bridges	Small	$17,050.50
1773	Roads and Bridges	Small	$6,348.60
1773	Roads and Bridges	Small	$18,566.39
1773	Roads and Bridges	Small	$12,000.47
1773	Water Control Facilities	Small	$17,066.00
1773	Roads and Bridges	Small	$10,963.90
1773	Roads and Bridges	Small	$21,221.88
1773	Roads and Bridges	Small	$4,853.88
1773	Roads and Bridges	Small	$24,211.92
1773	Roads and Bridges	Small	$6,932.49
1773	Roads and Bridges	Small	$7,262.67
1773	Roads and Bridges	Small	$21,686.17
1773	Roads and Bridges	Small	$23,083.37
1773	Roads and Bridges	Small	$5,310.14
1773	Roads and Bridges	Small	$40,489.30
1773	Buildings and Equipment	Small	$5,000.00
1773	Roads and Bridges	Small	$6,057.54
1773	Roads and Bridges	Small	$14,559.92
1773	Roads and Bridges	Small	$28,509.08
1773	Roads and Bridges	Small	$23,660.31
1773	Roads and Bridges	Small	$22,806.22
1773	Roads and Bridges	Small	$17,118.91
1773	Roads and Bridges	Small	$3,995.91
1773	Roads and Bridges	Small	$35,134.94
1773	Roads and Bridges	Small	$5,357.00
1773	Roads and Bridges	Small	$18,102.13
1773	Roads and Bridges	Small	$11,551.61
1773	Roads and Bridges	Small	$18,778.14
1773	Roads and Bridges	Small	$7,856.06
1773	Roads and Bridges	Small	$10,637.08
1773	Roads and Bridges	Small	$10,131.11
1773	Roads and Bridges	Small	$3,670.37
1847	Roads and Bridges	Small	$15,050.55
1847	Roads and Bridges	Small	$42,454.00

1847	Roads and Bridges	Small	$3,415.08
1847	Roads and Bridges	Small	$4,233.70
1847	Roads and Bridges	Small	$43,613.64
1847	Roads and Bridges	Small	$2,008.56
1847	Roads and Bridges	Small	$14,909.80
1847	Roads and Bridges	Small	$19,772.50
1847	Roads and Bridges	Small	$15,822.00
1847	Roads and Bridges	Small	$33,679.80
1847	Roads and Bridges	Small	$9,510.31
1847	Roads and Bridges	Small	$5,251.44
1847	Roads and Bridges	Small	$53,294.97
1847	Roads and Bridges	Small	$3,512.35
1847	Roads and Bridges	Small	$26,039.68
1847	Roads and Bridges	Small	$26,091.75
1847	Roads and Bridges	Small	$33,943.95
1847	Roads and Bridges	Small	$55,824.90
1847	Roads and Bridges	Small	$62,947.46
1934	Roads and Bridges	Small	$10,523.08
1934	Roads and Bridges	Small	$22,987.26
1934	Roads and Bridges	Small	$2,101.06
1934	Roads and Bridges	Small	$9,267.70
1934	Roads and Bridges	Small	$21,022.30
1934	Roads and Bridges	Small	$9,078.14
1934	Roads and Bridges	Small	$4,903.93
1934	Roads and Bridges	Small	$18,665.42
1934	Debris Removal	Small	$7,614.00
1934	Roads and Bridges	Small	$2,198.00
1934	Roads and Bridges	Small	$12,484.29
1934	Roads and Bridges	Small	$4,470.51
1934	Roads and Bridges	Small	$12,588.21
1934	Roads and Bridges	Small	$18,633.74
1934	Roads and Bridges	Small	$10,389.50
1934	Roads and Bridges	Small	$17,796.68
1934	Roads and Bridges	Small	$1,314.00
1934	Roads and Bridges	Small	$11,136.32
1934	Roads and Bridges	Small	$4,381.08
1934	Roads and Bridges	Small	$5,628.88
1934	Roads and Bridges	Small	$5,693.06
1934	Roads and Bridges	Small	$16,083.65
1934	Roads and Bridges	Small	$13,220.13
1934	Utilities	Small	$35,380.00
1934	Roads and Bridges	Small	$6,598.97
1934	Roads and Bridges	Small	$3,310.13
1934	Debris Removal	Small	$12,607.00
1934	Roads and Bridges	Small	$5,760.00
1934	Roads and Bridges	Small	$19,426.44
1934	Roads and Bridges	Small	$15,821.32
1934	Roads and Bridges	Small	$13,333.19
1961	Roads and Bridges	Small	$10,718.55
1961	Roads and Bridges	Small	$39,333.15
1961	Emergency Work Donated Resources	Small	$8,756.34
1961	Roads and Bridges	Small	$6,071.00
1961	Roads and Bridges	Small	$20,097.14
1961	Emergency Protective Measures	Small	$36,609.00
1961	Roads and Bridges	Small	$5,571.80
1961	Roads and Bridges	Small	$22,780.06
1961	Roads and Bridges	Small	$33,478.40
1961	Emergency Protective Measures	Small	$16,357.62
1961	Emergency Protective Measures	Small	$1,405.33
1961	Roads and Bridges	Small	$7,600.60

4200	Debris Removal	Small	$7,249.01
4200	Water Control Facilities	Small	$79,325.00
4200	Roads and Bridges	Small	$22,215.58
4200	Debris Removal	Small	$7,805.24
4200	Roads and Bridges	Small	$84,105.24
4200	Roads and Bridges	Small	$50,981.50
4200	Buildings and Equipment	Small	$95,359.33
4200	Roads and Bridges	Small	$4,917.10
4200	Buildings and Equipment	Small	$13,537.36
4200	Roads and Bridges	Small	$166,440.35
4200	Emergency Protective Measures	Small	$11,962.73
4200	Roads and Bridges	Large	$157,575.48
4451	Utilities	Small	$53,852.37
4451	Roads and Bridges	Large	$50,924.82
4451	Roads and Bridges	Small	$11,171.89
4451	Emergency Protective Measures	Small	$19,753.47
4451	Utilities	Small	$13,253.70
4451	Roads and Bridges	Small	$43,079.17
4451	Roads and Bridges	Small	$13,579.57
4451	Roads and Bridges	Small	$122,855.71
4451	Roads and Bridges	Small	$13,627.65
4451	Roads and Bridges	Small	$64,232.55
4451	Management Costs	Small	$2,184.48
4451	Roads and Bridges	Small	$51,317.19
4451	Roads and Bridges	Small	$8,555.78
4451	Roads and Bridges	Small	$25,041.26
4451	Roads and Bridges	Small	$12,087.40
4451	Roads and Bridges	Small	$118,105.18
4451	Management Costs	Small	$1,294.77
4451	Roads and Bridges	Small	$14,623.24
4451	Debris Removal	Small	$3,325.84
4451	Utilities	Small	$57,214.22
4451	Roads and Bridges	Small	$5,839.00
4451	Utilities	Small	$268,357.80
4451	Management Costs	Small	$1,500.00
4451	Management Costs	Small	$6,353.50
4451	Roads and Bridges	Large	$7,267.29
4451	Utilities	Small	$87,128.00
4451	Buildings and Equipment	Small	$42,152.87
4451	Roads and Bridges	Small	$51,455.98
4451	Management Costs	Small	$1,650.36
4451	Roads and Bridges	Small	$10,750.66
4451	Roads and Bridges	Small	$20,034.07
4451	Management Costs	Small	$2,107.65
4451	Roads and Bridges	Small	$10,256.87
4451	Roads and Bridges	Small	$10,467.16
4451	Roads and Bridges	Small	$31,169.70
4451	Roads and Bridges	Small	$57,650.74
4451	Parks, Recreational Facilities, and Other	Small	$87,003.00
4451	Roads and Bridges	Small	$41,471.73
4451	Roads and Bridges	Small	$185,909.38
4451	Management Costs	Small	$2,860.72
4451	Management Costs	Small	$2,882.54
4490	Emergency Protective Measures	Large	$6,309.87
4612	Emergency Protective Measures	Small	$10,624.46
4612	Debris Removal	Small	$8,266.49
4612	Utilities	Small	$10,222.80
4612	Management Costs	Small	$924.47
4612	Utilities	Small	$36,084.07
4612	Management Costs	Small	$2,335.43

4741	Management Costs	Small	$1,297.51
4741	Management Costs	Small	$2,272.26
4741	Roads and Bridges	Small	$17,347.18
4741	Roads and Bridges	Small	$11,436.44
4741	Roads and Bridges	Small	$82,548.65
4741	Roads and Bridges	Small	$78,912.88
4741	Roads and Bridges	Small	$45,445.24
Total			**$5,548,276.14**

Source: Federal Emergency Management Agency – June 2025

2.2 JURISDICTIONAL PROFILES AND MITIGATION CAPABILITIES

2.2.1 Unincorporated Grundy County

Grundy County, Missouri, is a county located in the north-central part of the state, established in 1841 and named after Felix Grundy. Trenton serves as the county seat. Historically, the county's economy has been shaped by agriculture, particularly corn, soybeans, and wheat farming, and also by mining, especially coal extraction from 1873 to 1943. Recent data indicates a shift towards Manufacturing, Retail Trade, and Health Care & Social Assistance as the largest industries by employment.

Key offices in Grundy County include the County Commission, Assessor, Circuit Clerk/Recorder, Collector/Treasurer, County Clerk, Coroner, Prosecuting Attorney, Public Administrator, and Sheriff.

Key departments in Grundy County include the Ambulance and Road and Bridge departments.

Mitigation Initiatives/Capabilities

The County does have ordinances on flood plain management. The County does have an Emergency Management Director (EMD) and is part of a Local Emergency Planning District (LEPD). The EMD plans and directs disaster responses or crisis management activities, provides disaster preparedness training, and prepares emergency plans and procedures for natural disasters. The County has a County Emergency Plan, County Mitigation Plan, and Mutual Aid Agreements. The EMD is also the floodplain administrator for the county. Agriculture makes up the majority of the county.

The County has had limited mitigation activities due to limited capabilities. The County expanding its mitigation capabilities is unlikely, due to limited capabilities, both financially and in terms of staff availability.

Table 2.7. Unincorporated Grundy 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	NA
County Emergency Operations Plan	Yes
Local Recovery Plan	NA
County Recovery Plan	No
City Mitigation Plan	NA
County Mitigation Plan	Yes
Debris Management Plan	No
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	NA
Critical Facilities Plan	Yes

Policies/Ordinance	
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	Yes
Subdivision Ordinance	No
Tree Trimming Ordinance	Yes
Nuisance Ordinance	No
Stormwater Ordinance	No
Drainage Ordinance	No
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Seismic Construction Ordinance	No
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
Hazard Awareness Program	No
National Flood Insurance Program (NFIP)	Yes
NFIP Community Rating System (CRS) program	No
National Weather Service (NWS) Storm Ready	No
Firewise Community Certification	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	NA
Economic Development Program	Contract
Land Use Program	No
Public Education/Awareness	Yes
Property Acquisition	No
Planning/Zoning Boards	No
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 (Local)	No
Hazard Analysis/Risk Assessment (County)	Yes
Flood Insurance Maps	Yes
FEMA Flood Insurance Study (Detailed)	Yes
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	Contract
Engineer	Contract
Development Planner	Contract
Public Works Official	Yes FT
Emergency Management Director	Contract
NFIP Floodplain Administrator	Yes
Emergency Response Team	Yes
Hazardous Materials Expert	Contract

Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	No
Economic Development Department	Contract
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	Yes
Salvation Army	Yes
Veterans Groups	Yes
Local Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	Yes
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.)	Yes
Local Funding Availability	
Apply for Community Development Block	Yes
Fund projects through Capital	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
Withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, 11/2025

2.2.2 City of Galt

Galt, Missouri, is a small city located in eastern Grundy County, with a history rooted in its connection to the railroad. It was formally platted in 1881, coinciding with the extension of the railroad to that point, and a post office was established the same year. Galt has continued to develop, being incorporated in 1946, while retaining its small-town character. The city is governed by five elected council members. Despite a recent population decline, Galt remains a community where "hometown tradition thrives".

Galt, Missouri, is a small city located in the eastern portion of Grundy County, just south of Missouri Route 6. It lies roughly one mile west of the Grundy-Sullivan county line. Trenton, the county seat, is located about 12 miles southwest of Galt. The area around Galt is shaped by the presence of waterways like Medicine Creek, which flows past to the east along the county line, and Little Medicine Creek, situated just east of the community. According to the United States Census Bureau, Galt has a total area of 0.29 square miles, consisting entirely of land. Its elevation is approximately 827 feet. This geography contributes to Galt's rural character.

Mitigation Initiatives/Capabilities

The City of Galt does have ordinances on flood plain management, and zoning along with stormwater management and drainage. The City does not have an Emergency Management Director (EMD), however, it follows the county emergency plan. The city has participated in the County Emergency Plan, County Mitigation Plan, and Mutual Aid Agreements processes. The floodplain administrator for the city is currently the city clerk.

The city of Galt has had limited mitigation activities due to limited capabilities. The city expanding its mitigation capabilities is unlikely, due to limited capabilities, both financially and in terms of staff availability.

Table 2.8. Galt 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	No
Local Recovery Plan	Yes
County Recovery Plan	No
City Mitigation Plan	Yes
County Mitigation Plan	Yes
Debris Management Plan	No
Economic Development Plan	
Transportation Plan	No
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan	No
Policies/Ordinance	
Zoning Ordinance	Yes
Building Code	No
Floodplain Ordinance	Yes
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	No
Stormwater Ordinance	Yes
Drainage Ordinance	Yes
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Seismic Construction Ordinance	No
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
Hazard Awareness Program	No
National Flood Insurance Program (NFIP)	Yes
NFIP Community Rating System (CRS) program	No
National Weather Service (NWS) Storm Ready	No
Firewise Community Certification	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	No
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, fire department, sheriff's office
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	Yes
FEMA Flood Insurance Study (Detailed)	Yes
Evacuation Route Map	No
Critical Facilities Inventory	Yes
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	Np
Development Planner	No
Public Works Official	Yes
Emergency Management Director	No
NFIP Floodplain Administrator	Yes
Emergency Response Team	Np
Hazardous Materials Expert	No
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	Yes
Transportation Department	Yes
Economic Development Department	No
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	No
Salvation Army	No
Veterans Groups	No
Local Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.)	Lions
Local Funding Availability	
Apply for Community Development Block	Yes
Fund projects through Capital	No
Authority to levy taxes for a specific purpose	Yes, voter approved
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Ability to incur debt through general obligation bonds	Yes, voter approved
Ability to incur debt through special tax bonds	Yes, voter approved
Ability to incur debt through private activities	Yes, voter approved
Withhold spending in hazard prone areas	Yes

Source: Data Collection Questionnaire, October 2025

2.2.3 City of Laredo

Laredo, Missouri, is a small city located in Grundy County. It's found in the eastern part of the county, situated at the intersection of Missouri routes E and V. Laredo, which is about eight miles southeast of Trenton, the county seat. Medicine Creek flows past the eastern side of the community. The city itself is relatively small in terms of area, with a total area of 0.28 square miles, all of it land. Its elevation is approximately 814 feet.

Laredo, Missouri, in Grundy County, has a history deeply intertwined with the arrival of the railroad. The town was essentially created by the Chicago, Milwaukee and St. Paul Railroad Company when they chose to route their line west of Medicine Creek. This decision bypassed the nearby settlement of Alpha, leading to businesses and residents relocating to the newly established Laredo, which quickly became a significant railroad division point between Kansas City and Ottumwa, Iowa. This era of the railroad brought prosperity and development to Laredo. However, the transition to diesel engines, which didn't require stops in Laredo, eventually led to a decline in railroad-related employment. Despite this shift, Laredo remains a community that values its history and heritage.

Mitigation Initiatives/Capabilities

The City of Laredo does have ordinances on drainage and storm water. The city does not have an Emergency Management Director (EMD), however, it follows the county emergency plan. The city has participated in the County Emergency Plan, County Mitigation Plan, and Mutual Aid Agreements processes.

The city of Laredo has had limited mitigation activities due to limited capabilities. The city expanding its mitigation capabilities is unlikely, due to limited capabilities, both financially and in terms of staff availability.

Table 2.9. Laredo Mitigation Capabilities

Capabilities	Status, *Including Date of Document or Policy*
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	NA
Capital Improvement Plan	NA
City Emergency Operations Plan	Yes
County Emergency Operations Plan	Yes
Local Recovery Plan	Yes
County Recovery Plan	Yes
City Mitigation Plan	No
County Mitigation Plan	Yes
Debris Management Plan	No
Economic Development Plan	NA
Transportation Plan	No
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	NA
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan	Yes

Policies/Ordinance	
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	No
Stormwater Ordinance	Yes
Drainage Ordinance	Yes
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Seismic Construction Ordinance	No
Program	
Zoning/Land Use Restrictions	NA
Codes Building Site/Design	NA
Hazard Awareness Program	NA
National Flood Insurance Program (NFIP)	No
NFIP Community Rating System (CRS) program	No
National Weather Service (NWS) Storm Ready	NA
Firewise Community Certification	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	No
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	No
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	Yes
Hazard Analysis/Risk Assessment (County)	Yes
Flood Insurance Maps	Yes
FEMA Flood Insurance Study (Detailed)	Yes
Evacuation Route Map	Yes
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	Yes, Streets, Water & wastewater, part time
Emergency Management Director	No
NFIP Floodplain Administrator	NA
Emergency Response Team	No
Hazardous Materials Expert	No

Local Emergency Planning Committee	No
County Emergency Management Commission	No
Sanitation Department	2 part time, wastewater system
Transportation Department	No
Economic Development Department	No
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	No
Salvation Army	Nop
Veterans Groups	No
Local Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.)	Yes, Lions and 4h.
Local Funding Availability	
Apply for Community Development Block	Yes
Fund projects through Capital	No
Authority to levy taxes for a specific purpose	Yes, vote of public
Fees for water, sewer, gas, or electric services	Yes, Water and wastewater
Impact fees for new development	Yes, voter approved
Ability to incur debt through general obligation bonds	Yes, voter approved
Ability to incur debt through special tax bonds	Yes, Voter approved
Ability to incur debt through private activities	Yes, Voter approved
Withhold spending in hazard prone areas	Yes, Voter approved.

Source: Data Collection Questionnaire, October 2025

2.2.4 City of Spickard

Spickard, Missouri, is a small town located in the northern part of Grundy County, just south of the Grundy-Mercer county line. It is situated along Missouri Route C, a short distance west of U.S. Route 65. A prominent geographic feature is the Weldon River, which flows adjacent to the town. According to the United States Census Bureau, Spickard has a total area of 0.63 square miles, all of which is land. Its location and proximity to the Weldon River contribute to its rural setting, characterized by agricultural landscapes.

Spickard, Missouri, located in northern Grundy County, was initially known as Spickardsville. It was plated in 1871 by G. A. Spickard, who named the town after himself. A post office was established the following year, in 1872. The name was officially changed to Spickard in 1892. While information readily available focuses on its founding and name change, it suggests Spickard developed around this time, likely influenced by the surrounding agricultural landscape and the flow of the nearby Weldon River. It has remained a small, rural community.

The city operates under a mayor and four council members. There are no public education programs, mitigation projects, or FEMA-funded initiatives currently in place, and no identified hazard-related concerns for vulnerable populations. The community has one outdoor warning siren that is manually activated by city staff and no additional warning systems. One public tornado shelter is in the basement of the Spickard Christian Church, though it does not meet FEMA standards. There has been no recent development, the population has been declining, and no new facilities or infrastructure are planned. Major employers include the Spickard School, the City of Spickard, and a volunteer fire station.

Mitigation Initiatives/Capabilities

The City of Spickard has few ordinances. The city does not have an Emergency Management Director (EMD), however, it follows the county emergency plan. The city has participated in the County Emergency Plan, County Mitigation Plan, and Mutual Aid Agreements processes.

The city of Spickard has had limited mitigation activities due to limited capabilities. The city expanding its mitigation capabilities is unlikely due to limited capabilities, both financially and in terms of staff availability.

Table 2.10. Spickard 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	No
Local Recovery Plan	No
County Recovery Plan	No
City Mitigation Plan	No
County Mitigation Plan	Yes – 2021
Debris Management Plan	No
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	No

Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan	No
Policies/Ordinance	
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	No
Stormwater Ordinance	No
Drainage Ordinance	No
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Seismic Construction Ordinance	No
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
Hazard Awareness Program	No
National Flood Insurance Program (NFIP)	No
NFIP Community Rating System (CRS) program	No
National Weather Service (NWS) Storm Ready	No
Firewise Community Certification	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	No
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, fire district and sheriff's department
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	Yes
FEMA Flood Insurance Study (Detailed)	Yes
Evacuation Route Map	No
Critical Facilities Inventory	Yes
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No

Public Works Official	Yes
Emergency Management Director	No
NFIP Floodplain Administrator	No
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	No
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	No
Economic Development Department	No
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	No
Salvation Army	No
Veterans Groups	No
Local Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.)	No
Local Funding Availability	
Apply for Community Development Block	Yes
Fund projects through Capital	Yes
Authority to levy taxes for a specific purpose	Yes, with voter approval
Fees for water, sewer, gas, or electric services	Yes, water and sewer
Impact fees for new development	No
Ability to incur debt through general obligation bonds	Yes with voter approval
Ability to incur debt through special tax bonds	Yes with voter approval
Ability to incur debt through private activities	Yes with voter approval
Withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, 12/2025

2.2.5 City of Trenton

Trenton, Missouri, is situated in the north-central part of the state, serving as the county seat of Grundy County. It is located within the "Green Hills" region of Missouri. Geographically, Trenton lies on the Thompson River floodplain, positioned between the Thompson River to the west and its tributary, Muddy Creek, to the east. The city covers a total area of 6.74 square miles, with 6.45 square miles being land and 0.29 square miles being water. Trenton is well-connected by road, with U.S. Route 65 passing along its eastern edge and Missouri Route 6 running through the southern part of the city.

Trenton, Missouri, began its history as Lomax Store and Bluff Grove before officially being incorporated in 1857. It was settled as early as 1834 and became the county seat of Grundy County in 1841 when James S. Lomax donated 80 acres for a townsite. Early settlers, like Dr. William Preston Thompson, arrived in the area in the 1830s, contributing to the development of "Moore's Settlement," and the establishment of the first store in 1838 marked a turning point in the town's growth. In the 1870s, Trenton became a railroad division, further boosting its importance. It also boasts a history of educational institutions, having been home to three colleges, including the present-day North Central Missouri College which originated as Trenton Junior College. Today, Trenton retains its role as the county seat and serves as a regional center, known for its small-town feel within a rural setting.

Mitigation Initiatives/Capabilities

The City of Trenton has ordinances related to zoning, building codes, flood plain management, storm water and drainage. The city enforces a nuisance ordinance through 2 full time staff positions. Zoning is regulated through a planning and board.

The city does have an Emergency Management Director (EMD), It follows the county emergency plan. The city has participated in the County Emergency Plan, County Mitigation Plan, and Mutual Aid Agreements processes.

The city of Trenton has had limited mitigation activities due to limited capabilities. The city expanding its mitigation capabilities is unlikely due to limited capabilities, both financially and in terms of staff availability.

Table 2.11. Trenton Mitigation Capabilities

Capabilities	Status, *Including Date of Document or Policy*
Planning Capabilities	
Comprehensive Plan	NA
Builder's Plan	NA
Capital Improvement Plan	NA
City Emergency Operations Plan	NA
County Emergency Operations Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
City Mitigation Plan	No
County Mitigation Plan	Yes
Debris Management Plan	No
Economic Development Plan	Yes
Transportation Plan	Yes
Land-use Plan	Yes
Flood Mitigation Assistance (FMA) Plan	No

Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	NA
Critical Facilities Plan	No
Policies/Ordinance	
Zoning Ordinance	Yes
Building Code	Yes
Floodplain Ordinance	Yes
Subdivision Ordinance	Yes
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes
Stormwater Ordinance	Yes
Drainage Ordinance	Yes
Site Plan Review Requirements	Yes
Historic Preservation Ordinance	No
Landscape Ordinance	No
Seismic Construction Ordinance	No
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes
Hazard Awareness Program	No
National Flood Insurance Program (NFIP)	Yes
NFIP Community Rating System (CRS) program	No
National Weather Service (NWS) Storm Ready	No
Firewise Community Certification	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	3/3Y
Economic Development Program	Yes, Contracted
Land Use Program	Yes
Public Education/Awareness	Yes
Property Acquisition	No
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 (Local)	Yes
Hazard Analysis/Risk Assessment (County)	Yes
Flood Insurance Maps	Yes
FEMA Flood Insurance Study (Detailed)	Yes
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	Yes
Staff/Department	
Building Code Official	Full-time
Building Inspector	Full-time
Mapping Specialist (GIS)	Contracted
Engineer	Contracted
Development Planner	Contracted
Public Works Official	Yes

Emergency Management Director	Yes
NFIP Floodplain Administrator	Yes
Emergency Response Team	Yes
Hazardous Materials Expert	Contracted
Local Emergency Planning Committee	Yes, county
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	Yes, Street department
Economic Development Department	Contracted
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	No
Salvation Army	No
Veterans Groups	Yes
Local Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.)	Yes
Local Funding Availability	
Apply for Community Development Block	Yes
Fund projects through Capital	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	No
Ability to incur debt through special tax bonds	No
Ability to incur debt through private activities	Yes
Withhold spending in hazard prone areas	Yes

Source: Data Collection Questionnaire, September 2025

2.2.6 Summary of Jurisdictional Capabilities

Table 2.12. Mitigation Capabilities Summary Table

Village of f	Uninc. Grundy County	City of Galt	City of Laredo	City of Spickard	City of Trenton
Planning Capabilities					
Comprehensive Plan	No	No	No	No	NA
Builder's Plan	No	No	NA	No	NA
Capital Improvement Plan	No	No	NA	No	NA
City Emergency Operations Plan	NA	Yes	Yes	No	NA
County Emergency Operations Plan	Yes	No	Yes	No	Yes
Local Recovery Plan	NA	Yes	Yes	No	No
County Recovery Plan	No	No	Yes	No	No
City Mitigation Plan	NA	Yes	No	No	No
County Mitigation Plan	Yes	Yes	Yes	Yes	Yes
Debris Management Plan	No	No	No	No	No
Economic Development Plan	No		NA	No	Yes
Transportation Plan	No	No	No	No	Yes
Land-use Plan	No	No	No	No	Yes
Flood Mitigation Assistance (FMA) Plan	No	No	No	No	No
Watershed Plan	No		NA	No	No
Firewise or other fire mitigation plan	No	No	No	No	No
School Mitigation Plan	NA	No	No	No	NA
Critical Facilities Plan	Yes	No	Yes	No	No
Policies/Ordinance					
Zoning Ordinance	No	Yes	No	No	Yes
Building Code	No	No	No	No	Yes
Floodplain Ordinance	Yes	Yes	No	No	Yes
Subdivision Ordinance	No	No	No	No	Yes
Tree Trimming Ordinance	Yes	No	No	No	No
Nuisance Ordinance	No	No	No	No	Yes
Stormwater Ordinance	No	Yes	Yes	No	Yes
Drainage Ordinance	No	Yes	Yes	No	Yes
Site Plan Review Requirements	No	No	No	No	Yes
Historic Preservation Ordinance	No	No	No	No	No
Landscape Ordinance	No	No	No	No	No
Seismic Construction Ordinance	No	No	No	No	No

Village of f	Uninc. Grundy County	City of Galt	City of Laredo	City of Spickard	City of Trenton
Program					
Zoning/Land Use Restrictions	No	No	NA	No	Yes
Codes Building Site/Design	No	No	NA	No	Yes
Hazard Awareness Program	No	No	NA	No	No
National Flood Insurance Program (NFIP)	Yes	Yes	No	No	Yes
NFIP Community Rating System (CRS) program	No	No	No	No	No
National Weather Service (NWS) Storm Ready	No	No	NA	No	No
Firewise Community Certification	No	No	No	No	No
Building Code Effectiveness Grading (BCEGs)	No	No	No	No	No
ISO Fire Rating	NA	No	No	No	3/3Y
Economic Development Program	Contract	No	No	No	Yes, Contracted
Land Use Program	No	No	No	No	Yes
Public Education/Awareness	Yes	No	No	No	Yes
Property Acquisition	No	No	No	No	No
Planning/Zoning Boards	No	No	No	No	Yes
Stream Maintenance Program	No	No	No	No	No
Tree Trimming Program	Yes	No	No	No	Yes
Engineering Studies for Streams (Local/County/Regional)	No	No	No	No	No
Mutual Aid Agreements	Yes	Yes	No	Yes	Yes
Studies/Reports/Maps					
Hazard Analysis/Risk Assessment (Local)	No	No	Yes	No	Yes
Hazard Analysis/Risk Assessment (County)	Yes	No	Yes	No	Yes
Flood Insurance Maps	Yes	Yes	Yes	Yes	Yes
FEMA Flood Insurance Study (Detailed)	Yes	Yes	Yes	Yes	Yes
Evacuation Route Map	No	No	Yes	No	No
Critical Facilities Inventory	No	Yes	No	Yes	No
Vulnerable Population Inventory	No	No	No	No	No
Land Use Map	No	No	No	No	Yes
Staff/Department					
Building Code Official	No	No	No	No	Full-time
Building Inspector	No	No	No	No	Full-time
Mapping Specialist (GIS)	Contract	No	No	No	Contracted
Engineer	Contract	Np	No	No	Contracted
Development Planner	Contract	No	No	No	Contracted

Village of f	Uninc. Grundy County	City of Galt	City of Laredo	City of Spickard	City of Trenton
Public Works Official	Yes FT	Yes	Yes	Yes	Yes
Emergency Management Director	Contract Co	No	No	No	Yes
NFIP Floodplain Administrator	Yes	Yes	NA	No	Yes
Emergency Response Team	Yes	Np	No	No	Yes
Hazardous Materials Expert	Contract	No	No	No	Contracted
Local Emergency Planning Committee	Yes	Yes	No	No	Yes
County Emergency Management Commission	No	No	No	No	No
Sanitation Department	No	Yes	Part time	No	No
Transportation Department	No	Yes	No	No	Yes
Economic Development Department	Contract	No	No	No	Contracted
Housing Department	No	No	No	No	No
Historic Preservation	No	No	No	No	No
Non-Governmental Organizations (NGOs)					
American Red Cross	Yes	No	No	No	No
Salvation Army	Yes	No	No	No	No
Veterans Groups	Yes	No	No	No	Yes
Local Environmental Organization	No	No	No	No	No
Homeowner Associations	No	No	No	No	No
Neighborhood Associations	Yes	No	No	No	No
Chamber of Commerce	Yes	No	No	No	Yes
Community Organizations (Lions, Kiwanis, etc.)	Yes	Lions	Yes, Lions and 4h.	No	Yes
Financial Resources					
Apply for Community Development Block Grants	Yes	Yes	Yes	Yes	Yes
Fund projects through Capital Improvements funding	Yes	No	No	Yes	Yes
Authority to levy taxes for a specific purpose	Yes	Yes	Yes	Yes	Yes
Fees for water, sewer, gas, or electric services	No	Yes	Yes	Yes	Yes
Impact fees for new development	No	Yes	Yes	No	Yes
Ability to incur debt through general obligation bonds	Yes	Yes	Yes	Yes	No
Ability to incur debt through special tax bonds	Yes	Yes	Yes	Yes	No
Ability to incur debt through private activities	Yes	Yes	Yes	Yes	Yes
Withhold spending in hazard prone areas	No	Yes	Yes	No	Yes

Source: Local questionnaires

2.2.7 Special District

Grundy County Health Department

The Grundy County health department participated in the hazard mitigation plan update for Grundy County. The following information was collected from the Special District Questionnaire and summarizes the mitigation capabilities of the special district.

The Grundy County health department has a facilities plan, which per policy, is updated annually. There is also a Hazard Awareness Program which is reviewed and updated annually at all locations.

There is an internal Emergency coordinator. This position oversees the emergency planning of the GCHD special district. GCHD has 1 employee that participates in Grundy County LEPC.

GCHD is governed by a Board of Directors which consists of 5 members.

All employees of GCHD receive safety training upon hire and every year of employment. This training is conducted annually. The training encompasses fire safety training, weather safety training, material safety data sheets, armed intruder training and bomb threat training.

There are no known warning sirens or tornado shelters within HCCH grounds, however, sirens operated by the city of Trenton can be regularly heard, and the facility is equipped with a basement.

GCHD currently employs approximately 9 people. There has been no participation with the hazard mitigation plan development in the past, so there are no mitigation planning members on staff that participated in the previous plan for Grundy County.

Table 2.13. Grundy County Health Department Mitigation Capabilities

Element	Yes, No, N/A Comments and/or Weblink
Planning Capabilities	
Capital Improvement Plan	No
Emergency Operations Plan	Yes, 2024 Reviewed annually
Continuity of Operations Plan	Yes, 2024
Community Wildfire Protection Plan	N/A
Programs	
Cross-Connection Program	N/A
Hydrant Flushing Program	N/A
Public Education/Awareness	Yes. Conducted on a variety of health and safety topics
Tree Trimming Program	N/A
Element	
Mutual Aid Agreements	Yes. Region H LPHAs, Region H Environmental Public Health
Studies/Reports/Maps	
Evacuation Route Map	N/A
Critical Facilities Inventory	No
Staff/Department	**Full Time or Part Time?**
4 Nurses	Full-time
2 Nurses	Part-time/as needed
1 Administrator	Full-time
2 Clerks	Full-time
Financial Resources	
Fund projects through Capital Improvements funding	No
Fees for water, sewer, gas, or electric services	No
Incur debt through general obligation bonds	No
Incur debt through special tax bonds	No
Incur debt through private activities	No
Withhold spending in hazard prone areas	N/A

Planning Capabilities	Method of incorporation since previous plan or challenges preventing incorporation
Capital Improvement Plan	N/A
Emergency Operations Plan	Reviewed annually
Continuity of Operations Plan	Reviewed every five years
Firewise or other fire mitigation plan such as Community Wildfire Protection Plan	N/A

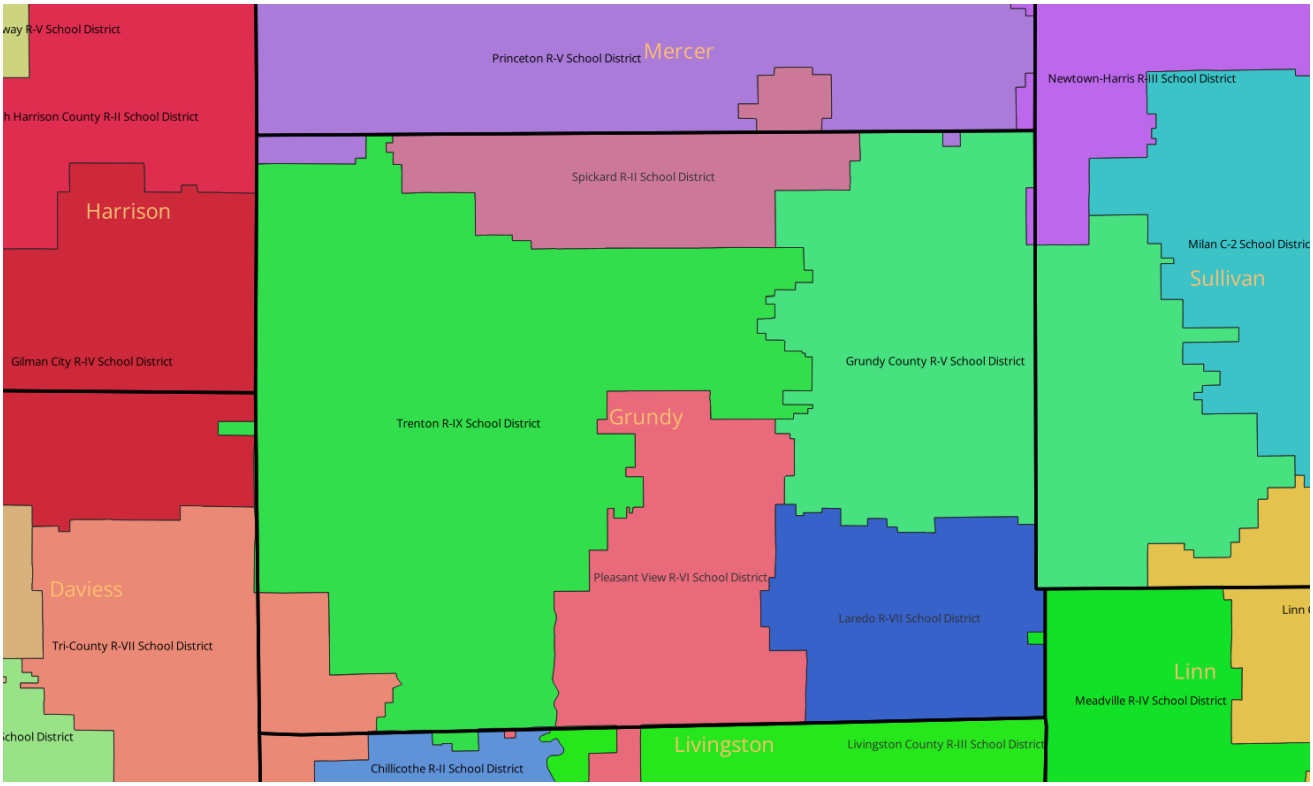
Source: Data Collection questionnaire, 9/2025

2.2.8 School District Profiles and Mitigation Capabilities

Grundy County, Missouri, is served by several school districts, each with varying enrollment numbers. The Trenton R-IX School District, which encompasses the city of Trenton, had an enrollment of 1,105 students attending its three schools during the 2023 school year. The Grundy County R-V School District, located in Galt, has a total of 137 students enrolled in grades PK-12. Within this district, Grundy Co. High serves grades 6-12 with a student population of 71. Other districts in the county

include Laredo R-VII, with Laredo Elementary School having 47 students, and Pleasant View R-VI, with Pleasant View R-VI having 156 students. These figures offer a snapshot of the student populations being served within the different school districts of Grundy County.

2.3 Map of Grundy County School Districts



Grundy County R-V

205 SW Border St.
Galt, MO 64641

The school conducts severe weather and evacuation drills. Each school building is equipped with a PA system used for emergency announcements and staff also receive alerts through internal radio and phone systems.

The district is governed by a Board of Education consisting of seven board members.

The district has done little to expand mitigation capabilities since the last plan update due to limited capabilities and has little planned in the way of expanding mitigation capabilities due to limited budget and resources.

Table 2.14. Grundy County R-V Enrollment Information

Enrollment					
	Schools	**Cert. Staff**	**Resident**	**Non-Res.**	**Total**
Elementary Schools	1	14	54	0	54
High Schools	1	15	110	12	68
Total:		**29**	**164**	**12**	**122**

Source: Missouri DESE School directory – 11/2025

Table 2.15. Grundy County R-V Mitigation Capabilities

Capability	Grundy R-V
Master Plan	No
Capital Improvement Plan	No
Emergency Plan	Yes - 2025
Weapons Policy	Yes – 2005
Full-Time Building Official	Yes – Principal
Emergency Manager	Yes - Superintendent
Grant Writer	No
Public Information Officer	No
Capital improvements Project fund	No
Local Funds	Yes
General Obligation Bond	No
Special Tax Bonds	No
Private Activities/Donations	No
State and Federal Funds	Yes

Source: Data Collection Questionnaire returned 1/2026

Pleasant View R-VI

128 SE 20th Street
Trenton, MO, 64683

The school conducts severe weather and evacuation drills. Each school building is equipped with a PA system used for emergency announcements and staff also receive alerts through internal radio and phone systems.

The district is governed by a Board of Education consisting of seven board members.

The district has done little to expand mitigation capabilities since the last plan update due to limited capabilities and has little planned in the way of expanding mitigation capabilities due to limited budget and resources.

Table 2.16. Pleasant View R-VI Enrollment

Enrollment					
	Schools	**Cert. Staff**	**Resident**	**Non-Res.**	**Total**
Elementary Schools	1	21	80	78	158
Total:		**21**	**80**	**78**	**158**

Source: Missouri DESE School directory – 11/2025

Table 2.17. Pleasant View R-VI Mitigation Capabilities

Capability	Pleasantview R-VI
Master Plan	No
Capital Improvement Plan	Yes -2025
Emergency Plan	Yes – 2024
Weapons Policy	Yes - 2025

Full-Time Building Official	Yes
Emergency Manager	Yes
Grant Writer	Yes
Public Information Officer	Yes
Capital improvements Project fund	No
Local Funds	Yes
General Obligation Bond	No
Special Tax Bonds	No
Private Activities/Donations	No
State and Federal Funds	Yes

Source: Data Collection Questionnaire returned 1/2026

Spickard R-II

105 North 4th Street
Spickard, MO, 64652

The school conducts severe weather and evacuation drills. Each school building is equipped with a PA system used for emergency announcements and staff also receive alerts through internal radio and phone systems.

The district is governed by a Board of Education consisting of seven board members.

The district has done little to expand mitigation capabilities since the last plan update due to limited capabilities and has little planned in the way of expanding mitigation capabilities due to limited budget and resources.

Table 2.18. Spickard R-II Enrollment

Enrollment					
	Schools	**Cert. Staff**	**Resident**	**Non-Res.**	**Total**
Elementary Schools	1	10	21	0	21
Total:		**10**	**21**	**0**	**21**

Source: Missouri DESE School directory – 11/2025

Table 2.19. Spickard R-II Mitigation Capabilities

Capability	Spickard R-II
Master Plan	No
Capital Improvement Plan	Yes
Emergency Plan	Yes
Weapons Policy	Yes
Full-Time Building Official	Yes
Emergency Manager	Yes
Grant Writer	Yes
Public Information Officer	Yes
Capital improvements Project fund	No
Local Funds	Yes
General Obligation Bond	No

Special Tax Bonds	No
Private Activities/Donations	Yes
State and Federal Funds	Yes

Source: Data Collection Questionnaire returned 1/2026

Trenton R-IX

1607 Normal Street
Trenton, MO, 64683

The school conducts severe weather and evacuation drills. Each school building is equipped with a PA system used for emergency announcements and staff also receive alerts through internal radio and phone systems, the district recently installed a new automated warning system known as SafeDefend

The district is governed by a Board of Education consisting of seven board members.

The district has done little to expand mitigation capabilities since the last plan update due to limited capabilities and has little planned in the way of expanding mitigation capabilities due to limited budget and resources.

Table 2.20. Trenton R-IX Enrollment

Enrollment					
	Schools	**Cert. Staff**	**Resident**	**Non-Res.**	**Total**
Elementary Schools	1	45	443	6	449
Middle Schools	1	37	295	5	300
High Schools	1	32	293	26	319
Total:		**114**	**1031**	**37**	**1068**

Source: Missouri DESE School directory – 11/2025

Table 2.21. Trenton R-IX Mitigation Capabilities

Capability	Trenton R-IX
Master Plan	Yes
Capital Improvement Plan	Yes
Emergency Plan	Yes
Weapons Policy	Yes
Full-Time Building Official	Yes
Emergency Manager	Yes
Grant Writer	Yes
Public Information Officer	Yes
Capital improvements Project fund	No
Local Funds	Yes
General Obligation Bond	Yes
Special Tax Bonds	No
Private Activities/Donations	Yes
State and Federal Funds	Yes

North Central Missouri College

1301 Main Street, Trenton, MO, 64683

The college conducts severe weather and evacuation drills. Each building is equipped with an intercom system used for emergency announcements and staff also receive alerts through internal radio and phone systems.

The college is governed by a Board of trustees consisting of six board members.

The district has done little to expand mitigation capabilities since the last plan update due to limited capabilities and has little planned in the way of expanding mitigation capabilities due to limited budget and resources.

Table 2.22. North Central Missouri College Enrollment

	Total
Full time	995
Part time	777
Total:	**1772**

Source: Missouri DESE School directory – 11/2025

Table 2.23. North Central Missouri College Mitigation Capabilities

Capability	NCMC
Master Plan	Yes
Capital Improvement Plan	Yes
Emergency Plan	Yes
Weapons Policy	Yes
Full-Time Building Official	Yes
Emergency Manager	Yes
Grant Writer	Yes
Public Information Officer	Yes
Capital improvements Project fund	Yes
Local Funds	Yes
General Obligation Bond	No
Special Tax Bonds	No
Private Activities/Donations	Yes
State and Federal Funds	Yes

Table 2.24. Summary of Mitigation Capabilities of schools in Grundy County

Capability	Grundy R-V	Pleasant View R-VI	Spickard R-II	Trenton R-IX	NCMC
Master Plan	No	No	No	Yes	Yes
Capital Improvement Plan	Yes -2025	Yes -2025	Yes	Yes	Yes
Emergency Plan	Yes – 2024	Yes – 2024	Yes	Yes	Yes
Weapons Policy	Yes - 2025	Yes - 2025	Yes	Yes	Yes
Full-Time Building Official	Yes – Principal	Yes	Yes	Yes	Yes
Emergency Manager	Yes - Superintendent	Yes	Yes	Yes	Yes
Grant Writer	No	Yes	Yes	Yes	Yes
Public Information Officer	No	Yes	Yes	Yes	Yes
Capital improvements Project fund	No	No	No	Yes	Yes
Local Funds	Yes	Yes	Yes	Yes	Yes
General Obligation Bond	No	No	No	No	No
Special Tax Bonds	No	No	No	No	No
Private Activities/Donations	No	No	Yes	Yes	Yes
State and Federal Funds	Yes	Yes	Yes	Yes	Yes

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 Land Use and Development discusses development that has occurred since the last plan update and any increased or decreased risk that resulted. This section also discusses areas of planned future development and any implications on risk/vulnerability;

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 Strength/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.

Natural hazards can be complex, occurring with a wide range of intensities. Some events are instantaneous and offer no window of warning, such as earthquakes. Some offer a short warning in which to alert the public to take actions, such as tornadoes or severe thunderstorms. Others occur less frequently and are typically more expensive, with some warning time to allow the public time to prepare for, such as flooding. The Grundy County Hazard Mitigation Planning Committee has determined that natural hazards will be the sole focus of the plan. To that purpose, man-made phenomena such as war, chemical contamination, and other man-made hazards will be excluded from the plan.

Happenings such as those listed below, which occur in a populated area, are referred to as hazardous events. It is not until significant property damage and loss of life result from a natural hazard that the phenomena are classified as a natural disaster.

3.1.1 Review of Existing Mitigation Plans

The MPC previously developed a multi-jurisdictional Hazard Mitigation Plan Update approved in 2021. Grundy County.

Levee failure was excluded from the mitigation planning process as there are no mapped levees nor associated levee protected areas within or immediately upstream of Grundy County. Sinkholes were excluded from the plan as there are no known sinkholes in Grundy County.

3.1.2 Review of Disaster Declaration History

Missouri State of Emergencies are Executive Orders (E.O.) signed by the Governor. For disasters, a State of Emergency could lead to a Federal Disaster Declaration. Since the last plan update, no non-federally declared events resulted in a significant event impacting the planning area

Disaster Declarations may be granted when the severity and magnitude of an event surpasses the ability of the 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.

The following table, (Table 3.1) has the FEMA disaster declarations that included Linn County,

Missouri from 1965 to the present.

Table 3.1. FEMA Disaster Declarations that included Grundy County, Missouri, 1965-Present

Disaster Number	Description	Declaration Date Incident Period	Individual Assistance (IA) Public Assistance (PA)
995	Missouri Flooding, Severe Storm	Jun 10, 1993 - Oct 25, 1993	IA - PA
1403	Missouri Ice Storm	Jan 29, 2002 - Feb 13, 2002	IA
1412	Missouri Severe Storms and Tornadoes	Apr 24, 2002 - Jun 10, 2002	PA
1524	Missouri Severe Storms, Tornadoes, and Flooding	May 18, 2004 - May 31, 2004	IA PA
1708	Severe Storms and Flooding in Missouri	May 5, 2007 - May 18, 2007	PA
1736	Severe Winter Storms in Missouri	Dec 6, 2007 - Dec 15, 2007	PA
1773	Severe Storms and Flooding in Missouri	June 1, 2008 - August 13, 2008	PA
1934	Severe Storms, Flooding, and Tornadoes in Missouri	June 12, 2010 - July 31, 2010	PA
1961	Severe Winter Storm and Snowstorm in Missouri	Jan 31, 2011 - Feb 5, 2011	PA
3017	Missouri Drought	Sep 24, 1976	PA
3232	Hurricane Katrina Evacuation in Missouri	Aug 29, 2005 - Oct 1, 2005	PA
3281	Severe Winter Storms in Missouri	Dec 8, 2007 - Dec 15, 2007	PA
3303	Severe Winter Storm in Missouri	Jan 26, 2009 - Jan 28, 2009	PA
3317	Severe Winter Storm in Missouri	an 31, 2011 - Feb 5, 2011	PA
4200	Severe Storms, Tornadoes, Straight-line Winds, and Flooding	Sep 9, 2014 - Sep 10, 2014	PA
4451	Missouri Severe Storms, Tornadoes, and Flooding	Apr 29, 2019 - Jul 6, 2019	PA
4490	Missouri Covid-19 Pandemic	Jan 20, 2020 - May 11, 2023	IA PA

Source: Federal Emergency Management Agency, https://www.fema.gov/data-visualization-summary-disaster-declarations-and-grants

3.1.3 Research Additional Sources

Other sources of data on locations and past impacts of hazards in the planning area referenced are:

- Missouri Hazard Mitigation Plans (2010, 2013, 2018, and 2023)
- Previously approved Grundy County Hazard Mitigation Plan (6/3/2021)
- Federal Emergency Management Agency (FEMA)
- Missouri Department of Natural Resources
- 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);
- 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 via search engines

Note that 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.

Note that 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

After reviewing the hazards in the 2023 Missouri State Hazard Mitigation Plan as well as the disaster declaration history, the MPC agreed on 9 natural hazards that significantly affect the planning area. These hazards are listed below in Table 3.2 with an "X" indicating the affected jurisdictions. Each of these hazards is profiled in further detail in the next section.

Levee Failure was omitted because there are no levees in the planning area and no areas of the planning area are in a levee protected location. Land Subsidence/Sinkholes were omitted because there are no known sinkholes in the planning area.

Table 3.2. Hazards Identified for Each Jurisdiction

Jurisdiction	Dam Failure	Drought	Earthquake	Extreme Temperatures	Flooding (River and Flash)	Severe Winter Weather	Thunderstorm/Lightning/ Hail/High Wind	Tornado	Wildfire	
Grundy County	x	x	x	x	x	x	x	x	x	
Cities										
City of Galt	x	x	x	x	x	x	x	x	x	
City of Laredo	x	x	x	x	x	x	x	x	x	
City of Spickard	x	x	x	x	x	x	x	x	x	
City of Trenton	x	x	x	x	x	x	x	x	x	
School Districts										
Grundy County R-V Schools	-	-	x	x	x	x	x	x	-	
Laredo R-VII Schools	-	-	x	x	x	x	x	x	-	
Pleasant View R-VI Schools	-	-	x	x	x	x	x	x	x	
Spickard R-II Schools	-	-	x	x	x	x	x	x	-	
Trenton R-IX Schools	x	-	x	x	x	x	x	x	-	
NCMC	x	-	x	x	x	x	x	x	-	
Special Districts										
Grundy County Health Department	x	-	x	x	x	x	x	x	-	

Source: Data questionnaire –2025

3.1.5 Multi-Jurisdictional Risk Assessment

For this multi-jurisdictional plan, the risks are assessed for each jurisdiction where they deviate from the risks facing the entire planning area. The planning area is fairly uniform, in terms of climate and topography, as well as building construction characteristics. Accordingly, the geographic areas of occurrence for weather-related hazards do not vary greatly across the planning area for most hazards. Trenton is slightly more urbanized within the planning area and has more assets that are vulnerable to the weather-related hazards and varied development trends impact the future vulnerability. Similarly, more rural areas have more assets (crops/livestock) that are vulnerable to animal/plant/crop disease. These differences are discussed in greater detail in the vulnerability sections of each hazard.

The hazards that vary across the planning area in terms of risk include dam failure, flash flood, and grass or wildland fire. The difference in hazards is explained in each hazard profile under a separate heading.

3.2 ASSETS AT RISK

This section assesses the population, structures, critical facilities and infrastructure, and other important assets in the planning area that may be at risk to natural hazards. **Table 3.3** shows the total population, building count, estimated value of buildings, estimated value of contents and estimated total exposure to parcels by jurisdiction.

3.2.1 Total Exposure of Population and Structures

For the 2023 State Plan, SEMA utilized a structure inventory dataset developed by the University of Missouri GIS Department (MSDIS) to determine the number of structures exposed to risks. MSDIS created a point and/or footprint dataset for every roof line in every county in the state of Missouri. This dataset is attributed with the type of structure such as Residential, Commercial, etc. This dataset, along with additional State Mitigation Planning Resources, is available on Google Drive in both GIS and Excel format and organized by County:

Unincorporated County and Incorporated Cities

In the following three tables, population data is based on 2023 Census Bureau data. Building counts and building exposure values are based on parcel data developed by the State of Missouri Geographic Information Systems (GIS) database. This data, organized by County, is available on Google Drive through the MISDIS data portal. Contents exposure values were calculated by factoring a multiplier to the building exposure values based on usage type. The multipliers were derived from the Hazus and are defined below. Land values have been purposely excluded from consideration because land remains following disasters, and subsequent market devaluations are frequently short term and difficult to quantify. Another reason for excluding land values is that state and federal disaster assistance programs generally do not address loss of land (other than crop insurance). It should be noted that the total valuation of buildings is based on county assessors' data which may not be current. In addition, government-owned properties are usually taxed differently or not at all, and so may not be an accurate representation of true value. Note that public school district assets and special districts assets are included in the total exposure tables assets by community and county.

Table 3.3 shows the total population, building count, estimated value of buildings, estimated value of contents and estimated total exposure to parcels for the unincorporated county and each

incorporated city. For multi-county communities, the population and building data may include data on assets located outside the planning area. **Table 3.4** that follows provides the building value exposures for the county and each city in the planning area broken down by usage type. Finally, **Table 3.5** provides the building count total for the county and each city in the planning area broken out by building usage types (residential, commercial, industrial, and agricultural).

Table 3.3. Maximum Population and Building Exposure by Jurisdiction

Jurisdiction	2023Annual Population Estimate	Building Count	Building Exposure ($)	Contents Exposure ($)	Total Exposure ($)
City of Galt	168	213	$26,122	$11,728	$37,850
City of Laredo	97	160	$18,564	$10,088	$28,653
City of Spickard	268	180	$20,716	$12,164	$32,879
Village of Tindall	69	49	$5,594	$3,607	$9,201
City of Trenton	5,542	3,461	$410,338	$239,582	$649,920
Unincorporated Grundy County	3,678	9,470	$247,055	$128,392	$375,447
Totals	**9,822**	**13,578**	**$733,976**	**$408,417**	**$1,142,393**

Source: U.S. Bureau of the Census, Annual population estimates/ 5-Year American Community Survey 2023; Building Count and Building Exposure, Missouri GIS Database from SEMA Mitigation Management; Contents Exposure derived by applying multiplier to Building Exposure based on Hazus 6.0 standard contents multipliers per usage type as follows: Residential (50%), Commercial (100%), Industrial (150%), Agricultural (100%). For purposes of these calculations, government, school, and utility were calculated at the commercial contents rate.

Table 3.4. Building Values/Exposure by Usage Type

Jurisdiction	Agricultural	Commercial	Education	Government	Industrial	Residential	Total
City of Galt	$125	$3,097	$6,146	$508	$0	$16,246	$26,122
City of Laredo	$36	$1,267	$0	$381	$0	$16,881	$18,564
City of Spickard	$48	$3,660	$0	$0	$0	$17,008	$20,716
Village of Tindall	$12	$141	$0	$0	$745	$4,696	$5,594
City of Trenton	$867	$65,037	$11,415	$2,158	$6,957	$323,904	$410,338
Unincorporated Grundy	$18,457	$13,373	$878	$1,777	$6,957	$205,613	$247,055
Totals	**$19,547**	**$86,575**	**$18,439**	**$4,952**	**$14,658**	**$589,805**	**$733,976**

Source: Missouri GIS Database, SEMA Mitigation Management Section

Table 3.5. Building Counts by Usage Type

Jurisdiction	Agriculture Counts	Commercial Counts	Education Counts	Government Counts	Industrial Counts	Residential Counts	Total
City of Galt	52	22	7	4	0	128	**213**
City of Laredo	15	9	0	3	0	133	**160**
City of Spickard	20	26	0	0	0	134	**180**
Village of Tindall	5	1	0	0	6	37	**49**
City of Trenton	361	462	13	17	56	2,552	**3,461**
Unincorporated Grundy	7,684	95	1	14	56	1,620	**9,470**
Totals	**8,138**	**615**	**21**	**39**	**118**	**4,647**	**13,578**

Source: Missouri GIS Database, SEMA Mitigation Management Section; Public School Districts and Special Districts

Even though schools and special districts' total assets are included in the tables above, additional discussion is needed, based on the data that is available from the districts' completion of the Data

Collection Questionnaire and district-maintained websites. The number of enrolled students at the participating public-school districts is provided in **Table 3.6** below. Additional information includes 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	Enrolment	Building Count	Building Exposure ($)	Contents Exposure ($)	Total Exposure ($)
Grundy County R-V	137	2*	$14,000,000	$2,000,000	$16,000,000
Laredo R-VII	46	1	NR	NR	NR
Pleasant View R-VI	153	1	$7,310,848	$2.248.460	$9,559,308
Spickard R-II	19	1	$2,000,000	$1,000,000	$3,000,000
Trenton R-IX	1,069	3	$58,624,272	$8,655,247	$67,279,519
NCMC	1,926	13	$200,000,000	$95,000,000	$295,000,000
* Some buildings not located within the county					

Source: MCDS Portal | Missouri Department of Elementary and Secondary Education - MCDS (mo.gov) Data collection questionnaire – July 2025

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 Data Collection Questionnaire as well as the following sources:

- Interview with County Emergency Management Director
- Interview with City Government Employees
- HAZUS
- Data Collection Questionnaires

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

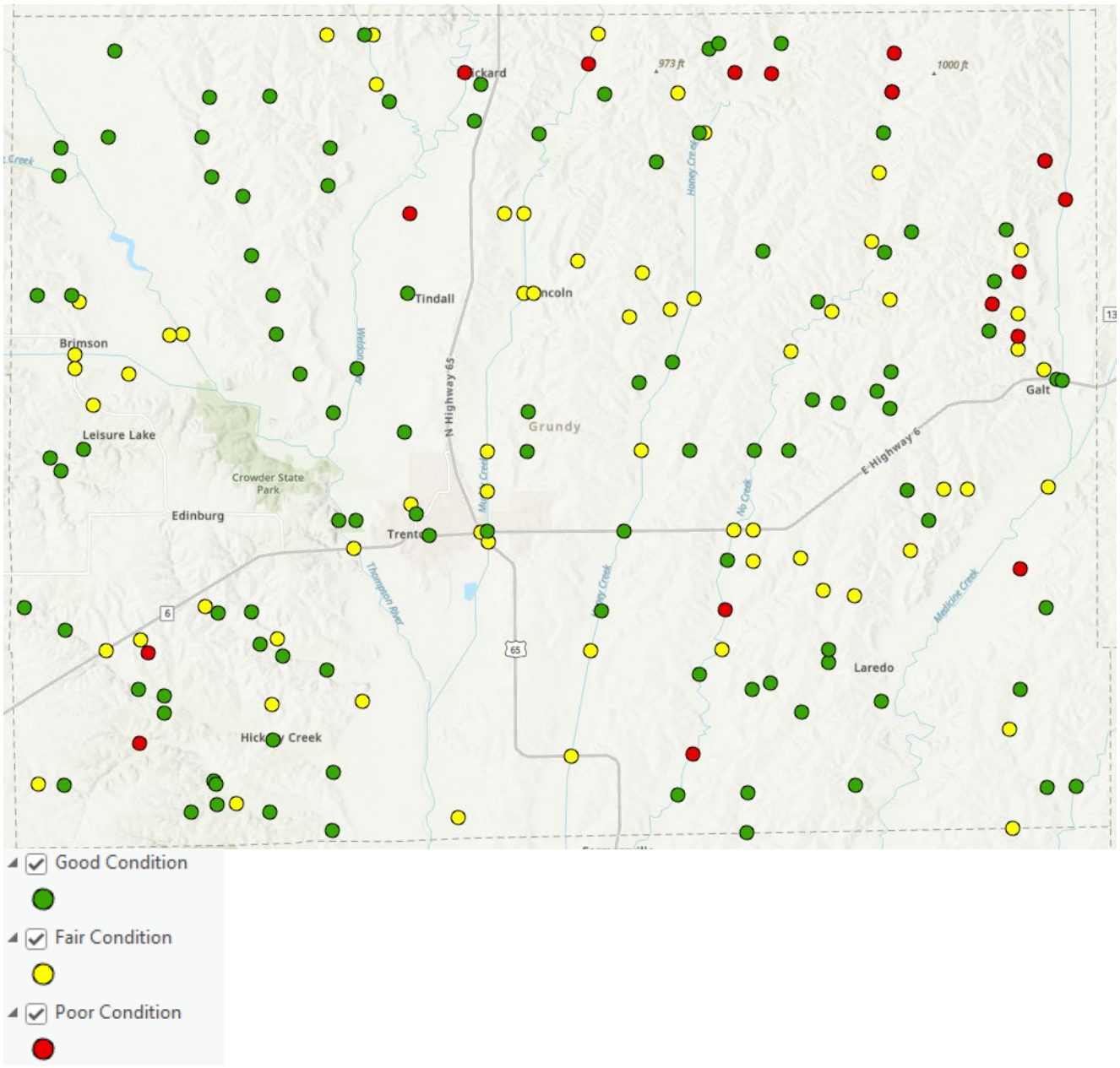
Jurisdiction	Airport Facility	Bus Facility	Childcare Facility	Communications Tower	Electric Power Facility	Emergency Operations	Fire Service	Government	Housing	Shelters	Highway Bridge	Hospital/Health Care	Military	Natural Gas Facility	Nursing Homes	Police Station	Potable Water Facility	Rail	Sanitary Pump Stations	School Facilities	Stormwater Pump Stations	Tier II Chemical Facility	Wastewater Facility	TOTAL
City of Galt	0	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0	1	0	1	1	0	0	1	8
City of Laredo	0	0	0	2	0	0	1	2	1	0	0	0	0	0	0	0	1	1	1	1	0	1	1	12
City of Spickard	0	0	0	1	0	0	1	2	1	0	0	0	0	0	0	0	1	0	1	1	0	1	1	10
Village of Tindall	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Trenton	1	0	6	5	4	1	1	4	5	0	2	1	1	1	3	1	1	1	6	4	0	10	1	59
Unincorporated Grundy County	0	0	0	10	3	0	0	2	0	0	0	1	0	1	0	0	0	2	0	1	0	1	0	6
Totals	**1**	**0**	**6**	**18**	**7**	**1**	**4**	**12**	**8**	**0**	**2**	**2**	**1**	**2**	**3**	**1**	**4**	**4**	**9**	**8**	**0**	**13**	**4**	**95**

Source: Missouri 2023 State Hazard Mitigation Plan and Hazard Mitigation Viewer; Data Collection Questionnaires; Hazus, etc.

The term “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.

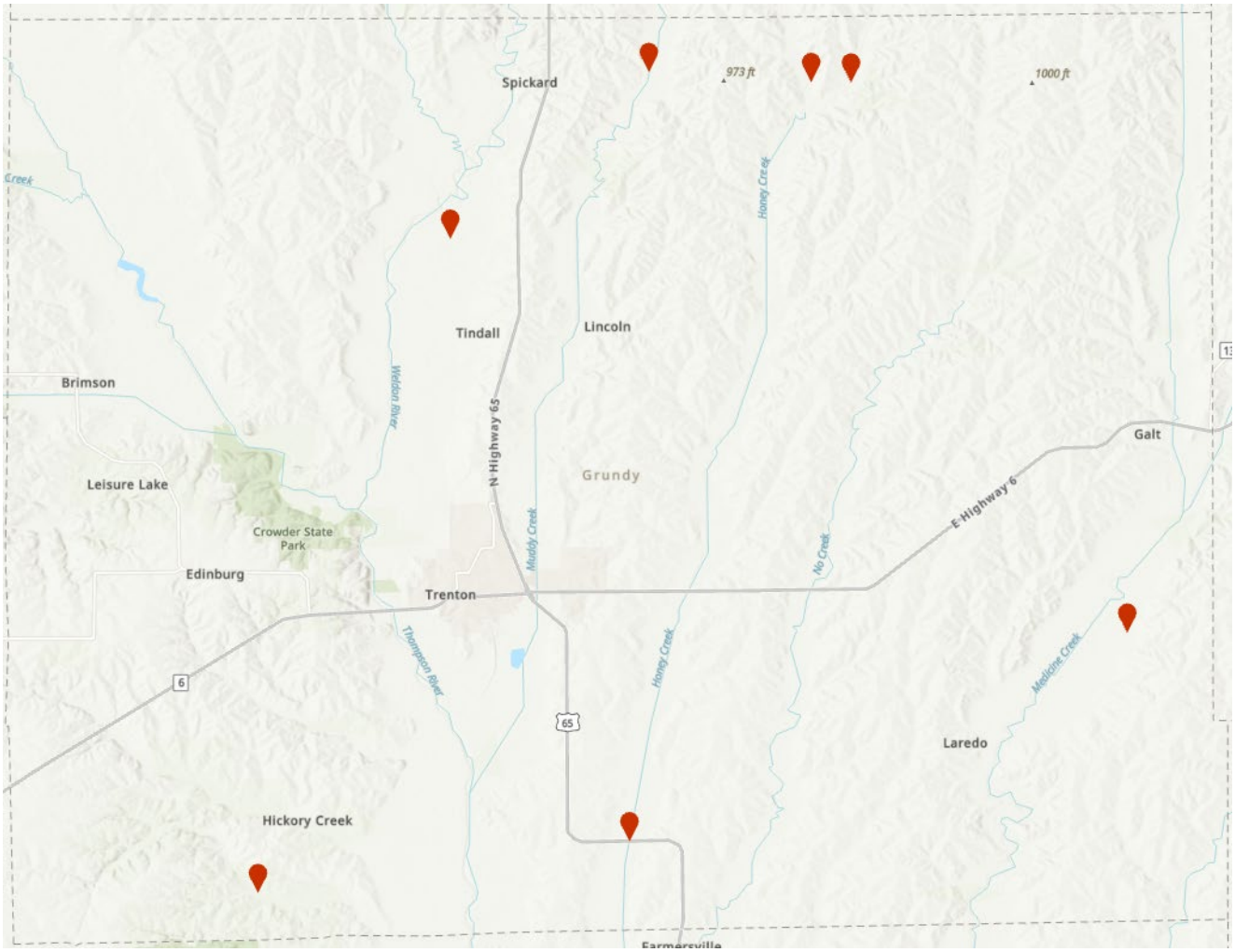
The following figure provides locations and conditions of the bridges in Grundy County. There are currently 7 bridges in the county that are considered scour critical. (See Figure 3.2) None of these bridges are located withing incorporated parts of the county, however there is one scour critical bridge on Highway 65 over Honey Creek.

Figure 3.1. Grundy County Bridges



Source: National Bridge Inventory

Figure 3.2. Grundy County Structurally Deficient Bridges (Scour Critical)



Source: National Bridge Inventory

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 floodwater.
- 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 disasters.

Table 3.8. Threatened and Endangered Species in Grundy County

Common Name	Scientific Name	Status
Mammals		
Gray Bat	Myotis grisescens	Endangered
Indiana Bat	Myotis sodalis	Endangered
Northern Long-eared Bat	Myotis septentrionalis	Endangered
Tricolored Bat	Perimyotis subflavus	Proposed Endangered
Fishes		
Topeka Shiner	Notropis topeka (=tristis)	Endangered
Insects		
Monarch Butterfly	Danaus plexippus	Proposed Threatened
Western Regal Fritillary	Argynnis idalia occidentalis	Proposed Threatened
Flowering Plants		
Eastern Prairie Fringed Orchid	Platanthera leucophaea	Threatened
Mead's Milkweed	Asclepias meadii	Threatened
Western Prairie Fringed Orchid	Platanthera praeclara	Threatened
Critical habitats		
There are no critical habitats at this location.		

Source: U.S. Fish and Wildlife Service, Listed Species (fws.gov); also https://ecos.fws.gov/ipac/

Natural Resources: The Missouri Department of Conservation (MDC) provides a database of lands the MDC owns, leases, or manages for public use. The following table provides a list of the names and locations of parks and conservation areas in Grundy County.

Table 3.9. Parks in Grundy County

Park / Conservation Area	Address	City
Crowder State Park	76 NW Highway 128	Trenton
Mockingbird Hill Access	Thompson River West of Trenton	Trenton

Source: Mostateparks.com; Local questionnaire – July 2025

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 3.10. Grundy County Properties on the National Register of Historic Places

Property	Address	City	Date Listed
Crowder State Park Vehicle Bridge	MO 128	Trenton	3/4/1985
Norris, Jewett, Library	1331 Main St.	Trenton	9/7/1984
Plaza Hotel	715 Main St.	Trenton	7/18/2001
St. Philip's Episcopal Church	141 E. 9th St.	Trenton	7/17/1979
Trenton High School	1312 E. 9th St.	Trenton	4/21/2010
Wolz, George, House	605 W Crowder Rd.	Trenton	7/19/2018

WPA Stock Barn and Pavilion	Oklahoma St. at Eastside Park	Trenton	4/25/1994

Source: National Register of Historic Places – Spreadsheet of NRHP Listed Properties
https://www.nps.gov/subjects/nationalregister/data-downloads.htm

Table 3.11. Major Non-Government Employers in Grundy County

Employer Name	Main Locations	Product or Service	Employees
Nestle Inc.	Trenton	Food Manufacturing	150-200
Wright Memorial Hospital	Trenton	Healthcare	200
Modine Manufacturing	Trenton	Thermal Management Component	200-250
NCMC	Trenton	Education	250
Trenton R-IX	Trenton	Education	174

Source: Data Collection Questionnaires; local Economic Development Commissions

Agriculture: Agriculture plays an important role in the economy of Grundy County. While exact employment numbers are not broken out by sector at the county level, the high number of farms (564) and the large share of land in agriculture (76.5%) suggest that a significant portion of the local workforce is tied to agriculture, either directly or indirectly.

Agriculture in Grundy County is a cornerstone of the local economy as a major source of employment and business activity. It also is a driver of economic resilience and rural development.

Table 3.12. Economic Contribution of Missouri Agriculture and Forestry for Grundy County

	Added Value (in $million)	Output (in $million)	Jobs Supported	Household Income Generated
Grundy County	$89.8	$244.4	1,694	$76.4 Million

Source: Missouri department of agriculture

Table 3.13. Top crops in Grundy County

Grundy	Soybeans	Corn	Forage	Wheat	Corn for Silage
Acres	69,851	34,675	18,718	416	190

Source: USDA Census of Agriculture

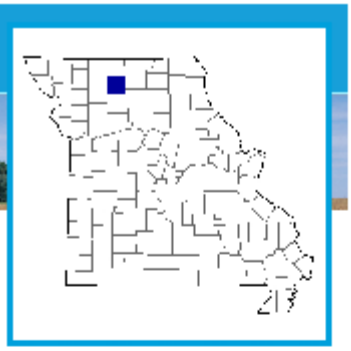
Table 3.14. Top livestock by inventory in Grundy County

Grundy County	Cattle & Calves	Layers (egg-laying hens)	Sheep & Lambs	Goats	Horses & Ponies	Hogs & Pigs
# Present	17,242	Not reported	1,249	Not reported	811	43,147

Source: USDA Census of Agriculture

Figure 3.3. Census of Agriculture for Grundy County 2022 (pg. 1)

2022 CENSUS OF AGRICULTURE *County Profile*



Grundy County
Missouri

Total and Per Farm Overview, 2022 and change since 2017

	2022	% change since 2017
Number of farms	564	-15
Land in farms (acres)	214,652	-5
Average size of farm (acres)	381	+12
Total	**($)**	
Market value of products sold	110,246,000	+19
Government payments	5,452,000	+20
Farm-related income	4,001,000	-20
Total farm production expenses	80,021,000	+2
Net cash farm income	39,678,000	+68
Per farm average	**($)**	
Market value of products sold	195,471	+39
Government payments [a]	18,173	+54
Farm-related income [a]	17,027	+13
Total farm production expenses	141,881	+19
Net cash farm income	70,351	+97

1 Percent of state agriculture sales

Share of Sales by Type (%)

Crops	76
Livestock, poultry, and products	24

Land in Farms by Use (acres)

Cropland	155,821
Pastureland	28,651
Woodland	18,237
Other	11,943

Acres irrigated: 2,387
1% of land in farms

Land Use Practices (% of farms)

No till	18
Reduced till	7
Intensive till	12
Cover crop	7

Farms by Value of Sales

	Number	Percent of Total [b]
Less than $2,500	221	39
$2,500 to $4,999	32	6
$5,000 to $9,999	36	6
$10,000 to $24,999	53	9
$25,000 to $49,999	95	17
$50,000 to $99,999	32	6
$100,000 or more	95	17

Farms by Size

	Number	Percent of Total [b]
1 to 9 acres	17	3
10 to 49 acres	120	21
50 to 179 acres	214	38
180 to 499 acres	123	22
500 to 999 acres	47	8
1,000+ acres	43	8

USDA United States Department of Agriculture
National Agricultural Statistics Service
www.nass.usda.gov/AgCensus

Figure 3.4. Grundy County Census of Agriculture 2022, (pg. 2)

Grundy County
Missouri, 2022
Page 2

2022 CENSUS OF AGRICULTURE *County Profile*

Market Value of Agricultural Products Sold

	Sales ($1,000)	Rank in State [c]	Counties Producing Item	Rank in U.S. [c]	Counties Producing Item
Total	**110,246**	**57**	**114**	**1,321**	**3,078**
Crops	**83,269**	**41**	**114**	**974**	**3,074**
Grains, oilseeds, dry beans, dry peas	78,751	41	109	738	2,917
Tobacco	-	-	2	-	267
Cotton and cottonseed	-	-	7	-	647
Vegetables, melons, potatoes, sweet potatoes	(D)	(D)	112	(D)	2,831
Fruits, tree nuts, berries	133	53	112	1,428	2,711
Nursery, greenhouse, floriculture, sod	(D)	9	104	(D)	2,660
Cultivated Christmas trees, short rotation woody crops	-	-	36	-	1,274
Other crops and hay	1,490	77	114	1,723	3,035
Livestock, poultry, and products	**26,977**	**66**	**114**	**1,553**	**3,076**
Poultry and eggs	916	43	113	806	3,027
Cattle and calves	8,959	82	114	1,336	3,047
Milk from cows	1,569	30	84	742	1,770
Hogs and pigs	15,046	25	111	368	2,814
Sheep, goats, wool, mohair, milk	122	69	111	1,310	2,967
Horses, ponies, mules, burros, donkeys	266	29	113	937	2,907
Aquaculture	-	-	36	-	1,190
Other animals and animal products	99	25	106	967	2,909

Producers [d]	**1,037**
Sex	
Male	630
Female	407
Age	
<35	105
35 – 64	489
65 and older	443
Race	
American Indian/Alaska Native	2
Asian	5
Black or African American	-
Native Hawaiian/Pacific Islander	-
White	1,030
More than one race	-
Other characteristics	
Hispanic, Latino, Spanish origin	4
With military service	115
New and beginning farmers	215

Percent of farms that:

Have internet access	66
Farm organically	1
Sell directly to consumers	2
Hire farm labor	18
Are family farms	96

Top Crops in Acres [e]

Soybeans for beans	69,851
Corn for grain	34,675
Forage (hay/haylage), all	18,718
Wheat for grain, all	416
Corn for silage/greenchop	190

Livestock Inventory (Dec 31, 2022)

Broilers and other meat-type chickens	(D)
Cattle and calves	17,242
Goats	(D)
Hogs and pigs	43,147
Horses and ponies	811
Layers	(D)
Pullets	50
Sheep and lambs	1,249
Turkeys	(D)

[a] Average per farm receiving. [b] May not add to 100% due to rounding. [c] Among counties whose rank can be displayed. [d] Data collected for a maximum of four producers per farm. [e] Crop commodity names may be shortened; see full names at www.nass.usda.gov/go/cropnames.pdf. [f] Position below the line does not indicate rank. (D) Withheld to avoid disclosing data for individual operations. (NA) Not available. (Z) Less than half of the unit shown. (-) Represents zero.

USDA is an equal opportunity provider, employer, and lender.

3.3 LAND USE AND DEVELOPMENT

3.3.1 Development Since Previous Plan Update

The following table shows a significant and steady loss of population in most of the communities in Grundy County. Most of the jurisdictions have shown a trend in declining population between 2010 and 2020. However, the 2023 ACS some jurisdictions estimated to have increased populations, but anecdotal accounts do not support these estimates. Note: data in this table is also in **Table 2.1** in Chapter 2.

Table 3.15. County Population Growth, 2010-2023

Jurisdiction	2010 Population	2020 Population	2023 Annual Population Estimate or ACS Population	# Change (2010-2023)	% Change (2010-2023)
Grundy County	10,261	9,808	9,822	-439	-4.3%
Grundy County Unincorporated	3,478	3,607	3,678	200	-5.7%
City of Galt	253	168	168	-85	-33.6%
City of Laredo	198	156	97	-101	-51.0%
City of Spickard	254	222	268	-14	-5.6%
Village of Tindall	77	46	69	-8	-10.3%
City of Trenton	6,001	5,609	5,542	-459	-7.6%

Source: U.S. Bureau of the Census, Decennial Census, annual population estimates/ 5-Year American Community Survey 2023;
*population includes the portions of these cities in adjacent counties

Population growth or decline is generally accompanied by increases or decreases in the number of housing units. The following table provides the change in numbers of housing units in the planning area from 2010 to 2023. This table includes the most recent data available, the American Community Survey 5-year Estimates.

Table 3.16. Change in Housing Units, 2010-2024

Jurisdiction	Housing Units 2010	Housing Units 2024	2010-2024 # Change	2000-2024 % Change
Grundy County	5,023	4,833	-190	-3.7%
City of Galt	138	111	-27	-19.5%
City of Laredo	128	157	29	22.6%
City of Spickard	148	222	74	50%
Village of Tindall	34	31	-3	-8.8%
City of Trenton	2,960	2,902	-58	-1.9%
Total:	**8,431**	**8,256**	**-175**	**-2.0%**

Source: U.S. Bureau of the Census, Decennial Census, American Community Survey 5-year Estimates; Population Statistics are for entire incorporated areas as reported by the U.S. Census Bureau

Vulnerability to hazards will be affected based on population and where new housing units have been built. Due to lack of expected growth in population, vulnerability is not expected to increase. The lack of city and county building ordinances is appealing to residential builders, however, the county is rural and its location has not been a popular area for development. The rural area is mostly comprised of farmland, and the value of the farmland exceeds the attraction for new residential development. However, vulnerability is a concern as the population ages in rural

Grundy County.

3.3.2 Future Land Use and Development

The population of Grundy County and participating jurisdiction has been declining steadily for at least the last ten years. Due to a lack of population, there has been little in the way of new developments. Some new development is possible within the city of Trenton; however, such development is unlikely to significantly alter vulnerability.

3.4 HAZARD PROFILES, VULNERABILITY, AND PROBLEM STATEMENTS

Each hazard will be analyzed individually in a hazard profile. The profile will consist of a general hazard description, location, strength/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

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 and the impact of Climate Change" to Changing Future Conditions Considerations in all of the hazard profiles. 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 areas in the planning area that are affected by the hazard. 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.
- **Strength/Magnitude/Extent:** This includes information about the strength, 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. This section should also include information on the typical or expected strength/magnitude/extent of the hazard in the planning area. Strength, magnitude, and extent can also include the speed of onset and the duration of hazard events. Describing the strength/magnitude/extent of a hazard is not the same as describing its potential impacts on a community. Strength/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 can be determined by dividing the number of recorded events by the number of years of available data 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 should be reported as 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.

- **Changing Future Conditions Considerations:**

  In addition to the probability of future occurrence, changing future conditions should also be considered, 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://toolkit.climate.gov/tools/climate-explorer

Vulnerability Assessments

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 should be based on the best available data. The vulnerability assessments can also be based on data that was collected for the 2023 State Hazard Mitigation Plan Update. With the 2023 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, including the independent City of St. Louis. 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 2023 State Plan Update.

The Missouri Hazard Mitigation Viewer includes a Map Viewer with a legend of clearly labeled features, a north arrow, a base map that is either aerial imagery or a street map, risk assessment data symbolized the same as in the 2023 State Plan for easy reference, search and query capabilities, ability to zoom to county level data and capability to download PDF format maps. The Missouri Hazard Mitigation Viewer can be found at this link: http://bit.ly/MoHazardMitigationPlanViewer2023.

The vulnerability assessments in the 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.

- **Vulnerability Overview:**

  This section will provide a summary of each jurisdiction's vulnerability to the identified hazards. This overall summary of vulnerabilities will identify structures, systems, populations, and/or other community assets as defined by the community that are susceptible to damage and loss for hazard events.

- **Potential Losses to Existing Development:**

  This section will include the potential impacts of the hazard for each participating jurisdiction. This will include types and numbers of buildings, critical facilities, etc. Impact means the consequences and effect the hazard could pose to the jurisdiction and its assets. The assets are determined by the community and include, for example, people, structures, facilities, systems, capabilities, and/or

activities that have value to the community. For example, impacts could be described by referencing historical disaster impacts and/or an estimate of potential future losses.

- **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.

- **Hazard Summary by Jurisdiction:**
  For hazard risks that vary by jurisdiction, this section will provide an overview of the variation and the factual basis for that variation.

Problem Statements

In each problem statement, the hazard analysis will conclude with a summary of the problems created by the hazard in the planning area, and possible ways to resolve those problems. This will include jurisdiction-specific information in those cases where the risk varies across the planning area. The focus of the problem statements sub-section is to synthesize the "problems" revealed through the risk assessment and then through the process of updating the mitigation strategy, develop mitigation actions that are aimed at "solving" the identified problems. Problem statements should be as specific as possible. Problems that are specific to jurisdictions or to specific assets or areas of the planning area that are problematic should be addressed. The goal of this is to prompt the development of specific mitigation actions that could be undertaken to potentially solve or lessen the effects of hazards.

3.4.1 Flooding (Riverine and Flash)

Hazard Profile

Hazard Description

A flood is partial or a 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 and levee failure is discussed in other sections within this chapter. 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 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 a full peak in only a few minutes. Rapid onset allows little or no time for protective measures. Flash flood water moves 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 (SFHAs). Flash flooding occurs in SFHAs and those 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.

Riverine flooding is most likely to occur in SFHAs. The following maps are from the most recent information from FEMA's National Flood Layer of Grundy County. The following key is the flood map key for all jurisdictions flood maps.

Figure 3.5. FIRM Map Legend

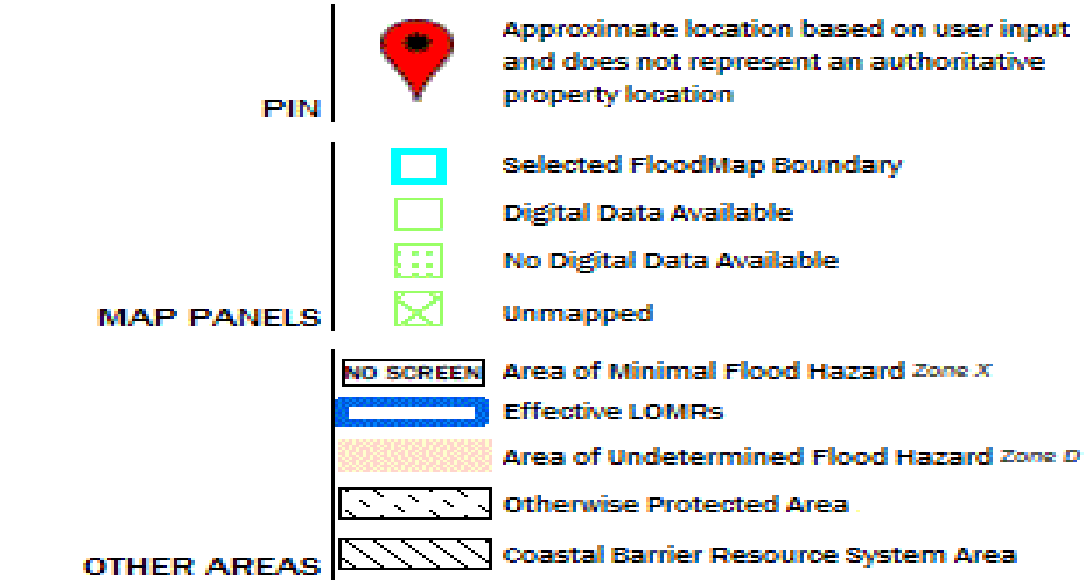


Figure 3.6. Brimson FIRM Map

Figure 3.7. Galt FIRM Map

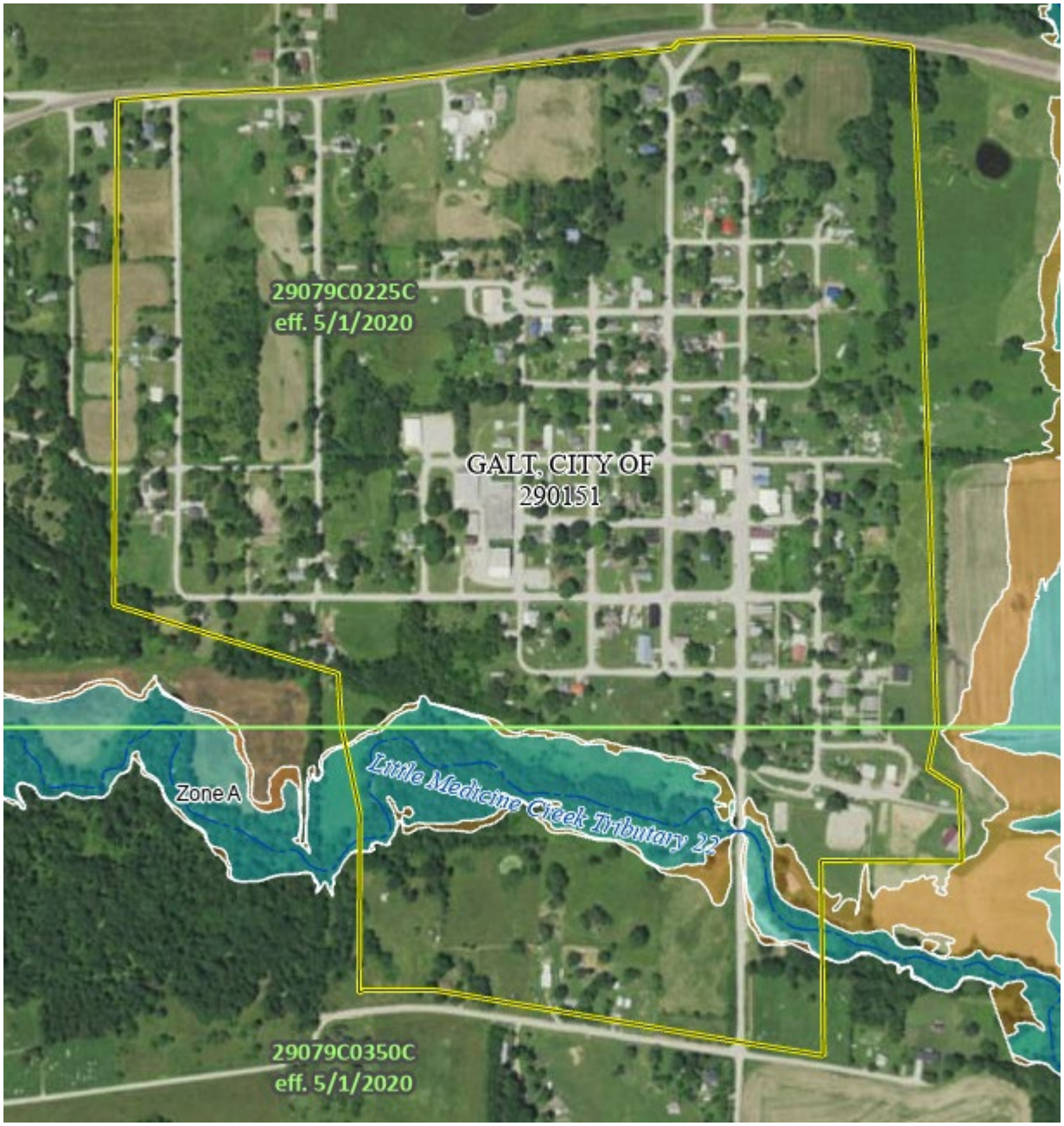


Figure 3.8. Laredo FIRM MAP

Figure 3.9. Spickard FIRM MAP

Figure 3.10. Tindall FIRM Map

Figure 3.11. Trenton FIRM Map

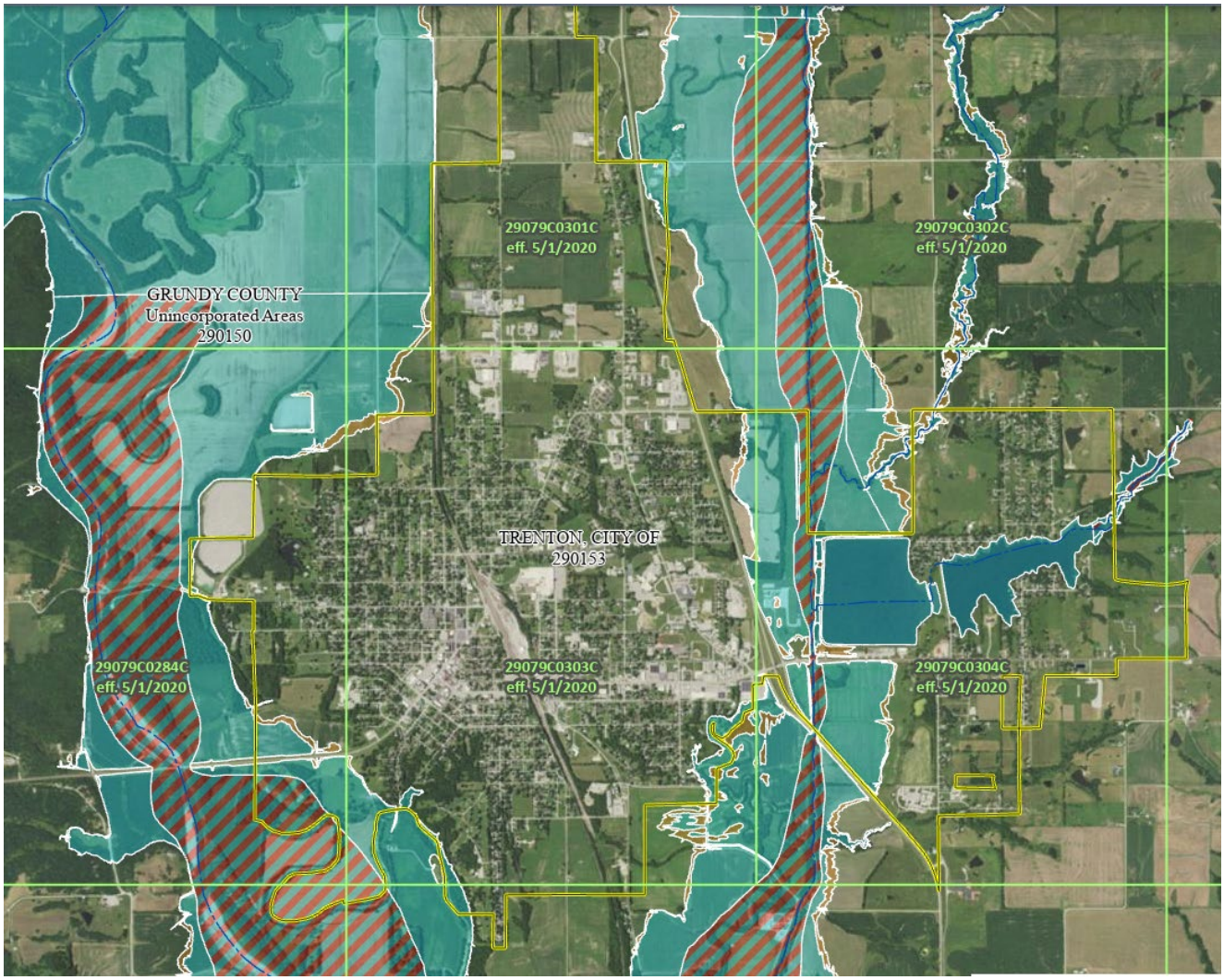


Table 3.17. Grundy NCEI Flood Events by Location, 2000-2025

Location	# of Events
Unincorporated Grundy County	**7**
HICKORY CREEK	3
COBURN	2
PARKERTON	2
Trenton	**1**
TRENTON ARPT	1

Source: National Centers for Environmental Information, 6-25-2025

Flash flooding occurs in SFHAs and those 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. The following table provides the locations and frequency of events from 2000 to 2025. Also included in the "Previous Occurrences" section, is a table that contains the event narratives from the NCEI database, which provides additional information about the past flash flood events in the planning area.

Table 3.18. Grundy County NCEI Flash Flood Events by Location, 2000-2025

Location	# of Events
Unincorporated Grundy County	**6**
PARKERTON 6/24/2008	
HICKORY CREEK 6/24/2008	
EDINBURG 7/24/2008	
COBURN 6/9/2011	
HICKORY CREEK 7/13/2017	
MODENA 8/4/2023	
Brimson	**1**
BRIMSON 6/11/2015	
Galt	**2**
GALT 8/27/2004	
GALT 5/15/2009	
Laredo	**2**
LAREDO 7/12/2017	
LAREDO 6/5/2019	
Spickard	**1**
SPICKARD 5/28/2019	
Trenton	**16**
TRENTON 5/17/2001	
TRENTON 8/27/2004	
TRENTON 8/27/2004	
TRENTON 5/6/2007	
TRENTON 6/24/2008	
TRENTON 6/9/2011	
TRENTON 8/28/2016	
TRENTON 7/13/2017	
TRENTON 5/26/2019	
TRENTON 5/14/2020	
TRENTON ARPT 6/24/2008	
TRENTON ARPT 7/24/2008	
TRENTON ARPT 5/15/2009	
TRENTON ARPT 9/19/2010	
TRENTON ARPT 6/9/2011	
TRENTON ARPT 9/9/2014	

Source: National Centers for Environmental Information, June 2025

Strength/Magnitude/Extent

Missouri has a long and active history of flooding over the past century, according to the 2023 State Hazard Mitigation Plan. Flooding along Missouri's major rivers generally result 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.

According to the U.S. Geological Survey, two critical factors affect flooding due to rainfall: rainfall duration and rainfall intensity – the rate at which it rains. These factors contribute to a flood's height, water velocity and other properties that reveal its magnitude.

National Flood Insurance Program (NFIP) Participation

The following table lists the participants in the NFIP. Participation in the NFIP has the goal of reducing the impact of flooding on private and public structures. The NFIP does so by providing affordable insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures.

Table 3.19. NFIP Participation in Grundy County – Ordinance and Enforcement Information

Community ID #	Community Name	NFIP Participant (Y/N/Sanctioned)	Adoption Date of Current Flood Damage Prevention Ordinance	Floodplain Administrator and/or Agency
290151A	GALT, CITY OF	YES	6-9-2018	Mercedes Scobee Clerk
290150A	GRUNDY COUNTY*	YES	4-13-1987	Green Hills Regional Planning Commission
290153A	TRENTON, CITY OF	YES	1-13-2020	Wes Barone City of Trenton

Source: NFIP Community Status Book, August 2025; PIVOT (information from STATE) Community Status Book | FEMA.gov; M= No elevation determined – all Zone A, C, and X: NSFHA = No Special Flood Hazard Area; E=Emergency Program

Table 3.20. NFIP Participation in Grundy County- Mapping Information

Community ID #	Community Name	Current Effective Map Date	Regular- Emergency Program Entry Date
290151A	GALT, CITY OF	05/01/20(M)	07/18/85
290150A	GRUNDY COUNTY*	05/01/20	02/01/87
290153A	TRENTON, CITY OF	05/01/20	12/2/1980

Source: NFIP Community Status Book, June 2025; PIVOT Community Status Book | FEMA.gov; M= No elevation determined – all Zone A, C, and X: NSFHA = No Special Flood Hazard Area; E=Emergency Program

The jurisdictions that participate in the NFIP have adopted Floodplain Ordinances that establish regulations for construction, development, and substantial improvements within floodplain areas. These regulations mandate the acquisition of floodplain development permits and elevation certificates to ensure that all projects comply with these standards. Records and documentation for all floodplain development is kept in adherence to FEMA regulations and the designated floodplain administrator of each jurisdiction maintains these records.

Substantial improvements/substantial damage provisions are implemented after an event through the Floodplain Ordinance of participating jurisdictions. Each jurisdiction that participates in the NFIP has addressed the specific requirements of FEMA regarding substantial damage/substantial improvement provisions and development in SFHA.

Of the jurisdictions that participated in the plan update, Spickard and Laredo, do not participate in the NFIP. While there are flood hazard areas that are in parts of the incorporated areas there are no structures present. Within these jurisdictions there is little political support for participation in the NFIP. Additionally, both cities are extremely limited in terms of staff capabilities, both employ a part-time clerk, a public works official, and Laredo employs a part-time sanitation department employee.

Table 3.21. NFIP Policy and Claim Statistics as of Date

Community Name	Policies in Force	Insurance in Force	Closed Losses	Total Payments
Trenton	3	$490,000.00	3	$156,808.89

Source: NFIP Community Status Book, July 2025; PIVOT (information from STATE), Community Status Book | FEMA.gov
*Closed Losses are those flood insurance claims that resulted in payment. Loss statistics are for current as of July 2025

The city of Treton is the only city within the planning area that has policies in force. There have been 3 closed losses totaling $156,808.89

Repetitive Loss/Severe Repetitive Loss Properties

Repetitive Loss Properties are those properties with at least two flood insurance payments of $1,000 or more in a 10-year period. According to the Flood Insurance Administration, jurisdictions included in the planning area have a combined total of 0 repetitive loss properties, as of September 2025,

Table 3.22. Grundy County Repetitive Loss Properties

Jurisdiction	# of Properties	Type of Property	# Mitigated	Building Payments	Content Payments	Total Payments	Average Payment	# of Losses
NO PROPERTIES								

Source: Missouri state emergency management agency, July 2025

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.

There have been 0 Severe repetitive loss properties in the planning area as reported by the Missouri State Emergency Management Agency as of July 2025.

Table 3.23. Grundy County Severe Repetitive Loss Properties

Jurisdiction	# of Properties	Type of Property	# Mitigated	Building Payments	Content Payments	Total Payments	Average Payment	# of Losses
No properties listed								

Previous Occurrences

Table 3.24. NCEI Grundy County Flash Flood Events Summary, 2000 to 2025

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2001	1	0	0	0	0
2004	3	0	0	0	0
2007	1	0	0	0	0

2008	6	0	0	0	0
2009	3	0	0	0	0
2010	1	0	0	0	0
2011	3	0	0	0	0
2014	1	0	0	0	0
2015	1	0	0	0	0
2016	1	0	0	0	0
2017	3	0	0	0	0
2019	3	0	0	0	0
2020	1	0	0	0	0
2023	1	0	0	0	0
Total:	**29**	**0**	**0**	**0**	**0**

Source: NCEI, data accessed June 2025

Table 3.25. NCEI Grundy County Riverine Flood Events Summary, 2000 to 2025

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2007	1	0	0	0	0
2017	6	0	0	0	0
2018	1	0	0	0	0
Total:	**8**	**0**	**0**	**0**	**0**

Source: NCEI, June 2025

Table 3.26. Grundy County Flood or Flash flood event summaries 2000-2025

Year	Date	Summary
2000		No reported events
2001	5/17/2001	Law enforcement reported 1.5 feet of water over highway 65
2002		No reported events
2003		No reported events
2004	8/27/2004	On August 27, 2004, a flash flood caused significant road closures. Water reached 2 feet deep on County Road F, and also covered the intersection of 100th Street and State Route J. Additionally, several creeks overflowed their banks near the municipal airport and Crowder State Park.
2005		No reported events
2006		No reported events
2007	5/6/2007	Several roads have water flowing over them due to the heavy rains.
2008	6/24/2008 7/24/2008	On Highway A, water was flowing up to 5 inches deep. Significant flooding was also reported on Route 6 west of Trenton, and Highway 65 south of Trenton was closed due to high water Muddy Creek at Trenton flooded parts of the city airport. Additionally, a water rescue was reported along Wolf Creek, five miles southwest of Trenton
2009	5/15/2009	Flash flooding led to the closure of State Route J and State Route C near Trenton. Additionally, the Trenton Airport's runways were closed due to the rising waters.
2010	9/19/2010	Water was reported up to a foot deep, at the intersection of 18th and Tindall Streets in Trenton.
2011	6/9/2011	Portions of Highway W experienced flooding, with reports of one to two feet of water flowing over the road. Additionally, water of an unknown depth was observed flowing across Highway 65.
2012		No reported events
2013		No reported events
2014	9/9/2014	Areas around Trenton received between 4 and 6 inches of rain in a short time, and as a result many roads in and around Trenton were flooded with running water. In Trenton, manhole covers were lifted into the street, and according to one resident there was flooding in areas that have never flooded in the past. As

		of 5 am the next morning several streets were still flooded and the airport had received nearly 6 inches of rain.
2015	6/11/2015	Flooding was reported on Route A, northwest of Trenton.
2016	8/28/2016	Several feet of water was covering intersections in Trenton that normally do not flood.
2017	7/12/2017	East of Laredo, several feet of water flowed over Route V. Within Trenton, Ellison and 4th Street were covered in running water. Additionally, Highways F and W in southern Grundy County were closed due to high water.
2018	10/8/2018	Numerous roads in and around Trenton were flooded due to heavy rain.
2019	5/26/2019 5/28/2019 6/5/2019	Water was flowing over several roads in Trenton. Significant street flooding was reported out of Spickard. After several inches of rain fell across the region several roads near Laredo was washed out.
2020	5/14/2020	Highway W was impassible due to high water coming off Wolf Creek.
2021		No reported events
2022		No reported events
2023	8/4/2023	Heavy rain led to flash flooding in Mercer and Grundy Counties. A water rescue was performed on US 65 north of Spickard.

Source: NCEI Storm event summaries – June 2025

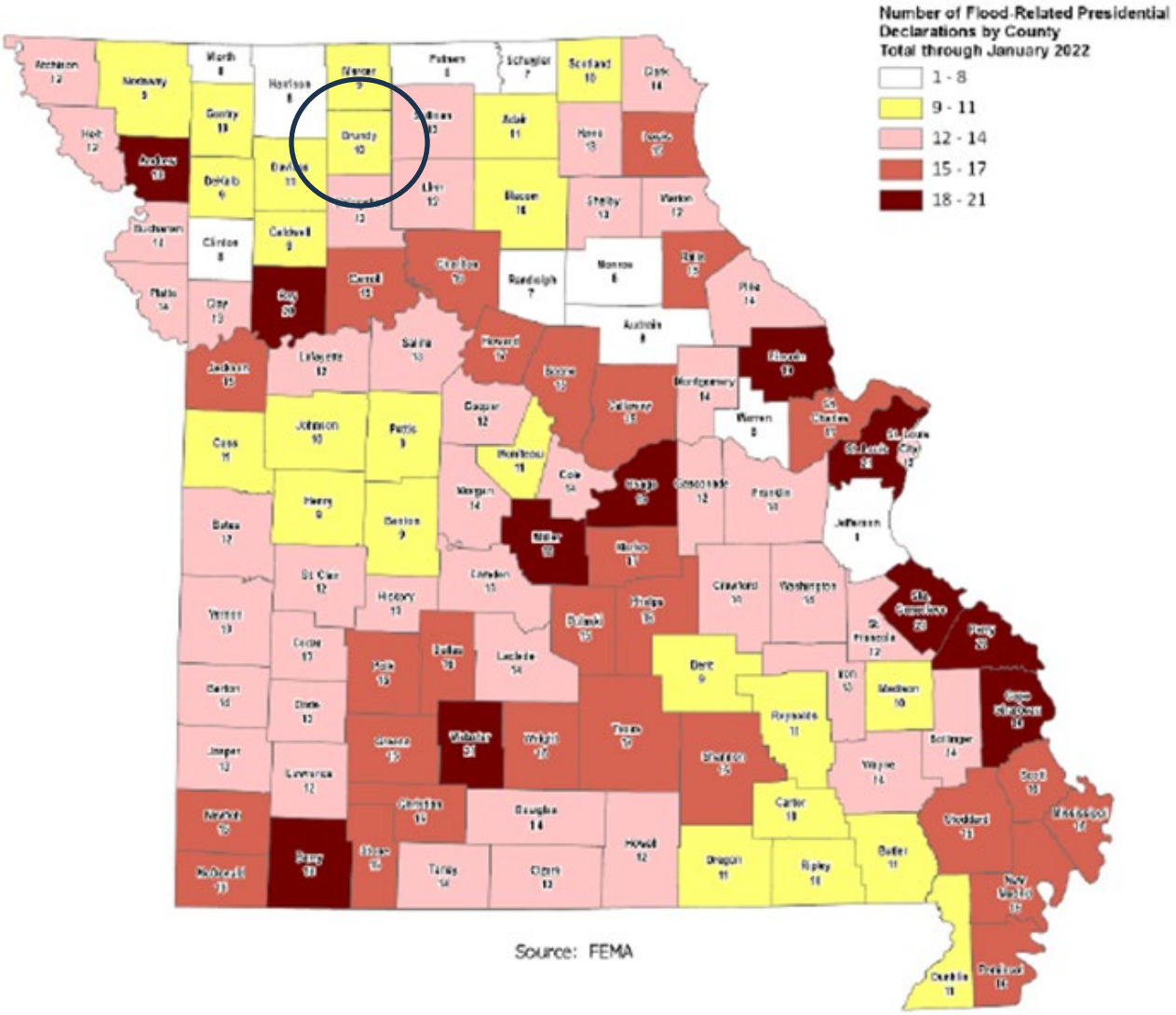
Table 3.27. Flooding Disaster Declarations in Grundy County (1973-2025)

Disaster Number	Declaration Date	Incident Subcategory	Information
995	7/9/1993	Flood	Severe Storms & Flooding
1524	6/11/2004	Severe Storm	Severe Storms, Tornadoes, & Flooding
1708	6/11/2007	Severe Storm	Severe Storms & Flooding
1773	6/25/2008	Severe Storm	Severe Storms & Flooding
1934	8/17/2010	Severe Storm	Severe Storms, Flooding, & Tornado
3325	6/30/2011	Flood	Flooding
4200	10/31/2014	Flood	Severe Storms, Tornadoes, Straight-Line Winds, and Flooding
4451	7/9/2019	Severe Storm	Severe Storms, Tornadoes, & Flooding
4612	9/1/2021	Flood	Severe storms, Straight line winds, and flooding
4741	9/21/2023	Flood	Severe storms, Straight line winds, and flooding

Source: FEMA.gov/es/disaster/

Figure 3.12. Number of Flood-Related Presidential Declarations for Grundy County (1973-

2025)



Source: 2023 Missouri Hazard Mitigation Plan

The following table provides historic information of crop insurance claims paid between 2014 and 2024 in Grundy County

Table 3.28. Crop Insurance Claims Paid for flooding in Grundy County 2014-2024

Crop Year	Crop Name	Cause of Loss	Insurance Paid ($)
2014	Corn	Flood	$106,534.50
	Soybeans		$1,106,689.50
2015	Soybeans	Flood	$364.00
2016	No Claims		$0

2017	Corn	Flood	$11,588.00
	Soybeans		$16,494.00
2018	No Claims		$0
2019	Corn	Flood	$129,505.50
	Popcorn		$77,398.00
	Soybeans		$313,117.00
	Wheat		$3,998.61
2020	No Claims		$0
2021	No Claims		$0
2022	No Claims		$0
2023	No Claims		$0
2024	No Claims		$0
Total			**$1,765,689.11**

Source: USDA Risk Management Agency http://www.rma.usda.gov/data/cause

Table 3.29. Crop Insurance Claims Paid for excessive moisture in Grundy County 2014-2024

Year	Crop Name	Cause of Loss	Insurance Paid ($)
2014	Corn	Excess Moisture / Precipitation / Rain	$98,750.50
	Soybeans		$722,497.89
	Wheat		$38,159.00
2015	Corn	Excess Moisture / Precipitation / Rain	$1,394,908.55
	Popcorn		$142,948.00
	Soybeans		$2,784,562.85
	Wheat		$156,232.32
2016	Corn	Excess Moisture / Precipitation / Rain	$129,258.92
	Popcorn		$2,551.00
	Grain Sorghum		$919.00
	Soybeans		$118,695.00
	Wheat		$12,934.21
2017	Corn	Excess Moisture / Precipitation / Rain	$53,870.00
	Soybeans		$157,975.30
2018	Corn	Excess Moisture / Precipitation / Rain	$139,175.00
	Soybeans		$71,716.40
2019	Corn	Excess Moisture / Precipitation / Rain	$3,012,971.89
	Soybeans		$1,173,352.00
	Wheat		$8,443.00
2020	Corn	Excess Moisture / Precipitation / Rain	$170,697.50
	Soybeans		$244,997.25
2021	Corn	Excess Moisture / Precipitation / Rain	$762,192.10
	Soybeans		$899,951.00
	Wheat		$4,161.00
2022	Corn	Excess Moisture / Precipitation / Rain	$151,481.00
	Soybeans		$122,237.00
2023	Corn	Excess Moisture / Precipitation / Rain	$8,687.00
	Soybeans		$152,631.00
2024	Corn	Excess Moisture / Precipitation / Rain	$211,700.00
	Soybeans		$185,367.00
Total			**$13,134,022.68**

Source: USDA Risk Management Agency http://www.rma.usda.gov/data/cause

According to the USDA Risk Management Agency, there have been a total of $14,899,711.79 in crop losses due to excess moisture/precipitation/rain and flood between the years 2014 and 2025. For the Cause of Loss of Flood alone, there have been a total of $1,765,689.11.

This total adjusted for an annualized basis results in $1,489,971.18 in crop losses.

Probability of Future Occurrence

The probability of future occurrence of either flash flood or flood is calculated by dividing the number of events by the number of years and multiplying the solution by 100% to determine the probability of that event occurring in any given year within the planning area.

$$Probability\ of\ Flash\ Flood\ Incident = \frac{29}{25} = 1.16$$ = 116% Probability

This indicates that Grundy County will get, on average, approximately 1.16 flash flood events annually.

$$Probability\ of\ River\ Flood\ Incident = \frac{8}{25} = 0.32$$ = 32% Probability

This indicates that there is approximately a 32% probability that Grundy County will have a Riverine Flood in any given year.

Changing Future Conditions Considerations

According to the 2023 Missouri State Hazard Mitigation Plan, “frequency of floods in Missouri is likely to increase,” and “over the last half century, average annual precipitation in most of the Midwest has increased by 5 to 10 percent.” Missouri has experienced above average precipitation since 1990. It is likely that the frequency and intensity of rainfall events will increase. As the number of these heavy rain events increases, more flooding and pooling water is to be expected.

The expected increases in rainfall frequency and intensity are also likely to put additional stress on natural hydrological systems and community stormwater systems. Heavier snowfalls in the winter will lead to intensified spring flooding, and groundwater levels will remain high.

These changes in climate patterns could potentially lead to the development of compounding events that could interact and cause extreme conditions. Other environmental impacts of flooding could include erosion, surface and groundwater contamination, and reduced water quality.

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 could break loose or puncture because of flood activity. Examples are bulk propane tanks. When this happens, the 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. Floodwater 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.

Scour critical bridges were discussed in Section 3.2.2 Critical and Essential Facilities and Infrastructure. Maps of Grundy County with the location of bridges and scour critical bridges can be found in Figures 3.1 and 3.2 of Section 3.2.2.

Potential Losses to Existing Development

Table 3.30. HAZUS Estimates of Potential Losses for Grundy County

Data from State Plan		Grundy County
Countywide Building Exposure		$1,058,298,500
Structural Damage		$772,700
Loss Ratio		0.07%
Contents Loss		$425,700
Inventory Loss		$240,000
Total Direct Loss		$1,438,400
Total Income Loss		$30,211,600
Total Direct and Income Loss		31,650,000
# HAZUS UDF Damaged Structures		42
# Substantially Damaged		4
# Displaced People		849
# Shelter Needs		49

Source: Missouri 2023 Hazard Mitigation Plan

According to the 2023 Missouri State Hazard Mitigation Plan, the total population affected by flood would be 849 people with a total loss – HAZUS Layer of $26,588,400 for Grundy County, Missouri.

Table 3.31. Building Counts in the SFHA by Usage Type

Jurisdiction	Agriculture	Commercial	Government	Residential	Residential-Sub	Grand Total
Galt	0	1	0	0	0	1
Grundy	234	0	11	15	36	296
Trenton	16	11	0	2	9	38
Grand Total	**250**	**12**	**11**	**17**	**45**	**335**

Source: 2023 Missouri hazard mitigation plan

Table 3.32. Building Counts by Flood Hazard Zone

Jurisdiction	1% - Zone A	1% - Zone AE
Galt	1	0
Grundy	194	102
Trenton	0	38
Grand Total	**195**	**140**

Source; 2023 Missouri hazard mitigation plan

Impact of Previous and Future Development

Any future development in floodplains would increase risk in those areas. For the communities

participating in the National Flood Insurance Program, enforcement of the floodplain management regulations will ensure mitigation of future construction in those areas. However, even if structures are mitigated, evacuation may be necessary due to rising waters. In addition, floods that exceed mitigated levels may still cause damage. There is no future development planned in floodplains in Grundy County at this time

Hazard Summary by Jurisdiction

River Flooding:

Creek, river and stream flooding would be mostly focused on areas alongside the county streams, these flooding events often tend to develop slower, and last longer than flash flooding events leading to longer term impacts over a larger area

Flash Flooding:

Flash flooding tends to be shorter duration, often more violent events that river flooding, no area of the county is free from the hazards of flash flooding, however, hilly, or urbanized areas are slightly more favored for flash flooding risks.

Problem Statement

Local governments should make a strong effort to improve emergency warning systems to ensure future deaths and injuries do not occur. Local governments should consider making improvements to roads and low water crossings that consistently flood by placing them on a hazard mitigation projects list and actively seek funding to successfully complete the projects

3.4.2 Dam Failure

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.

Table 3.33. MoDNR Dam Hazard Classification Definitions

Hazard Class	Definition
Class I	The area downstream from the dam that would be affected by inundation contains ten (10) or more permanent dwellings or any public building. Inspection of these dams must every two years.
Class II	The area downstream from the dam that would be affected by inundation contains one (1) to nine (9) permanent dwellings, or one (1) or more campgrounds with permanent water, sewer, and electrical services or one (1) or more industrial buildings. Inspection of these dams must occur once every three years.
Class III	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.

Source: Missouri Department of Natural Resources, https://dnr.mo.gov/document-search/frequently-asked-dam-reservoir-questions-pub1351/pub1351

Table 3.34. NID Dam Hazard Classification Definitions

Hazard Class	Definition
Low Hazard	Loss of at least one human life is likely if the dam fails.
Significant Hazard	Possible loss of human life and likely significant property or environmental destruction.
High Hazard	Equal or exceed 25 feet in height and exceed 15 acre-feet storage; Equal or exceed 50-acre feet storage and exceed 6 feet in height; Do not meet the criteria for high or significant hazard.

Source: National Inventory of Dams

Geographic Location

Dams Located Within the Planning Area

The following tables provide the names, locations, and other pertinent information for high hazard

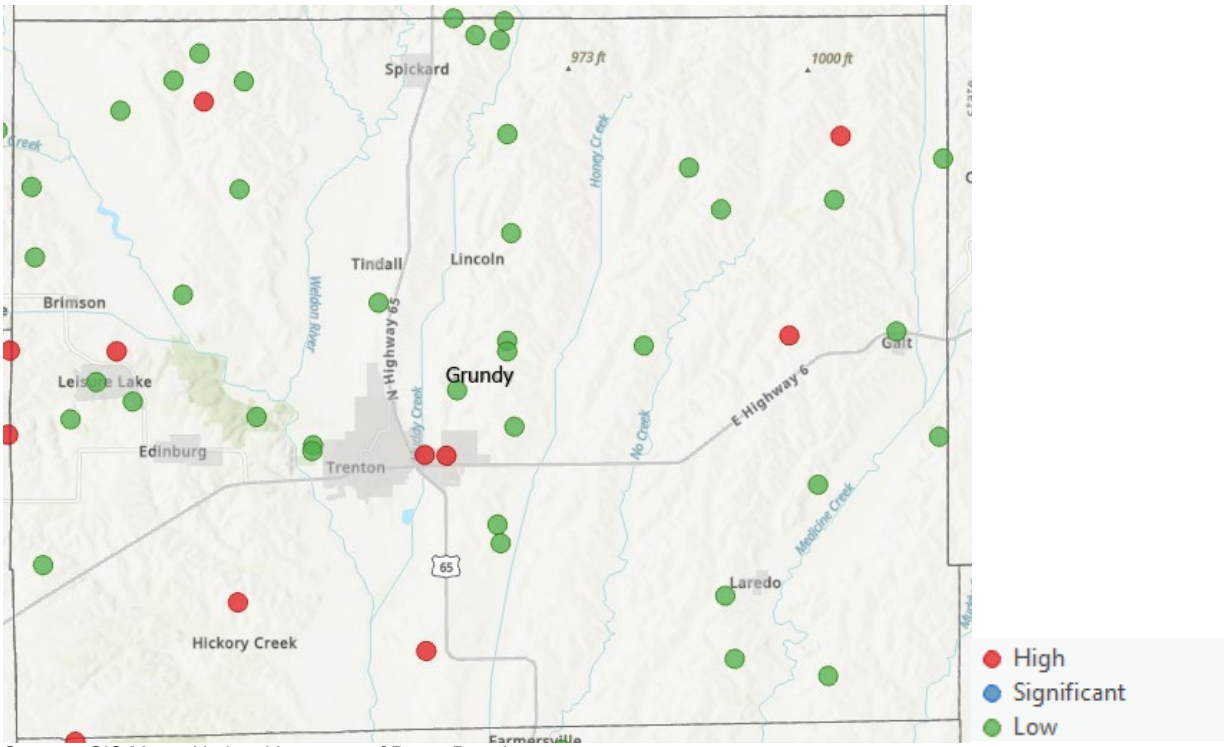
dams within the planning area.

Table 3.35. High Hazard Dams in the Grundy County Planning Area

Dam Name	Emergency Action Plan (EAP)AP	Dam Height (Ft)	Normal Storage (Acre-Ft)	Last Inspection Date	River	Nearest Downstream City	Distance To Nearest City	Dam Owner
Mack&Woodard Lake Dam-Sect 22	NR	20	67	unknown	TR-THOMPSON RIVER	TRENTON	N/A	MACK WOODARD
Trenton Lower Lake Dam	NR	20	1314	8/14/79	TR MUDDY CREEK	TRENTON	N/A	RG WHITE ESTATE
Goodrich Lake Dam	NR	25	25	unknown	TR-HICKORY CR	TRENTON	N/A	CLIFFORD GOODRICH
Hanes Lake Dam	NR	25	50	unknown	TR-SUGAR CREEK	TRENTON	N/A	WAYNE HANES
Preston Lake Dam	NR	25	33	unknown	TR-LOST CREEK	TRENTON	N/A	JAMES PRESTON
Herrold Lake Dam	NR	25	66	unknown	TR-NO CREEK	DUNLAP	N/A	MIKE HERROLD
Berry Lake Dam	NR	30	100	unknown	TR-LITTLE NO CREEK	FARMERSVILLE	N/A	LEWIS BERRY
Trenton Lake Upper Dam	NR	34	690	8/14/79	TR MUDDY CREEK	TRENTON	N/A	TRENTON LAKE ASSOCIATION

Sources: Missouri Department of Natural Resources GIS, https://gis-modnr.opendata.arcgis.com/pages/dnr-missouri-geological-survey and National Inventory of Dams, https://nid.sec.usace.army.mil/#/. Contact the MoDNR Dam and Reservoir Safety Program at 800-361-4827 to request the inundation maps for your county to show geographic locations at risk, extent of failure and to perform GIS analysis of those assets at risk to dam failure.

Figure 3.13. High Hazard Dam Locations in Grundy County



Source: GIS Maps; National Inventory of Dams Data Layer

The Missouri Department of Natural Resources does not have any inundation maps available for Grundy County per an email request as of May of 2025

Upstream Dams Outside the Planning Area

As of May 2025, Missouri DNR reported no upstream dams likely to lead to flooding in Grundy County.

Strength/Magnitude/Extent

The strength/magnitude of dam failure would be similar in some cases to flood events (see the flood hazard vulnerability analysis and discussion). The strength/magnitude/extent of dam failure is related to the volume of water behind the dam as well as the potential speed of onset, depth, and velocity. Note that for this reason, dam failures could flood areas outside of mapped flood hazards.

There are 8 High Hazard dams in Grundy County, all of which are unregulated therefore no inspection reports are available from the department of natural resources.

Previous Occurrences

Information from Stanford University's National Performance of Dams Program shows that only 1 known instance of dam incident has been reported in Gundy County. The incident was a result of an inflow flood.

Trenton Lower Lake; Inflow flood event; MO10366
On August 10th, 1993, excessive inflow led to water being discharged from the upper lake spillway, this resulted in a partial failure of the spillway from the upper lake into the lower lake.

Probability of Future Occurrence

There are currently no regulated high hazard dams in Grundy County. There are no USACE-regulated dams in the planning area. According to the information from the 2023 Missouri State Hazard Mitigation Plan, there have been no incidents in the past 20 years, however, Stanford University's National Performance of Dams Program database does report 1 incident that happened in 1993.

It should be considered that within Missouri historical dam failures and incidents include events from all hazard classes and all dams; regulated or not. Failures and incidents for regulated dams that have higher inspection frequencies should be less probable. The non-regulated dams do not have a regular inspection schedule nor requirement.

If we base the probability upon past events:

$$Probability\ of\ Dam\ Failure = \frac{0}{32} = 0.00 = 0\%$$

With no previous occurrences of dam failure, the probability of such an event occurring is less than 1%

However, if we consider the instances of dam incidents:

$$Probability\ of\ Dam\ Incident = \frac{1}{32} = 0.03 = 3\%$$

The probability of the planning area experiencing any type of dam incident, if based on past occurrences, would be less than 5% in any given year.

Changing Future Conditions Considerations

According to the 2023 Missouri State hazard mitigation plan "Studies have been conducted to investigate the impact of climate change scenarios on dam safety. Dam failure is already tied to flooding and the increased pressure flooding places on dams. The impacts of changing future conditions on dam failure will most likely be those related to changes in precipitation and flood likelihood. Changing future conditions projections suggest that precipitation may increase and occur in more extreme events, which may increase risk of flooding, putting stress on dams and increasing likelihood of dam failure"

Vulnerability

Vulnerability Overview

According to the US Army Corps of Engineers (USACE) National Inventory of Dams (NID) there are a total of 47 dams located in the planning area. There are 8 high hazard dams, No significant hazard dams, and 39 low hazard dams in Grundy County.
There are currently some structures of both agricultural and residential varieties. The 2023 Missouri State Hazard Mitigation Plan contains the following information about the vulnerability of Grundy County to dam failure.

Table 3.36. Number and Types of Dams in Grundy County

Numbers and Types of Dams in Grundy County															
Count of NID Dams				Count of State Regulated Dams				Count of Federally Regulated Dams				Count of Un-Regulated Dams			
H	S	L	Total	1	2	3	Total	H	S	L	Total	H	S	L	Total
8	0	39	47	0	0	0	0	0	0	0	0	8	0	39	47

Source: 2023 Missouri State Hazard Mitigation Plan

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

Table 3.37. Estimated Number and Values of Structures & Population Vulnerable to Failure of State-Regulated Dams with Available Inundation Areas

Type of Structure	Value of Structures	Number of Structures	Population
Agriculture	$0	0	0
Residential	$0	0	0
Total	**$0**	**0**	**0**

Source: 2023 Missouri State Hazard Mitigation Plan

Table 3.38. State Estimates of Potential Loss as a Result of Dam Failure, Both State Regulated and USACE Dams

Location	Potential Damage (in $)
Grundy County	$0

Source: 2023 Missouri State Hazard Mitigation Plan

Table 3.39. Estimated Number and Values of Structures & Population Vulnerable to Failure of USACE Dams with Available Inundation Areas

Type of Structure	Value of Structures	Number of Structures	Population
No USACE dam impacts within the planning area			
Total	**0**	**0**	**0**

Source: 2023 Missouri State Hazard Mitigation Plan

Impact of Previous and Future Development

Any growth within Grundy County, downstream from a known dam, would lead to increased risks and potential losses due to an incident. As of June 2025, there were no known plans for large scale development in at-risk areas.

Hazard Summary by Jurisdiction

The largest part of Grundy County is subject to a low risk for hazards from a dam incident, as found in data from the 2023 Missouri state hazard mitigation plan.

Trenton

Two of the 8 high hazard dams in Grundy County are located within the city limits of Trenton and pose a risk for the residents downstream from the dams in the event of a breach. Due to the dams being unregulated, maps of risk areas are not currently available.

Problem Statement

Some entities in Grundy County that own and control dams do not properly inspect and maintain them to ensure the safety of people and property that lie within the inundation area of a dam breach. Jurisdictions and residents should be informed of the proper way to inspect a dam and look for initial problems.

3.4.3 Earthquakes

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.

Missouri holds the record for the most devastating earthquake in the history of post-settlement North America. The New Madrid 1811-1812 earthquake series included five earthquakes of magnitude 8.0 (Modified Mercalli Intensity Scale) or higher occurring in the period of December 16, 1811, through February 7, 1812. These earthquakes affected an estimated 600,000 square kilometers. Movement was felt as far away as Quebec, and damage was reported in Charleston, South Carolina and Washington D.C.

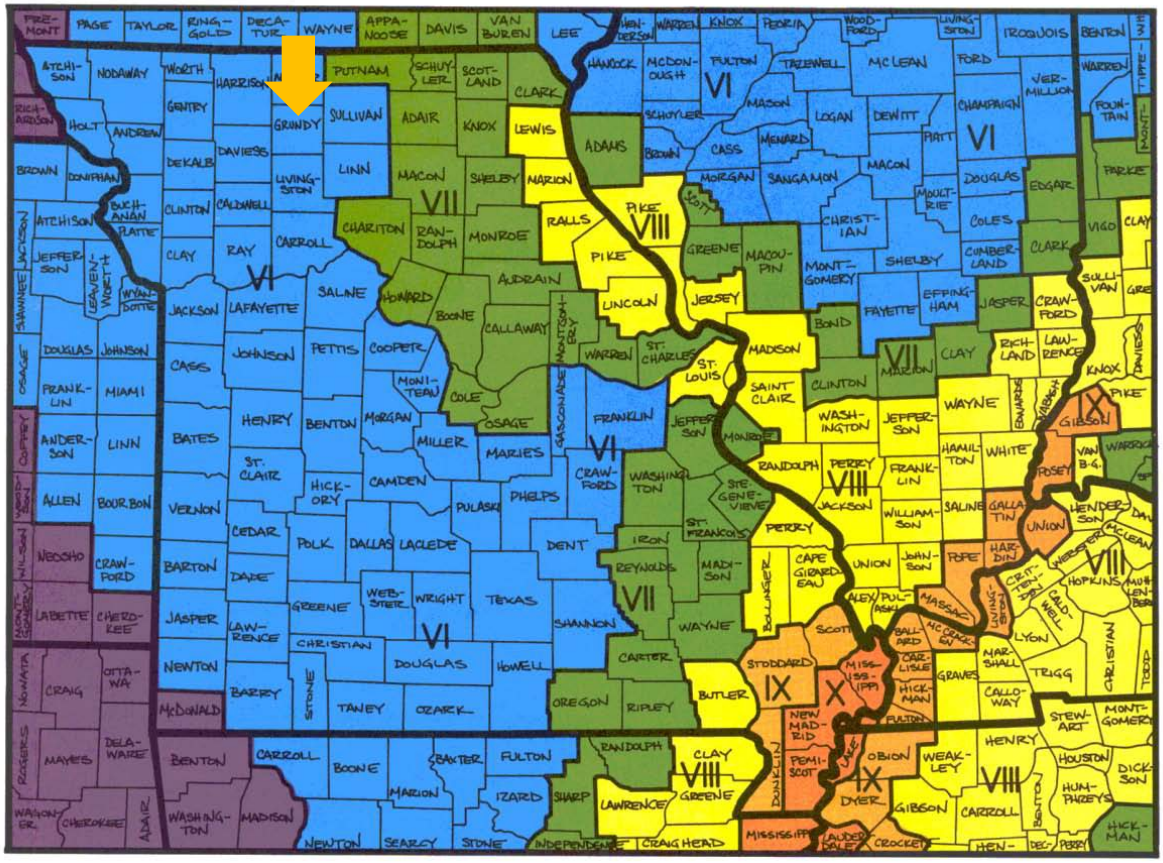
Geographic Location

Seismic activity on the New Madrid Seismic Zone of Southeastern Missouri is very significant both historically and at present. On December 16, 1811, and January 23 and February 7, 1812, three earthquakes struck the central US with magnitudes estimated to be 7.5-8.0. These earthquakes caused violent ground cracking and volcano-like eruptions of sediment over an area of more than 10,500 km^2, and uplift of a 50 km by 23 km zone (the Lake County uplift). The shaking was felt over a total area of over 10 million km^2. This is the largest felt area of any historical earthquake. Of all the historical earthquakes that have occurred in the US, an 1811-style event would do the most damage if it occurred today.

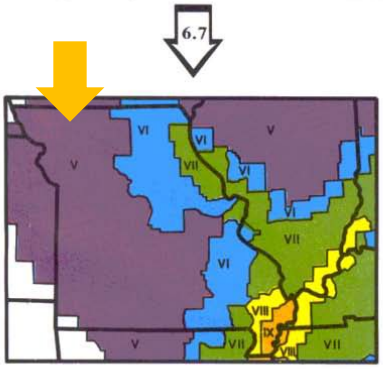
If an 1811 earthquake occurred in Grundy County the earthquake intensity would not vary across the county. The damages resulting from an earthquake would depend upon the quality of the construction of the buildings. Poorly built buildings would be damaged slightly. Considerable quantities of dishes and glassware, and some windows would be broken. People would have trouble walking. Pictures could fall off walls and objects fall from shelves. Plaster in walls might crack. Some furniture would be overturned. Small bells in churches, chapels, and schools could ring.

The following map (Figure 3.32) shows the highest projected Modified Mercalli intensities by county from a potential magnitude 7.6 earthquake whose epicenter could be anywhere along the length of the New Madrid Seismic Zone. The secondary maps in Figure show the same regional intensities for 6.7 and 8.6 earthquake, respectively.

Figure 3.14. Impact Zones for Earthquake Along the New Madrid Fault

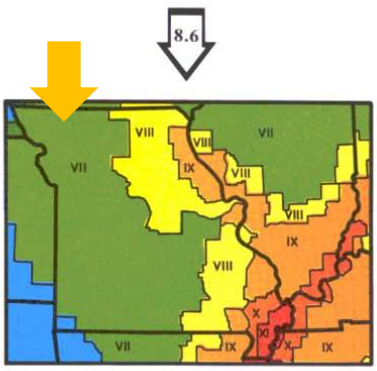


This map shows the highest projected Modified Mercalli intensities by county from a potential magnitude – 7.6 earthquake whose epicenter could be anywhere along the length of the New Madrid seismic zone.



This map shows the highest projected Modified Mercalli intensities by county from a potential magnitude – 6.7 earthquake whose epicenter could be anywhere along the length of the New Madrid seismic zone.

This map shows the highest projected Modified Mercalli intensities by county from a potential magnitude – 8.6 earthquake whose epicenter could be anywhere along the length of the New Madrid seismic zone.



Source: https://sema.dps.mo.gov/docs/EQ_Map.pdf

Figure 3.15. Projected Earthquake Intensities

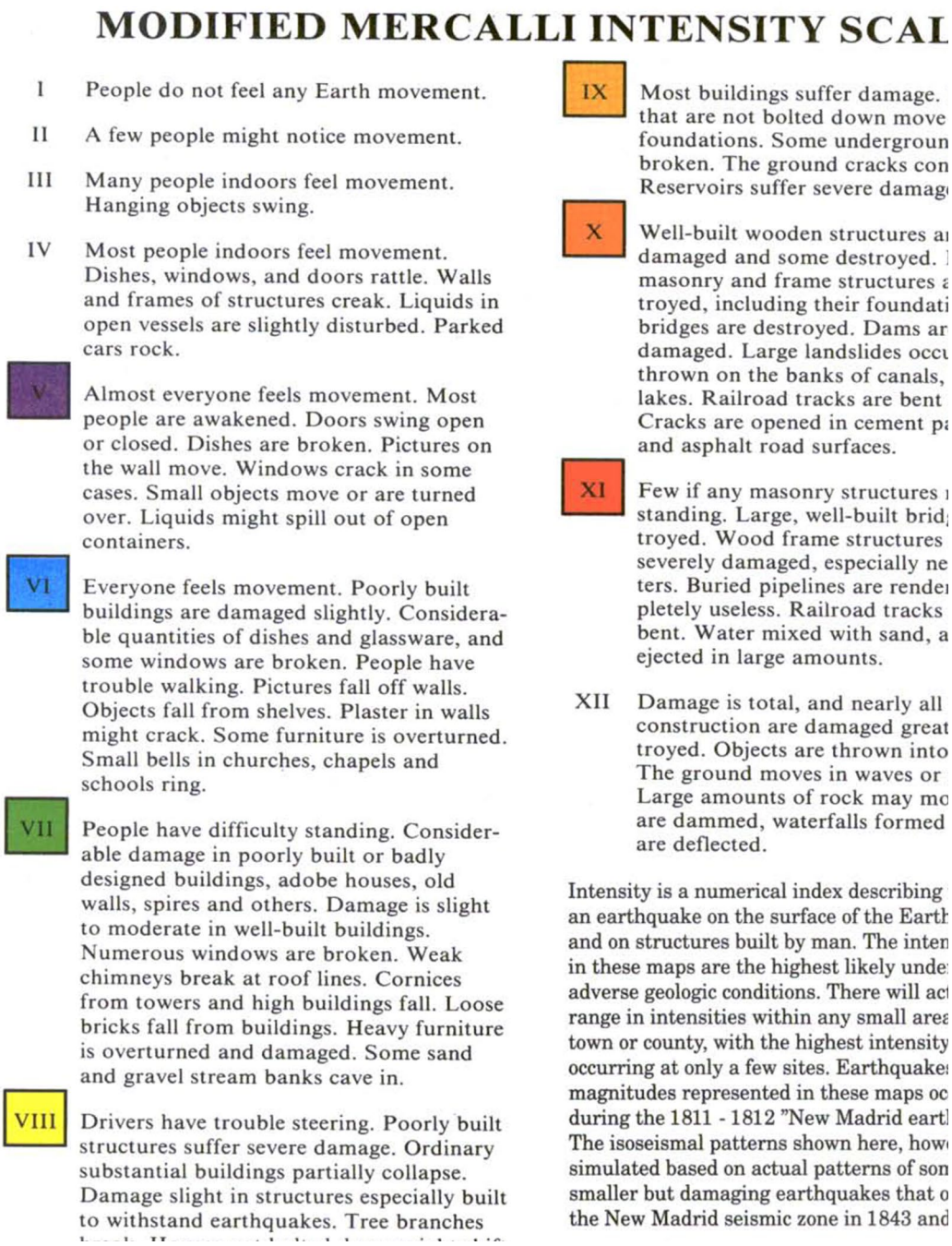
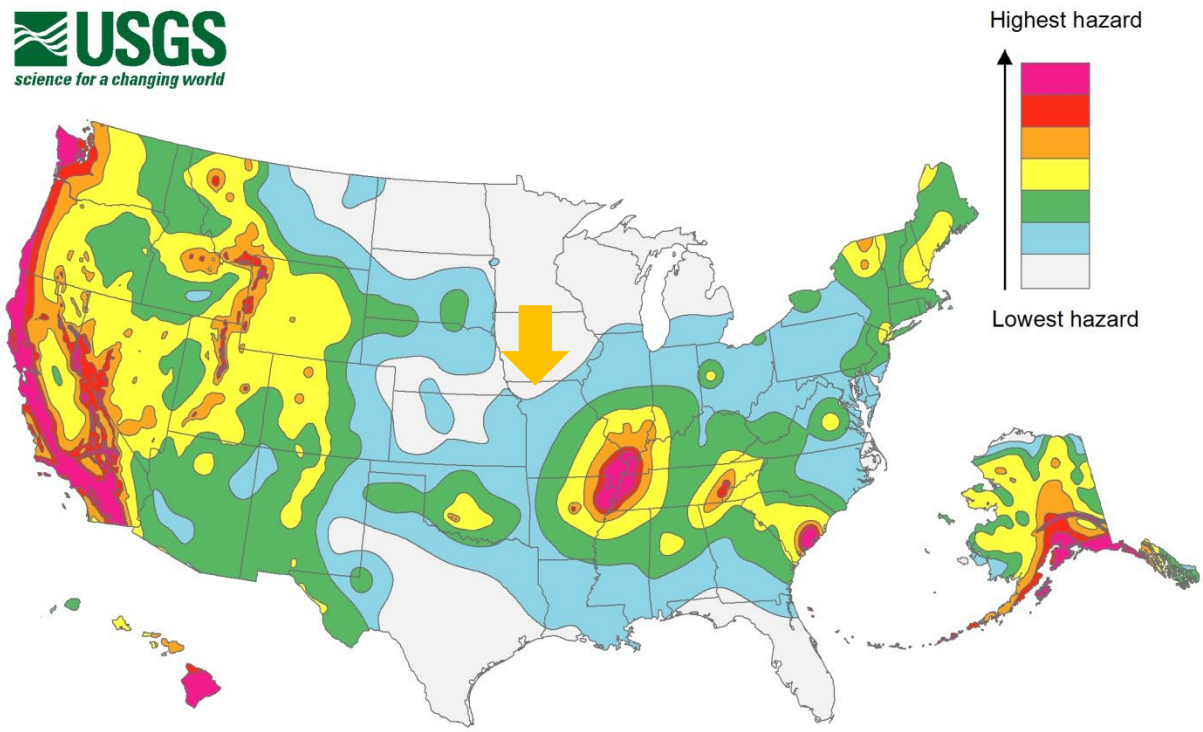


Figure 3.16. United States Seismic Hazard Map



Source: United States Geological Survey at https://www.usgs.gov/programs/earthquake-hazards/hazards

Strength/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 as 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. For example, comparing a 5.3 and a 6.3 earthquake shows that the 6.3 quake is ten times bigger in magnitude. Each whole number increase in magnitude represents a tenfold increase in measured amplitude because of the logarithm. Each whole number step in the magnitude scale represents a release of approximately 31 times more energy.

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

Grundy County has had 0 earthquakes since 1931, and according to homefacts.com, there is a "Very Low" risk level for the county.

Probability of Future Occurrence

Additionally, this same website also predicts the probability of Grundy County having a 5.0 Earthquake within the next 50 years at 0.14%.

2% Probability of Exceedance

The State Hazard Mitigation Plan ran a scenario, based on an event with a 2% probability of exceedance in 50 years, in order to determine the worst-case scenario. This scenario was equivalent to the 2,500-year earthquake scenario in HAZUS-MH. This methodology is based on the probabilistic seismic hazard shaking grids that were developed by the US Geological Survey (USGS) for the National Seismic Hazard Maps that are included with HAZUS-MH. The USGS maps provide estimates of peak ground acceleration and spectral acceleration at periods of 0.3 seconds and 0.1 seconds, respectively, which have a 2% probability of exceedance in the next 50 years. The most severe shaking is around the New Madrid Fault in Missouri. The following figure represents the potential for damage in areas with soils potentially susceptible to liquefaction.

Figure 3.17. HAZUS-MH Earthquake 2% Probability of Exceedance in 50 Years – Ground

Shaking and Liquefaction Potential

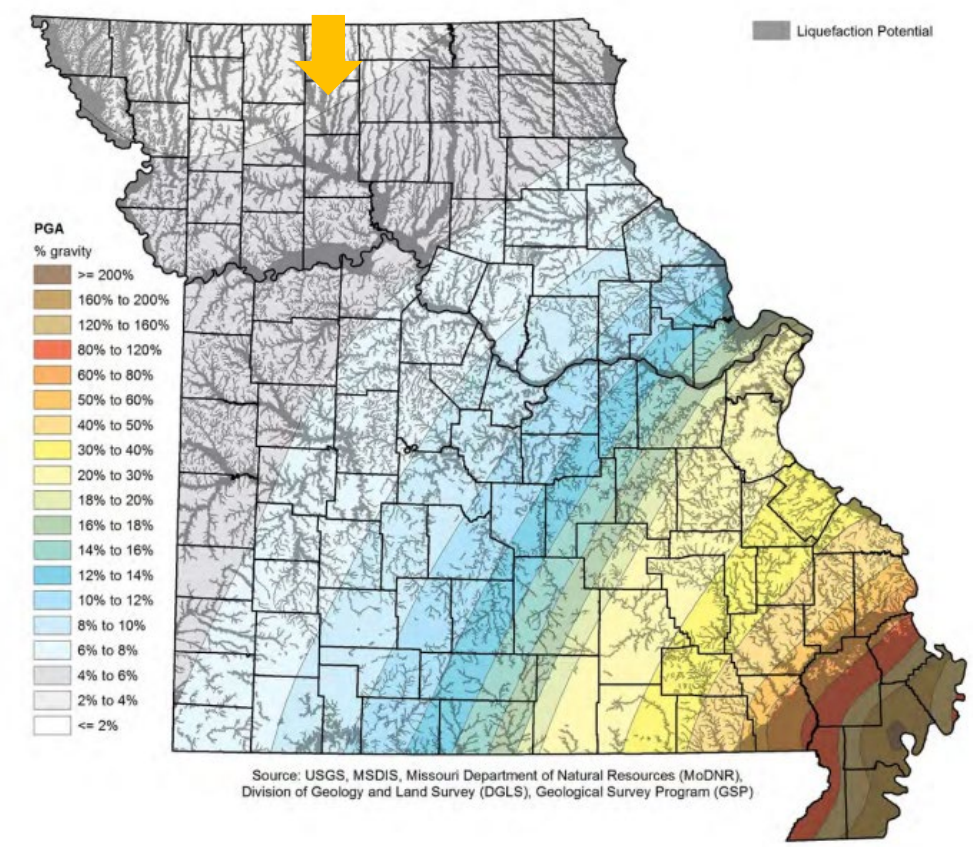


Table 3.3 HAZUS-MH Earthquake Loss Estimation 2% Probability of Exceedance in 50-Years Scenario Direct Economic Losses Results for Grundy County (All values in thousands)

County	Cost Structural Damage	Cost Non-structural Damage	Cost Contents Damage	Inventory Loss	Relocation Loss	Capital Related Loss	Wages Losses	Rental Income Loss	Total Loss
Grundy	$1,179	$2,215	$599	$17	$720	$154	$260	$299	$5,444

Source 2023 Missouri State Hazard Mitigation Plan

Changing Future Conditions Considerations

According to the 2023 Missouri State Hazard Mitigation plan, scientists are beginning to believe that there may be a connection 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.

Vulnerability

Vulnerability Overview

The 2023 Missouri State Hazard Mitigation Plan provided an earthquake loss estimation for each county. The annualized loss scenario from the 2023 State Hazard Mitigation Plan for Grundy County is provided in the following table.

Table 3.40. HAZUS-MH Earthquake Loss Estimation: Annualized Loss Scenario for Grundy County

County	Total Losses, in $ Thousands	Loss Per Capita, in $ Thousands	Loss Ratio, in $ per Million
Grundy	$6	$0.0005	$5

Source: Missouri Hazard Mitigation Plan 2023

According to the Overview of Residential Earthquake Insurance in 2023, 5.6% of the population of Grundy County residents had earthquake insurance. According to this report, the percentage of coverage for earthquakes has been declining since 2014. The following table provides county specific information.

Table 3.41. Earthquake Coverage in Grundy County, Missouri in 2023

Earthquake Exposures	Homeowners, Farm, Mobile Home Exposures	% With Earthquake Endorsement	Average Premium, All Earthquake	Average Premium, $110k-$140k Coverage
103	1,853	5.6%	$93	$72

Source: Missouri Department of Commerce & Insurance “overview of Residential Earthquake Insurance 2023”

Potential Losses to Existing Development

Potential losses to existing development were estimated using FEMA’s loss estimation software, HAZUS 6.0. The HAZUS building inventory counts are based on the 2020 census data and primarily 2022 economic values. Population counts are 2019 estimates from the US Census Bureau.

Figure 3.18. HAZUS Earthquake Loss Estimation with a 2% Probability of Exceedance in 50

Years Scenario – Total Building Loss

Table 3.42. FEMA National Risk Index Loss Estimation: Annualized Loss Scenario for Grundy County

Annualized Frequency	Expected Annual Loss Buildings (In $ Thousands)	Expected Annual Loss-Fatalities	Expected Annual Loss – Population Equivalence	Expected Annual Loss – Total	Expected Annual Loss Rating
0.00022	$6	0.00004	$288	$4,217	Very Low

Source: Missouri Hazard Mitigation Plan 2023

Impact of Previous and Future Development

Any future development to the planning area while unexpected, would not increase the risk to an earthquake other than contributing to the overall exposure of what could become damaged because of an earthquake event.

Hazard Summary by Jurisdiction

Since the earthquake intensity is not likely to vary greatly throughout Grundy County, the risk will be the same throughout. However, damages could differ if there are structural variations in the planning area-built environment. For example, older structures and those structures which are not in prime condition are likely to experience higher damages.

Since the earthquake intensity is not likely to vary greatly throughout the planning area, the risk will be the same throughout the planning area. According to Appendix C in the Missouri State Hazard Mitigation Plan, the potential risk to Grundy County is classified as Low. There are also no projected damages to roadways or bridges in the planning area.

Table 3.43. Grundy County Homes at Increased Risk – Homes Built Prior to 1939 and Mobile Homes by Jurisdiction

Jurisdiction	Mobile Home	% Mobile Home	Homes Built Before 1939	% Homes Built Before 1939
Grundy County	217	5.7%	942	24.6%
City of Galt	15	16.9%	15	16.9%
City of Laredo	3	5.1%	22	37.3%
City of Spickard	1	0.6%	45	28.7%
Village of Tindall	2	6.7%	10	33.3%
City of Trenton	61	2.8%	557	25.7%

Source: U.S. Census Bureau, Physical Housing Characteristics for Occupied Housing Units (S2501)

Problem Statement

Although Grundy County is not located in an area that will likely see catastrophic damage from an earthquake, the county could be impacted by the loss of communications, transportation, the disruption of roads, rail and pipelines, water transportation, and the area will see a significant amount of refugees fleeing from Southern Missouri if a quake hits that area. Education is minimal for earthquakes due to the low likelihood of impact. An emergency plan for earthquakes should be made available to all residents and state what would happen in the event of an earthquake with details for communication and transportation. Owners of buildings and homes need to be aware of the plan in case damage is sustained to their property. Residents should be made aware of where the generators and emergency buildings are located. Utilization of social media and texting needs to be encouraged

3.4.4 Drought

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 State 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.

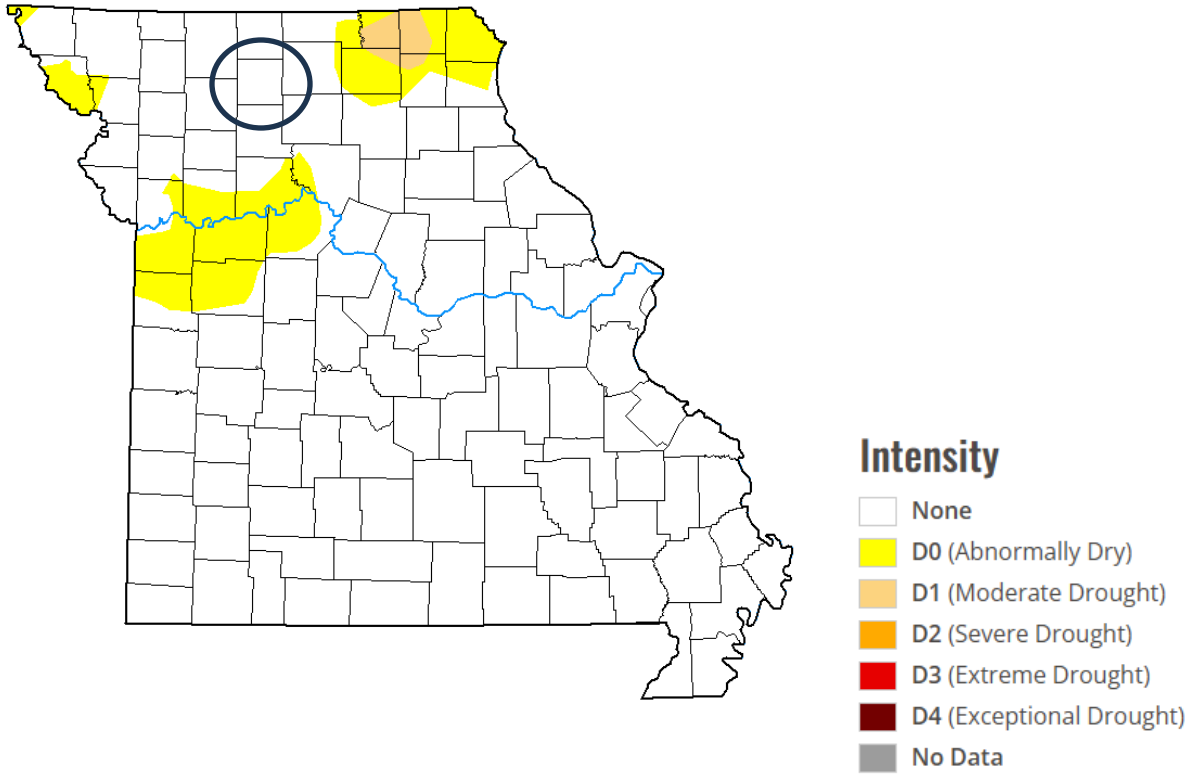
- Socioeconomic drought refers to when physical water shortage begins to affect people.

Geographic Location

Because of the broad scope of drought, all of Grundy County, except for the school districts, is susceptible to this hazard. Agricultural land is extremely vulnerable to drought impacts. According to the most recent census of agriculture, 76.7% of Grundy County is classified as farmland, making the impacts of drought one that is acutely felt by residents of Grundy County.

The following figure, Figure 3.19, shows a map of drought conditions in the state on July 11, 2025. This is a snapshot of the drought conditions on that date. Less than normal amounts of precipitation would cause the severity of the drought classification to worsen over time.

Figure 3.19. U.S. Drought Monitor Map of Missouri on July 11, 2025



Source: U.S. Drought Monitor, https://droughtmonitor.unl.edu/Maps/MapArchive.aspx

Strength/Magnitude/Extent

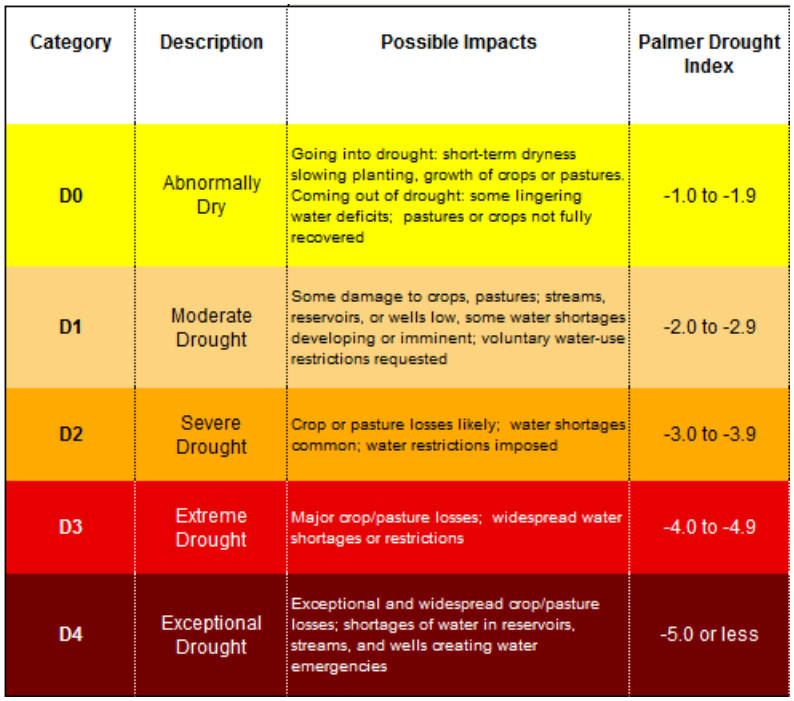
The Palmer Drought Indices measure dryness based on recent precipitation and temperature. The indices are based on a "supply-and-demand model" of soil moisture. Calculation of supply is relatively straightforward, using temperature and the amount of moisture in the soil. However, demand is more complicated 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.

The National Drought Mitigation Center uses a scale to show the intensity of drought that goes from D0 to D4. The following figure shows the correlation of this scale to the Palmer Index. Reports from NCEI Storm Database use the D0-D4 Scale in their narratives.

Figure 3.20. Drought Severity Classification



Category	Description	Possible Impacts	Palmer Drought Index
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered	-1.0 to -1.9
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested	-2.0 to -2.9
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed	-3.0 to -3.9
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions	-4.0 to -4.9
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less

Previous Occurrences

According to the NCEI database, Grundy County has experienced drought conditions on numerous occasions. The following information provides the date the individual drought conditions were declared or continued, and a narrative about the event.

Table 3.44. Previous Occurrences of Drought in Grundy County 2004-2025

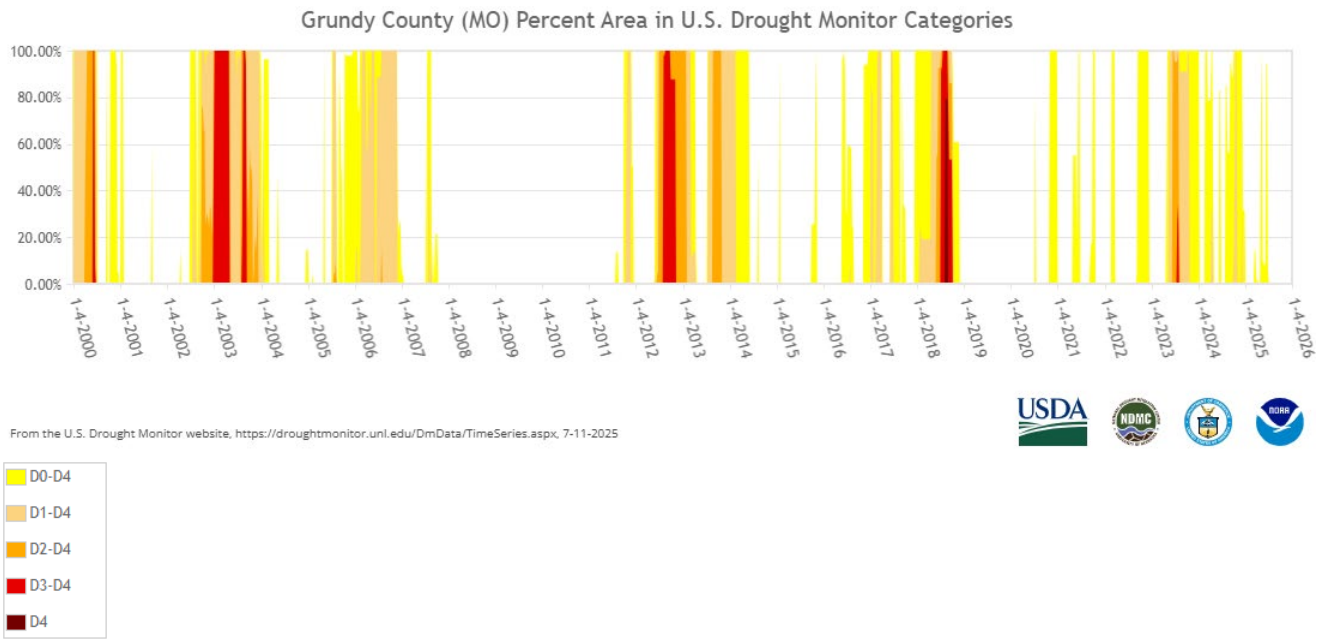
Begin Date	Episode Narrative
7/1/2012	Dry conditions, which started in the spring, intensified during the month of July. Drought conditions expanded across Missouri, with D2 conditions at the beginning of the month, increasing to D3 conditions by the end of the month. Most locations by the end of the month had yearly rainfall deficits of 10 to 15 inches.
8/1/2012	Dry conditions, which started in the spring, intensified during the month of August. Drought D2 and D3 conditions at the beginning of the month increased to D3 and D4 conditions by the end of the month. Most locations by the end month continued yearly rainfall deficits in the 10-to-15-inch range.
9/1/2012	The remnants of Hurricane Isaac brought some much-needed relief to drought conditions across the area, on the 1st of September. This helped improve drought conditions from D4 and D3 to D3 and D2. Rainfall totals with the remnants of Isaac, ranged from around one inch near the Iowa border, to around 7 inches in the Kansas City Metropolitan area.
10/1/2012	The drought continued across west central and northwest Missouri through the month of October, with slight improvement noted, especially across north central and central portions of the state. Rainfall deficits for the year were in the 10-to-15-inch range.
11/1/2012	The drought continued across the area during the month of November. Slight improvement was noted, with D1 to D2 conditions prevailing. Rainfall deficits were generally in the 10-to-16-inch range for the year.
12/1/2012	Slight improvements in the drought conditions were observed across northwest and west central Missouri. However, D1 to D2 conditions, moderate to severe drought conditions, still prevailed across the area.

1/1/2013	There have been several storm systems that have impacted the region in the last half of January. Most of the precipitation from these systems has fallen along and southeast of a Kansas City to Kirksville line. This has resulted in some improvement to the drought across portions of central to northern and northeastern Missouri. However, western and far northwestern Missouri remain in a severe drought (D2).
8/27/2013	A persistent upper-level ridge of high pressure centered over the lower Missouri Valley, in late August, caused D2 drought conditions to redevelop across portions of north central Missouri. Several locations, including Kirksville, reported only a trace of rainfall for the month of August.
9/1/2013	Severe drought D2 conditions persisted across most of northern Missouri during the month of September.
10/1/2013	Severe D2 drought conditions continued in the month of October across north central Missouri.
6/1/2018	Starting at the very end of May and going into June, the US Drought Monitor at the University of Nebraska declared portions of Missouri in a D2 or worse drought. While impacts from this drought would be felt through the summer, it's unclear if any drought impacts were felt through the month of June.
7/1/2018	The anomalously dry period that plagued the region during the summer of 2018 continued into and through July. Most areas were about 2 inches short of normal precipitation for the month of July. Most of northern Missouri, north of the Missouri River, came up between 4 and 5 inches short of normal. This combined with the dry June has caused the drought across the region to worsen.
8/1/2018	Precipitation picked up during August, especially in some of the hardest hit drought areas, but in a lot of cases the damage had already been done, and while the rain did pick back up the ground soil was so parched that it made hardly a dent in the drought across northern Missouri.
9/1/2018	While much of the area saw some relief from the drought, many counties remained in D2-D4 status through the month of September. While the full scope of drought impacts is unknown, many farmers took losses on their hay and corn, opting to bale it for livestock or knock it down.
10/1/2018	After a very dry summer, exceptional drought (D4) conditions were experienced area-wide, resulting in heavy losses for local farmers. Things changed in October when widespread heavy rain effectively ended that drought. Widespread 6 to 9 inches of rain fell, with some locations receiving over a foot of rain over the 4 day stretch from October 6 through October 9. By October 9th, the drought was effectively ended by the UNL drought monitor.
6/20/2023	After 2 months of relatively dry conditions portions of Missouri were brought into severe drought conditions. According to the Advanced Hydrologic Precipitation Service page there was a deficit of 2-5 inches across May and June which led to the declaration and maintenance of severe drought.
7/1/2023	After another month of below normal precipitation the severe drought across eastern Kansas persisted through the month of July.
8/1/2023	Several counties in Missouri began August within severe (D2) to extreme (D3) drought, but improved to D1 or better by early to mid-August thanks to well targeted rains.

Source: NCEI Storm Data Base

The following figure is a graph from the US Drought Monitor depicting the historic drought conditions in Grundy County. It shows the total percentage of land area that has been affected during drought from 2000 to 2025.

Figure 3.21. Percent of Grundy County in Drought 2000-2025



Source: US Drought Monitor

Probability of Future Occurrence

To determine the frequency of previous droughts in Grundy County the data was taken from droughtmonitor.unl.edu. A search was conducted on the frequency of drought and the drought classifications for the time period of 1/4/2000 through 7/8/2025. This time frame encompasses a total of 306 months, and this figure was used in the probability calculations. The following table provides a breakdown of the information that was gathered for Grundy County.

Table 3.45. Grundy County and Weeks Spent by Drought Classification 2000-2025

Grundy County	D0	D1	D2	D3	D4
Weeks at this Designation	568	316	136	55	3
Months at this Designation	142	79	34	13.75	0.75

Source: US Drought Monitor

The probability of Grundy County experiencing drought, by severity, is calculated by dividing the number of months in drought at that designation by the total number of months and multiplied by 100 for the average percentage probability of drought in the planning area in any given month.

$$Probability\ of\ D0\ Drought = \frac{142}{306} = .464 = 46.4\%\ probability$$

$$Probability\ of\ D1\ Drought = \frac{79}{306} = .258 = 25.8\%\ probability$$

$$Probability\ of\ D2\ Drought = \frac{34}{306} = .14 = 14\%\ probability$$

$$Probability\ of\ D3\ Drought = \frac{13.75}{306} = .045 = 4.5\%\ probability$$

$$Probability\ of\ D4\ Drought = \frac{0.75}{306} = .002 = .2\%\ probability$$

While the severity of the drought will vary, Grundy County is likely to experience drought and should take steps to lessen the severity of the occurrence with measures intended to conserve water usage.

Vulnerability

Vulnerability Overview

The following figure from the 2023 Missouri State Hazard Mitigation Plan shows the drought vulnerability by county in Missouri.

Figure 3.22. Annualized Drought Crop Insurance Claims Paid 2013-2021

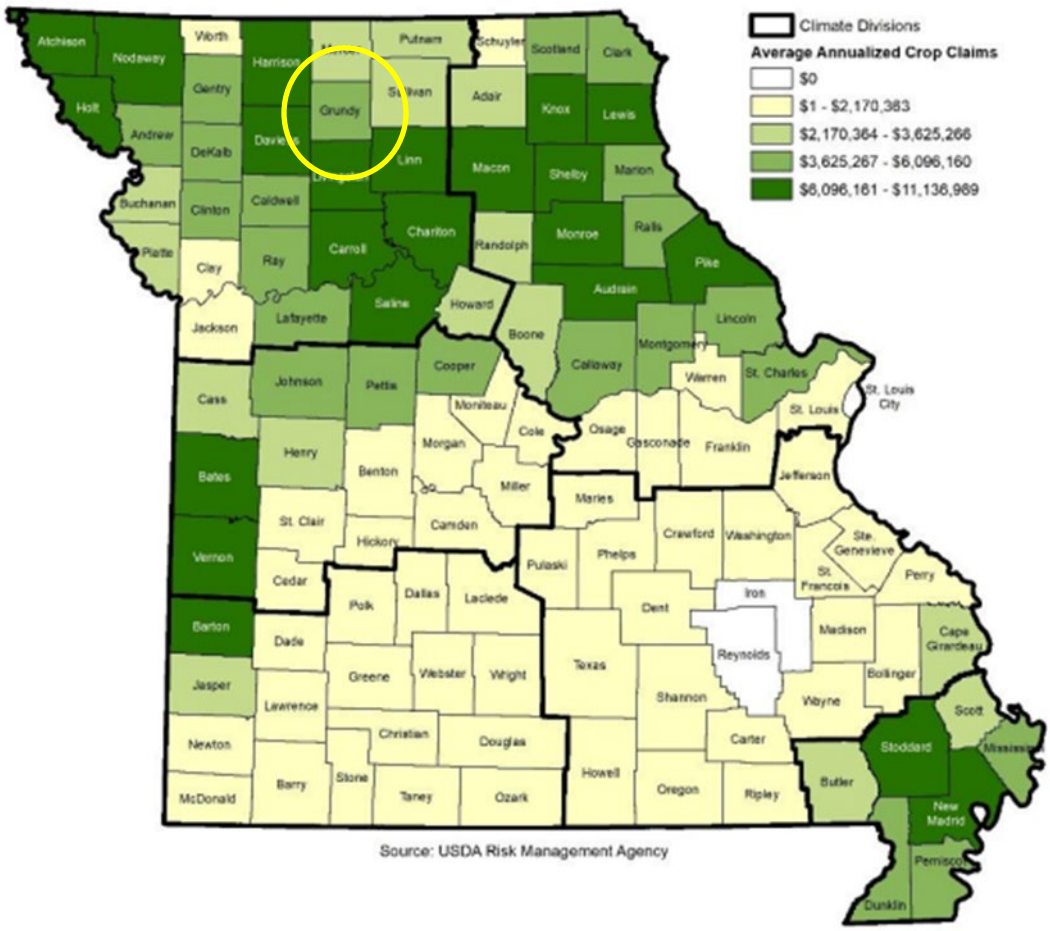
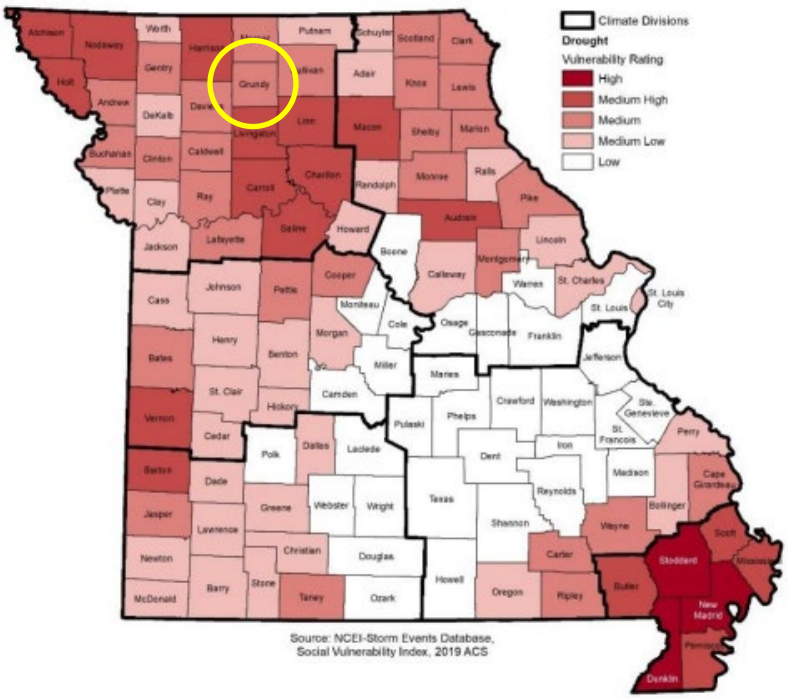


Table 3.46. Crop Loss Payments from 2014-2024 for Grundy County

Year	Crop Name	Cause of Loss	Insurance Paid ($)
2014	Soybeans	Drought	$50,437.00
	Wheat		$813.00
2015	Soybeans	Drought	$7,014.00
2016	Soybeans	Drought	$6,082.00
	Wheat		$11,809.00
2017	Corn	Drought	$49,675.00
	Soybeans		$275,011.00
	Wheat		$28,758.00
2018	Soybeans	Drought	$19,350.00
2019	No Claim		$0
2020	Corn	Drought	$37,650.00
	Soybeans		$203,463.00
2021	Corn	Drought	$136,755.65
	Soybeans		$175,047.50
2022	Corn	Drought	$98,323.00
	Soybeans		$110,742.10
2023	Corn	Drought	$310,197.00
	Soybeans		$206,393.00
2024	Corn	Drought	$94,660.50
	Soybeans		$388,364.50
Total			**$2,210,545.25**

Source: USDA Risk Management Agency http://www.rma.usda.gov/data/cause

Figure 3.23. Drought Vulnerability in Missouri by County



Source: 2023 Missouri State Hazard Mitigation Plan

As per the previous figure, Grundy County in Missouri has a Medium Drought Vulnerability Rating per the 2023 Missouri State Hazard Mitigation Plan. The method used to determine vulnerability to drought across Missouri was a statistical analysis of data from several sources: USDA Risk Management Agency's insured crop losses as a result of drought (2021-2022), USDA crop exposure by county, 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 Carolins, and storm events data (1996-December 31, 2021) and probability of severe drought based on historic Palmer Drought Severity Index. The USDA crop exposure by county is from the 2017 Agricultural Census and assumes that the larger the exposure, the greater potential for loss and impact on the local economy.

From the statistical data collected, four factors were considered in determining overall vulnerability to drought as follows: social vulnerability, crop exposure ratio, annualized crop claims paid, and likelihood of occurrence. Based on natural breaks in the statistical data, a rating value of 1 through 5 was assigned to each factor. 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. These rating values correspond to the following descriptive terms:

1. Low
2. Medium-low
3. Medium
4. Medium-High
5. High

The following table utilizes these factors in determining the vulnerability rating of Grundy County to drought, according to the 2023 Missouri Hazard Mitigation Plan.

Table 3.47. Vulnerability of Grundy County to Drought

SOVI Index Rating	USDA RMA Total Drought Crop Claims	Average Annualized Crop Claims	USDA Claims Rating	2017 Crop Exposure	Crop Exposure Rating	Likelihood of Severe Drought	Drought Occurrence	Total Rating	Total Rating (text) Drought
4	$44,935,052	$4,493,505	4	$49,205,000	2	0.62	3	13	Medium

Source: 2023 Missouri State Hazard Mitigation Plan

Potential Losses to Existing Development

The National Drought Monitor Center at the University of Nebraska at Lincoln summarized the potential impacts 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.

Although it is difficult to quantify many of the potential losses that may occur due to drought, agriculture losses are direct economic costs that can be easily quantified by examining previous insurance claims in the county. Grundy County's crop exposure is high, with approximately 76.7% of the county's total land area in use for agriculture. Over the past 11 years Grundy County has experienced an average of $200,958.66 in crop losses annually due to drought conditions.

Impact of Previous and Future Development

Increases in acreage planted with crops would increase the exposure to drought-related agricultural losses. In addition, increases in population impose additional strains on water supply systems to meet the growing demand for treated water, and these strains could prove impactful during times of drought.

Changing Future Conditions Considerations

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.

Hazard Summary by Jurisdiction

Drought has the potential to impact the entire planning area, with the exception of the school districts. However, the ways in which the impacts will be experienced vary. As previously discussed in this section, most of the damage that has been seen historically due to drought affects agriculture. Therefore, the magnitude of the impacts of drought may be greater in rural parts of the county, which have large areas of crops and wildlife. In areas with greater building density, there is more exposure to potential shrinking and expanding soil problems around foundations as a result of drought. If drought conditions are severe and prolonged, water supplies could also be affected.

Problem Statement

Some of the key problems in Grundy County:

- Grundy County and participating jurisdictions have a high level of crop exposure. Possible solutions include encouraging farmers to purchase crop insurance and educating farmers on drought-resistant farming practices.
- Grundy County and participating jurisdiction's water supply could be impacted by severe or prolonged drought. Possible solutions include the development of agreements with neighboring communities for a secondary water source and review of local ordinance/regulation for inclusion of water-use restrictions during periods of drought.

3.4.5 Extreme Temperatures

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 weeks. 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 figures below uses both of these factors to produce a guide for the apparent temperature or relative intensity of heat conditions.
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.

Geographic Location

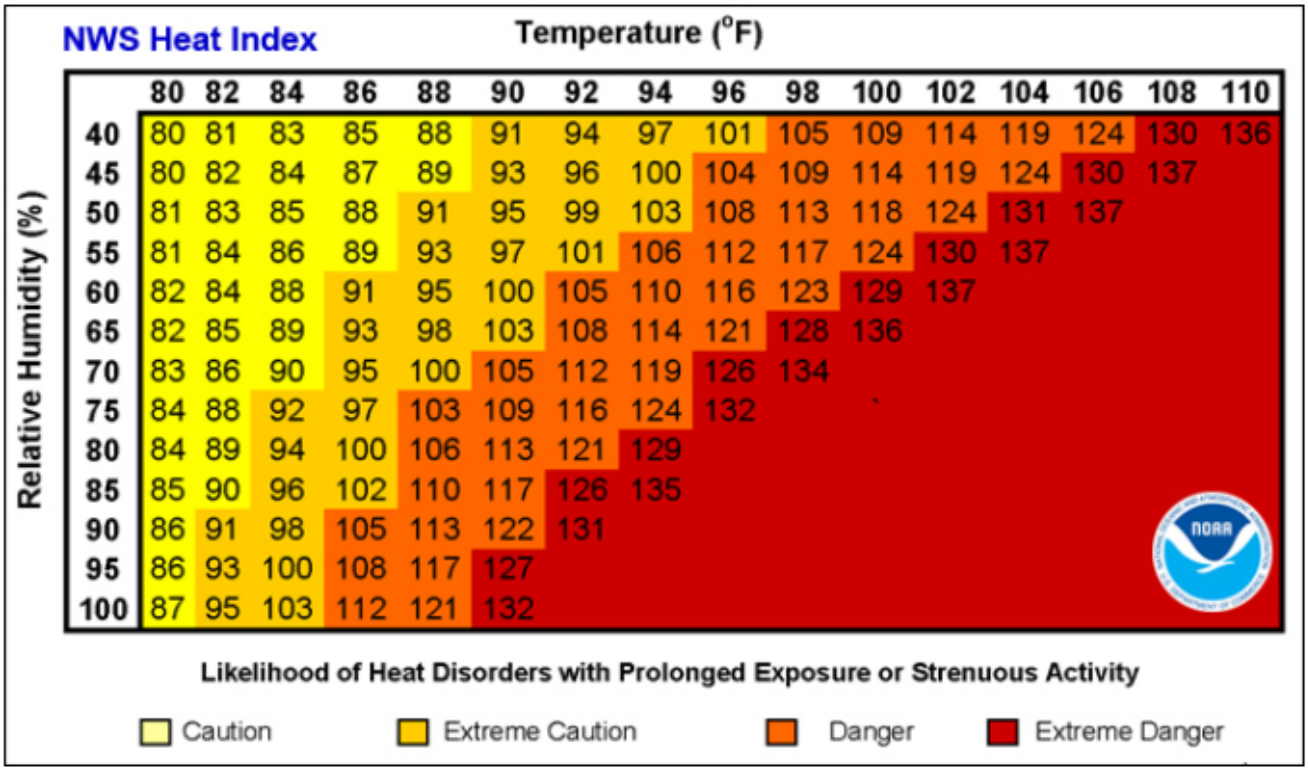
Extreme temperatures cover large spans of areas and will affect the county in the same way no matter where in the county.

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 nighttime 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 following figure provides information for Grundy County's previous occurrences of extreme heat events. There were 6 previous occurrences in the county, all were categorized as "danger" on the heat index chart. More information can be found in the previous occurrences section of this chapter.

Figure 3.24. 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.

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. 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.

The National Weather Service issues the following wind chill products as conditions warrant across the State of Missouri. NWS local offices in Missouri may collaborate with local partners to determine when an alert should be issued for a local area. The planning area is vulnerable to all of these warnings if the temperature drops low enough.

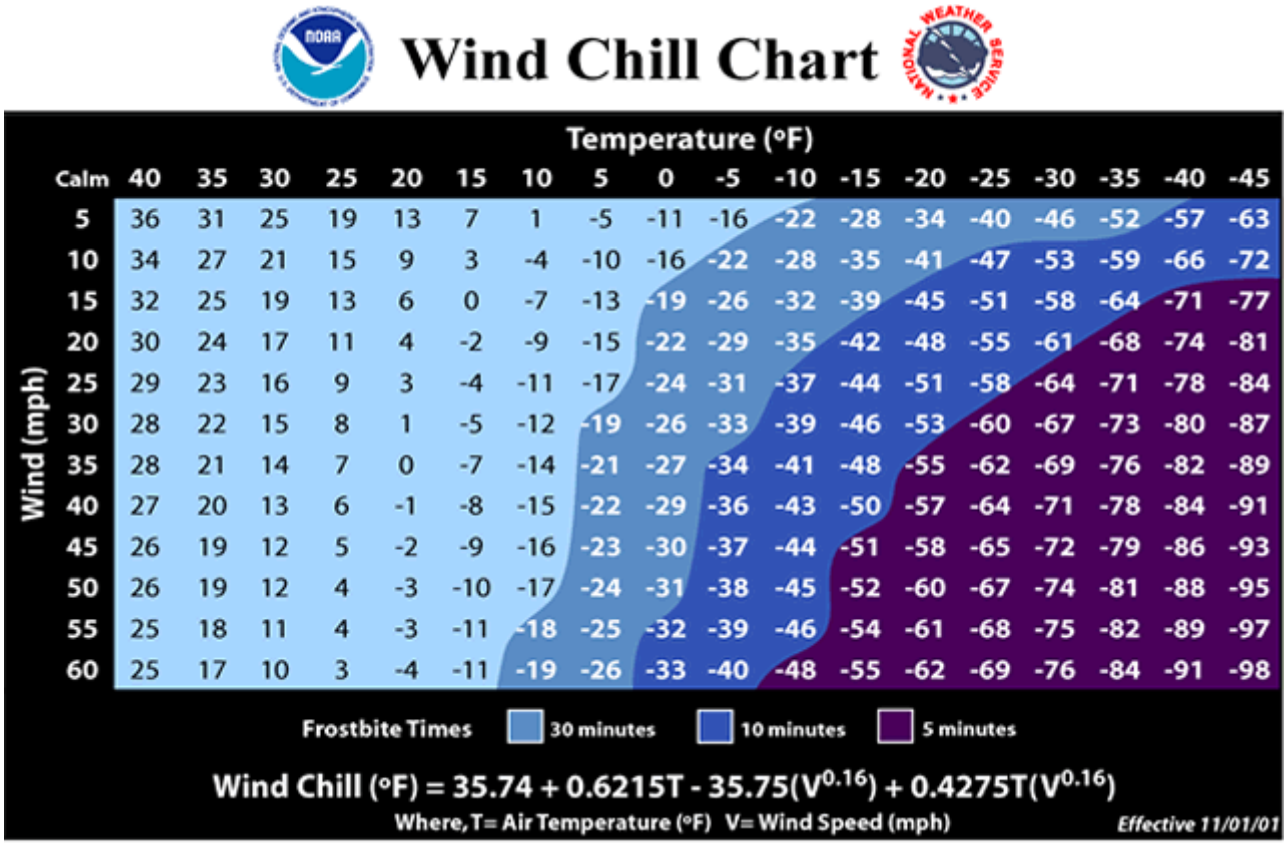
- Wind Chill Warning: NWS issues a wind chill warning when dangerously cold wind chill values are expected or occurring. If you are in an area with a wind chill warning, avoid going outside during the coldest parts of the day. If you do go outside, dress in layers, cover exposed skin, and make sure at least one other person knows your whereabouts. Update them when you arrive safely at your destination.
- Wind Chill Watch: NWS issues a wind chill watch when dangerously cold wind chill values are possible. As with a warning, adjust your plans to avoid being outside during the coldest parts of the day. Make sure your car has at least a half a tank of gas and update your winter survival kit.
- Wind Chill Advisory: NWS issues a wind chill advisory when seasonably cold wind chill values, but not extremely cold values are expected or occurring. Be sure you and your loved ones dress appropriately and cover exposed skin when venturing outdoors.
- Hard Freeze Warning: NWS issues a hard freeze warning when temperatures are expected to drop below 28°F for an extended period of time, killing most types of commercial crops and

residential plants.

- Freeze Warning: When temperatures are forecasted to go below 32°F for a long period of time, NWS issues a freeze warning. This temperature threshold kills some types of commercial crops and residential plants.
- Freeze Watch: NWS issues a freeze watch when there is a potential for significant, widespread freezing temperatures within the next 24-36 hours. A freeze watch is issued in the autumn until the end of the growing season and in the spring at the start of the growing season.
- Frost Advisory: A frost advisory means areas of frost are expected or occurring, posing a threat to sensitive vegetation.

The following figure provides information about Grundy County's occurrences of extreme cold events. According to the following chart there have been 3 previous occurrences of extreme cold in Grundy County. In the narratives of weather events, the temperature was cold enough to cause frostbite in as little as 30 minutes. More information about the previous events can be found in the previous occurrences section of this chapter. While these events were listed as separate occurrences in the NCEI database the events in 2021 and 2022 were weather systems that spanned multiple days.

Figure 3.25. Wind Chill Chart



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

Previous Occurrences

Extreme Heat

There are 5 reported incidents of extreme heat reported over the last 20 years from the county.

Extreme Cold

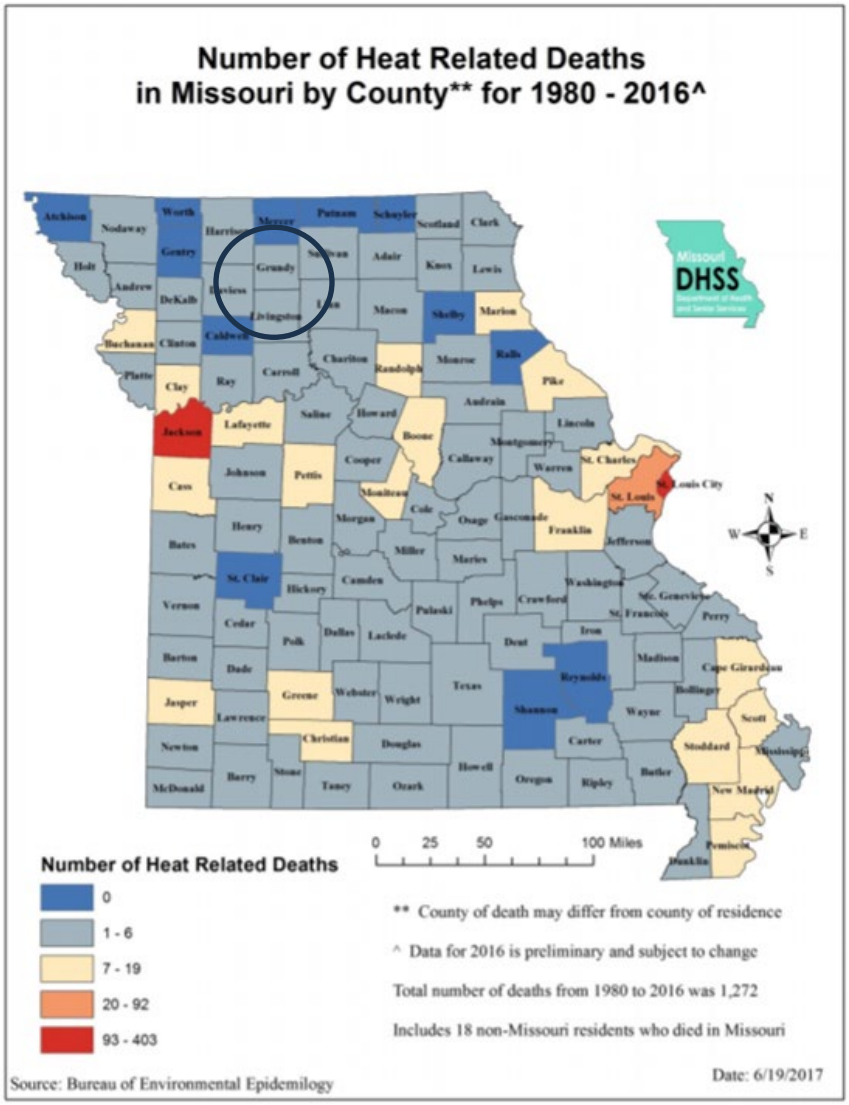
There have been 6 reported incidents of extreme cold over the last 20 years.

Table 3.48. Extreme heat reports 2004-2024

Year	Reports	Deaths	Injuries
2005	1	0	0
2006	2	0	0
2007	1	0	0
2012	1	0	0
2023	1	0	0
Total:	**6**	**0**	**0**

Source: NCEI Storm reports data – June 2025

Figure 3.26. Heat Related Deaths in Missouri 2000-2013



Source: https://health.mo.gov/living/healthcondiseases/hyperthermia/pdf/hyper2b.pdf

Table 3.49. Crop Insurance Claims Paid in Grundy County 2014-2024 – Heat

Year	Crop Name	Cause of Loss	Insurance Paid ($)
2014	No Claim		$0
2015	No Claim		$0
2016	No Claim		$0
2017	No Claim		$0
2018	Corn	Heat	$-17,226.00
2019	No Claim		$0
2020	Corn	Heat	$1,887.00
2021	No Claim		$0
2022	Corn	Heat	$220,785.00
	Soybeans		$1,247.00
2023	No Claim		$0
2024	Soybeans	Heat	$80,216.00
Total			**$286,909.00**

Source: USDA Risk Management Agency http://www.rma.usda.gov/data/cause

Summaries of excessive heat events 2004 – 2024

2005

7-21-2005 Excessive Heat
Oppressive heat and humidity prevailed across the area from July 21st to July 25th. Afternoon heat indices reached from 105 to 110 degrees. Kansas City International heat index reached 114 degrees on July 22nd, and St. Joseph topped out at 113 degrees on July 22nd.

2006

Excessive Heat 7-16-2006 through 7-20-2006
Oppressive heat and humidity combined to produce afternoon and early evening heat indices from 105 to 115 degrees, from July 16th through July 20th. The highest computed heat index reached 121 degrees at Amity Missouri. Three males and one female died of heat related causes in Jackson County.

Excessive Heat 7-29-2006 through 8-1-2006
Oppressive heat and humidity combined to produce heat indices from 105 to 115 degrees, from July 29th through July 31st.

2007

Excessive Heat 8-6-2007
An upper-level ridge of high pressure persisted across the area from August 6th through August 17th. The combination of heat and humidity produced heat index readings in the 105-to-115-degree range.

2012

Excessive Heat 7-18-2012
High temperatures in the 100-to-110-degree range, combined with humidity, produced afternoon and early evening heat indices in the 100-to-110-degree range. Overnight low temperatures were in the 70s to lower 80s.

2023

Excessive Heat 8-19-2023 through 8-25-2023

Max heat indices during the afternoons of August 19th through August 25th, 2023, primarily ranged from the 110 to 120-degree range.

Table 3.50. Extreme cold reports 2004-2024

Year	Reports	Deaths	Injuries
2014	1	0	0
2021	3	0	0
2022	1	0	0
Total:	**5**	**0**	**0**

Source: NCEI Storm reports data – June 2025

Table 3.51. Crop Insurance Claims Paid in Grundy County 2014-2024 – Extreme Cold

Year	Crop Name	Cause of Loss	Insurance Paid ($)
2014	Wheat	Cold Winter	$96,769.00
2015	Wheat	Cold Winter	$14,912.64
2016	Corn	Cold Winter	$124.00
2017	No Claim		$0
2018	No Claim		$0
2019	Wheat	Cold Winter	$27,509.74
2020	No Claim		$0
2021	No Claim		$0
2022	No Claim		$0
2023	No Claim		$0
2024	No Claim		$0
Total			**$139,315.38**

Source: USDA Risk Management Agency http://www.rma.usda.gov/data/cause

Extreme cold event summaries 2004-2024

2014

Extreme Cold 1-6-2014
A polar plunge of arctic air slammed into Kansas, bringing wind chill values to around 30 degrees below zero for the morning of January 6.

2021

Extreme Cold 2-14-2021 through 2-16-2021
In the first night of bitter cold across the area, temperatures dropped well below zero and with winds around 10-20 mph wind chills overnight going into Sunday morning dropped to around 20 to 30 below.

2022

Extreme Cold 12-22-2022 & 12-23-2022
An arctic air mass sent temperatures below zero along with strong winds. Minimum wind chills across the region generally ranged from -30 to -40 degrees between roughly 10 am on 12/22 to noon on 12/23.

Extreme temperatures can cause stress to crops and animals. According to USDA Risk Management Agency, losses to insurable crops during the 10-year time period from 2014 to 2024 were $426,224.38. 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 1988-2011, there were 3,496 fatalities in the U.S. attributed to summer heat. This translates to an annual national average of 146 deaths. During the same period, __ deaths were recorded in the planning area, according to NCEI data. The National Weather Service stated that among natural hazards, no other natural disaster—not lightning, hurricanes, tornadoes, floods, or earthquakes—causes more deaths.

Probability of Future Occurrence

$$Probability\ of\ Extreme\ heat = \frac{7}{20} = \ 0.35 = 35\%\ probability$$

$$Probability\ of\ Extreme\ cold = \frac{5}{20} = \ 0.25 = 25\%\ probability$$

$$Probability\ of\ either\ heat\ or\ cold\ event = \frac{12}{20} = \ 0.60 = 60\%\ probability$$

Changing Future Conditions Considerations

By the end of the century, the temperatures are projected to continue to increase. If greenhouse gas emissions are not curbed, historically unprecedented warming is projected by the end of the century. Due to the change in climate, it is projected that by the middle of the 21st century, record breaking heat is likely to occur on a regular basis. This will lead to a higher frequency of heat waves.

The impacts of extreme temperatures are experienced more acutely by the elderly and other vulnerable populations. High temperatures are often higher in urban areas, of which Chariton County has none. There is a higher demand for electricity as people try and keep cool. This increased demand adds a strain to electricity providers and could potentially lead to an increase in the number of power outages.

Additionally, air quality and water quality can be adversely affected by an increase in temperatures. Chariton County is mostly agricultural, and the strain placed on crops and livestock could increase along with the temperature.

Vulnerability

Vulnerability Overview

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.
The table below lists typical symptoms and health impacts due to exposure to extreme heat. Exposures to extreme cold can result in frostbite and hypothermia.

Table 3.52. 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 Institute on Aging estimates that more than 49 million Americans over the age of 65 are particularly vulnerable to hypothermia, with isolated elders being most at risk. For an older person, a body temperature of 95° or lower can cause many health problems, such as heart attack, kidney problems, liver damage or worse. (See Table 3.57)

Also at risk are those without shelter, those who are stranded, and those 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.

Extreme heat and extreme cold events are common occurrences in Missouri. The method used 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 to December 31, 2021), total population and percentage of population over 65 data from the U.S. Census (2019), 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.

From the statistical data collected, four factors were considered in determining overall vulnerability to extreme temperatures as follows: total population, percentage of population over 65, likelihood of occurrence, and social vulnerability. Based on natural breaks in the statistical data, a rating value of 1 through 5 was assigned to each factor. Once the individual ratings were determined for the above factors, a combined vulnerability rating was computed for extreme heat and extreme cold. These rating values correspond to the following descriptive terms:

1) Low
2) Medium-Low
3) Medium
4) Medium-High
5) High

Table 3.53. 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
15	0.57	1	10	Medium	6	0.24	2	11	Medium High

Source: 2023 Missouri State Hazard Mitigation Plan

Potential Losses to Existing Development

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

Extreme cold temperatures can lead to potential losses to existing development. These losses may include power outages, loss of income from closures and disruptions, and risks to real estate such as burst pipes.

Over the past 10 years extreme temperatures have led to $426,224.38 in documented losses, converted to an annualized basis this would yield $42,622.54 in losses. It should be noted that 7 out of the previous 10 years had any claims.

Impact of Previous and Future Development

Population growth can result in increases in the age-groups that are most vulnerable to extreme temperatures. Population growth also increases the strain on electricity infrastructure, as more electricity is needed to accommodate the growing population.

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. To determine jurisdictions within the planning area with populations more vulnerable to extreme heat, demographic data was obtained from the 2010 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. The table 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 3.54. Grundy County Population Under Age 5 and Over Age 65, 2023 Census Data

Jurisdiction	Population Under 5	% Population Under 5	Population 65 and over	% Population 65 and over
Grundy County	692	7.1%	2191	22.3%
City of Galt	11	6.5%	48	28.6%
City of Laredo	12	7.7%	30	19.2%
City of Spickard	12	5.4%	45	20.3%
Village of Tindall	2	4.3%	16	34.8%
City of Trenton	352	6.3%	1301	23.2%
Total:	**1081**	**11%**	**3631**	**37%**

Source: U.S. Census Bureau, Profile of General Population and Housing Characteristics (DP1)

Problem Statement

The county has a growing population of residents over 65 years, who are at a greater risk for

extreme-temperature related illnesses, injuries, and death. Possible solutions include organizing outreach to the vulnerable elderly populations, including establishing and promoting accessible heating or cooling centers in the community and creating a database in coordination with the Health Department to track those individuals at high risk.

3.4.6 Severe Thunderstorms Including High Winds, Hail, and Lightning

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 (discussed separately in **Section 3.**4.1) and tornadoes (discussed separately in **Section 3.**4.8).

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 is 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

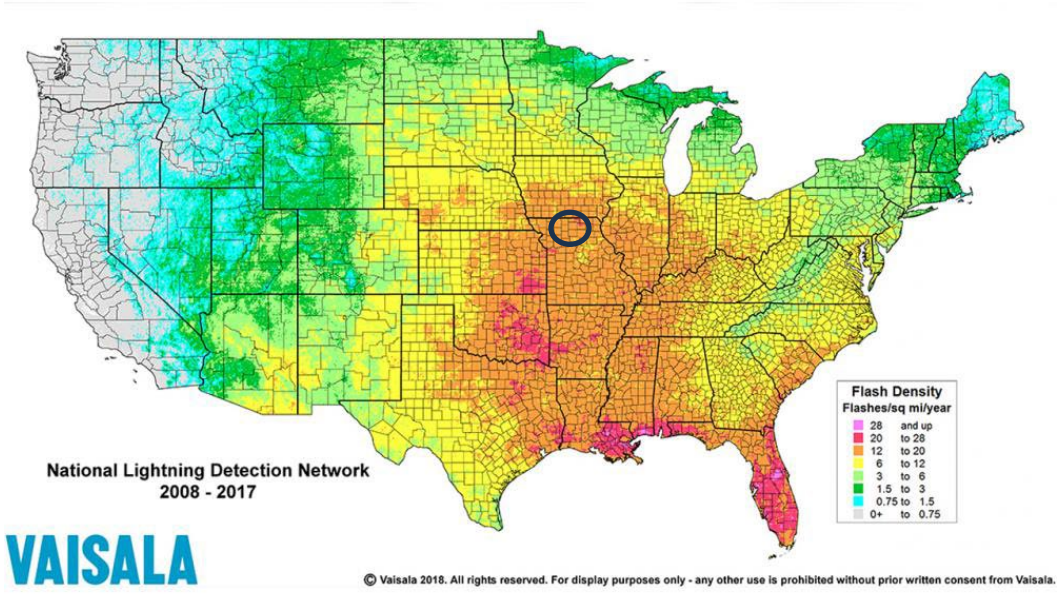
July 23, 2010. It was eight inches in diameter, almost the size of a soccer ball. Soccer-ball-sized hail is the exception, but even small pea-sized hail can do damage.

Geographic Location

Thunderstorms/high winds/hail/lightning events are an area-wide hazard that can happen anywhere in the county. Although these events occur similarly throughout the planning area, they are more frequently reported in more urbanized areas. In addition, damages are more likely to occur in more densely developed urban areas. The majority of Grundy County is rural

Geographic Location

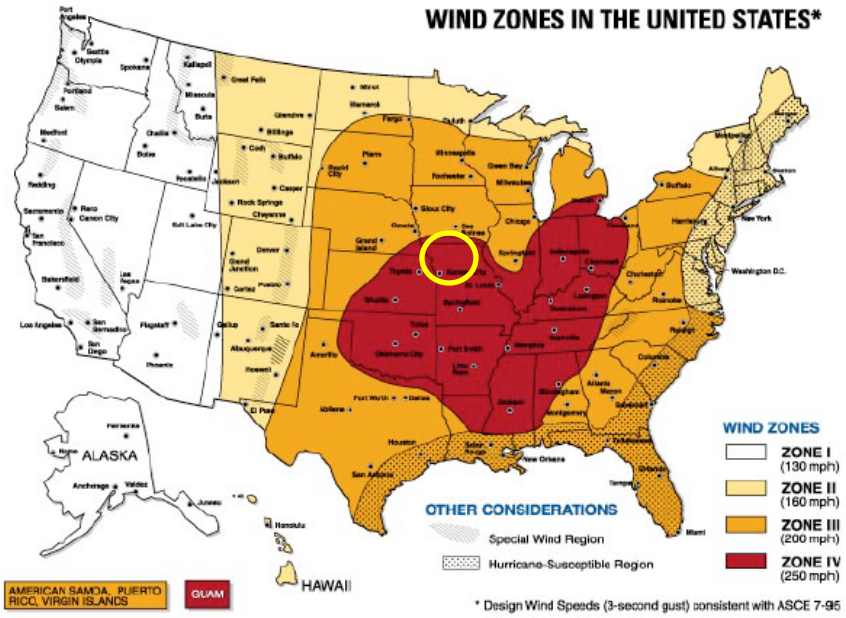
Figure 3.27. Location and Frequency of Lightning in Missouri



Source: National Weather Service, http://www.vaisala.com/en/products/thunderstormandlightningdetectionsystems/Pages/NLDN.aspx .

Grundy County, indicated by a yellow circle in the following figure, is entirely within Zone 4. This information indicated that Grundy County could sustain wind speeds of up to 250 miles per hour.

Figure 3.28. 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

Strength/Magnitude/Extent

Based on information provided by the Tornado and Storm Research Organization (TORRO), The table below describes typical damage impacts of the various sizes of hail.

Table 3.55. 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 and 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.

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

The following table includes NCEI reported events and damages for the past 20 years for all four included hazards when information is available.

"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.

The tables below 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.

Table 3.56. Crop Insurance Claims Paid in Grundy County from Thunderstorms 2014-2024

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
No claims			
Total			

Source: USDA Risk Management Agency, Insurance Claims, https://www.rma.usda.gov/tools-reports/summary-business/cause-loss

Table 3.57. Crop Insurance Claims for Wind Paid in Grundy County 2014-2024

Year	Crop Name	Cause of Loss	Insurance Paid ($)
2014	No Claim		$0
2015	No Claim		$0
2016	No Claim		$0
2017	No Claim		$0
2018	Corn	Wind	$31,381.00
	Soybeans		$2,259.00
2019	No Claim		$0
2020	No Claim		$0
2021	No Claim		$0
2022	Corn	Wind	$1,968.00
2023	No Claim		$0
2024	No Claim		$0
Total			**$35,608.00**

Source: USDA Risk Management Agency http://www.rma.usda.gov/data/cause

Table 3.58. Crop Insurance Claims for lightning Paid in Grundy County 2014-2024

Year	Crop Name	Cause of Loss	Insurance Paid ($)
2014	No Claim		$0
2015	Corn	Lightning	$5,407.00
	Wheat		$1,602.00
2016	No Claim		$0
2017	No Claim		$0
2018	No Claim		$0
2019	No Claim		$0
2020	No Claim		$0
2021	No Claim		$0
2022	No Claim		$0
2023	No Claim		$0
2024	No Claim		$0
Total			**$7,009.00**

Source: USDA Risk Management Agency http://www.rma.usda.gov/data/cause

Table 3.59. Crop Insurance Claims for Hail Paid in Grundy County 2014-2024

Year	Crop Name	Cause of Loss	Insurance Paid ($)
2014	Soybeans	Hail	$2,351.00
	Wheat		$95,890.00
2015	Wheat	Hail	$12,651.00
2016	No Claim		$0
2017	No Claim		$0
2018	No Claim		$0
2019	No Claim		$0
2020	Soybeans	Hail	$2,715.00
2021	No Claim		$0
2022	No Claim		$0
2023	Wheat	Hail	$4,193.00
2024	No Claim		$0
Total			**$117,800.00**

Source: USDA Risk Management Agency http://www.rma.usda.gov/data/cause

Table 3.60. Severe thunderstorm reports in Grundy County 2004-2025

Date	Event Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Thunderstorm						
No Reports						
Severe Wind						
5/23/2004	Thunderstorm Wind	52	0	0	0	0
5/27/2004	Thunderstorm Wind	52	0	0	0	0
5/27/2004	Thunderstorm Wind	52	0	0	0	0
5/27/2004	Thunderstorm Wind	70	0	0	0	0
6/12/2004	Thunderstorm Wind	61	0	0	0	0
6/12/2004	Thunderstorm Wind	52	0	0	10000	0
8/28/2005	Thunderstorm Wind	57	0	0	0	0
8/6/2006	Thunderstorm Wind	52	0	0	0	0
8/6/2006	Thunderstorm Wind	52	0	0	0	0
8/6/2006	Thunderstorm Wind	61	0	0	2000	0
8/6/2006	Thunderstorm Wind	52	0	0	0	0
8/7/2007	Thunderstorm Wind	52	0	0	0	0
8/8/2007	Thunderstorm Wind	60	0	0	2000	0

8/12/2007	Thunderstorm Wind	53	0	0	0	0
6/12/2008	Thunderstorm Wind	52	0	0	500	0
6/15/2008	Thunderstorm Wind	52	0	0	0	0
8/28/2008	Thunderstorm Wind	52	0	0	0	0
6/7/2009	Thunderstorm Wind	56	0	0	0	0
8/4/2009	Thunderstorm Wind	52	0	0	0	0
4/2/2010	Thunderstorm Wind	61	0	0	1000	0
4/2/2010	Thunderstorm Wind	61	0	0	100	0
5/12/2010	Thunderstorm Wind	61	0	0	0	0
5/12/2010	Thunderstorm Wind	61	0	0	5000	0
9/13/2010	Thunderstorm Wind	52	0	0	2000	0
3/22/2011	Thunderstorm Wind	52	0	0	0	0
5/21/2011	Thunderstorm Wind	52	0	0	0	0
6/9/2011	Thunderstorm Wind	52	0	0	0	0
6/26/2011	Thunderstorm Wind	52	0	0	0	0
6/26/2011	Thunderstorm Wind	52	0	0	1000	0
6/26/2011	Thunderstorm Wind	70	0	0	3000	0
6/26/2011	Thunderstorm Wind	61	0	0	0	0
3/19/2012	Thunderstorm Wind	61	0	0	3000	0
7/7/2012	Thunderstorm Wind	52	0	0	0	0
5/19/2013	Thunderstorm Wind	52	0	0	0	0
6/24/2013	Thunderstorm Wind	51	0	0	0	0
4/27/2014	Thunderstorm Wind	55	0	0	0	0
6/3/2014	Thunderstorm Wind	56	0	0	0	0
6/30/2014	Thunderstorm Wind	61	0	0	0	0
7/7/2014	Thunderstorm Wind	52	0	0	0	0
7/7/2014	Thunderstorm Wind	61	0	0	0	0
8/1/2015	Thunderstorm Wind	65	0	0	2000	0
8/2/2015	Thunderstorm Wind	52	0	0	0	0
11/11/2015	Thunderstorm Wind	61	0	0	5000	0
11/11/2015	Thunderstorm Wind	61	0	0	0	0
11/11/2015	Thunderstorm Wind	61	0	0	0	0
5/27/2016	Thunderstorm Wind	52	0	0	0	0
7/7/2016	Thunderstorm Wind	56	0	0	0	0
8/28/2016	Thunderstorm Wind	50	0	0	0	0
9/19/2016	Thunderstorm Wind	65	0	0	0	0
6/15/2017	Thunderstorm Wind	52	0	0	0	0
6/16/2017	Thunderstorm Wind	50	0	0	0	0
6/28/2017	Thunderstorm Wind	65	0	0	0	0
6/28/2017	Thunderstorm Wind	65	0	0	0	0
9/16/2017	Thunderstorm Wind	52	0	0	0	0
6/2/2018	Thunderstorm Wind	56	0	0	0	0
6/11/2018	Thunderstorm Wind	52	0	0	0	0
8/28/2018	Thunderstorm Wind	56	0	0	0	0
8/28/2018	Thunderstorm Wind	56	0	0	0	0
8/28/2018	Thunderstorm Wind	61	0	0	10000	0
8/28/2018	Thunderstorm Wind	56	0	0	0	0
8/28/2018	Thunderstorm Wind	56	0	0	0	0
5/28/2019	Thunderstorm Wind	52	0	0	0	0
6/15/2019	Thunderstorm Wind	52	0	0	0	0
6/15/2019	Thunderstorm Wind	56	0	0	0	0
6/22/2019	Thunderstorm Wind	65	0	0	0	0
6/22/2019	Thunderstorm Wind	52	0	0	0	0
9/8/2019	Thunderstorm Wind	56	0	0	0	0
9/19/2019	Thunderstorm Wind	56	0	0	0	0
5/25/2020	Thunderstorm Wind	52	0	0	0	0
5/25/2020	Thunderstorm Wind	52	0	0	0	0
8/10/2020	Thunderstorm Wind	56	0	0	0	0
6/24/2021	Thunderstorm Wind	52	0	0	0	0
6/24/2021	Thunderstorm Wind	56	0	0	0	0
6/24/2021	Thunderstorm Wind	56	0	0	0	0
12/15/2021	Thunderstorm Wind	52	0	0	0	0

12/15/2021	Thunderstorm Wind	65	0	0	0	0
6/8/2022	Thunderstorm Wind	56	0	0	0	0
6/17/2022	Thunderstorm Wind	52	0	0	0	0
6/17/2022	Thunderstorm Wind	56	0	0	0	0
3/31/2023	Thunderstorm Wind	61	0	0	0	0
6/29/2023	Thunderstorm Wind	68	0	0	0	0
6/29/2023	Thunderstorm Wind	52	0	0	0	0
6/29/2023	Thunderstorm Wind	54	0	0	0	0
6/30/2023	Thunderstorm Wind	52	0	0	0	0
7/29/2023	Thunderstorm Wind	52	0	0	0	0
6/25/2024	Thunderstorm Wind	52	0	0	0	0
6/25/2024	Thunderstorm Wind	52	0	0	0	0
6/25/2024	Thunderstorm Wind	52	0	0	0	0
3/14/2025	Thunderstorm Wind	60	0	0	0	0
3/14/2025	Thunderstorm Wind	61	0	0	0	0
3/14/2025	Thunderstorm Wind	61	0	0	0	0
3/14/2025	Thunderstorm Wind	61	0	0	0	0
Total	**92**		**0**	**0**	**$46,600**	**0**
Lightning						
No reports						
Hail						
5/27/2004	Hail	1	0	0	0	0
5/27/2004	Hail	2	0	0	0	0
5/27/2004	Hail	2.5	0	0	0	0
5/27/2004	Hail	2.75	0	0	0	0
5/27/2004	Hail	4	0	0	300000	0
6/12/2004	Hail	0.75	0	0	0	0
10/29/2004	Hail	1	0	0	0	0
5/11/2005	Hail	1	0	0	0	0
8/28/2005	Hail	0.88	0	0	0	0
8/28/2005	Hail	1	0	0	0	0
3/12/2006	Hail	0.88	0	0	0	0
3/12/2006	Hail	1.25	0	0	0	0
3/12/2006	Hail	0.88	0	0	0	0
4/11/2006	Hail	0.88	0	0	0	0
5/6/2007	Hail	1	0	0	0	0
5/6/2007	Hail	0.88	0	0	0	0
7/14/2007	Hail	0.75	0	0	0	0
4/10/2008	Hail	1	0	0	0	0
4/10/2008	Hail	1	0	0	0	0
5/25/2008	Hail	1.75	0	0	0	0
5/25/2008	Hail	0.88	0	0	0	0
6/12/2008	Hail	0.88	0	0	0	0
6/12/2008	Hail	1.75	0	0	0	0
6/12/2008	Hail	1	0	0	0	0
6/27/2008	Hail	1	0	0	0	0
7/21/2008	Hail	1	0	0	0	0
7/21/2008	Hail	2	0	0	0	0
3/6/2009	Hail	0.75	0	0	0	0
3/24/2009	Hail	0.75	0	0	0	0
4/25/2009	Hail	0.75	0	0	0	0
6/1/2009	Hail	0.75	0	0	0	0
6/7/2009	Hail	1.5	0	0	0	0
6/7/2009	Hail	2.5	0	0	0	0
6/7/2009	Hail	0.75	0	0	0	0
6/7/2009	Hail	1	0	0	0	0
6/7/2009	Hail	0.75	0	0	0	0
6/4/2010	Hail	2	0	0	0	0
6/4/2010	Hail	1.75	0	0	0	0
6/4/2010	Hail	0.88	0	0	0	0
6/4/2010	Hail	0.75	0	0	0	0
7/16/2010	Hail	1	0	0	0	0

9/2/2010	Hail	0.75	0	0	0	0
9/19/2010	Hail	0.88	0	0	0	0
3/22/2011	Hail	0.75	0	0	0	0
3/22/2011	Hail	1.5	0	0	0	0
3/22/2011	Hail	1	0	0	0	0
3/22/2011	Hail	0.75	0	0	0	0
4/3/2011	Hail	1.5	0	0	0	0
4/3/2011	Hail	1.5	0	0	0	0
5/21/2011	Hail	0.75	0	0	0	0
5/21/2011	Hail	0.75	0	0	0	0
5/21/2011	Hail	0.88	0	0	0	0
5/21/2011	Hail	0.88	0	0	0	0
5/21/2011	Hail	0.88	0	0	0	0
6/9/2011	Hail	0.75	0	0	0	0
6/9/2011	Hail	1.75	0	0	0	0
6/9/2011	Hail	2.75	0	0	0	0
6/9/2011	Hail	0.75	0	0	0	0
6/9/2011	Hail	1.25	0	0	0	0
6/9/2011	Hail	0.88	0	0	0	0
6/9/2011	Hail	2.5	0	0	0	0
6/9/2011	Hail	0.75	0	0	0	0
6/9/2011	Hail	1.75	0	0	0	0
6/14/2011	Hail	1	0	0	0	0
5/4/2012	Hail	0.75	0	0	0	0
5/15/2013	Hail	1.5	0	0	0	0
5/15/2013	Hail	0.88	0	0	0	0
5/19/2013	Hail	1	0	0	0	0
5/26/2013	Hail	1	0	0	0	0
5/10/2014	Hail	1.75	0	0	0	0
5/10/2014	Hail	4.25	0	0	0	0
5/10/2014	Hail	2	0	0	0	0
5/10/2014	Hail	2.75	0	0	0	0
5/10/2014	Hail	2.5	0	0	0	0
5/10/2014	Hail	2.75	0	0	0	0
5/10/2014	Hail	2	0	0	0	0
5/10/2014	Hail	1.5	0	0	0	0
5/10/2014	Hail	1.75	0	0	0	0
5/10/2014	Hail	0.75	0	0	0	0
6/3/2014	Hail	1	0	0	0	0
6/7/2015	Hail	0.75	0	0	0	0
5/27/2016	Hail	1	0	0	0	0
4/10/2017	Hail	1	0	0	0	0
4/10/2017	Hail	1.25	0	0	0	0
6/28/2017	Hail	1	0	0	0	0
6/28/2017	Hail	1.5	0	0	0	0
6/8/2018	Hail	1.25	0	0	0	0
8/28/2018	Hail	1.25	0	0	0	0
5/14/2019	Hail	1.25	0	0	0	0
5/28/2019	Hail	1	0	0	0	0
6/5/2019	Hail	1	0	0	0	0
6/15/2019	Hail	1.5	0	0	0	0
8/29/2019	Hail	1	0	0	0	0
9/27/2019	Hail	1.5	0	0	0	0
9/27/2019	Hail	1.25	0	0	0	0
6/20/2021	Hail	1	0	0	0	0
3/5/2022	Hail	1.25	0	0	0	0
3/31/2023	Hail	1	0	0	0	0
3/31/2023	Hail	1.75	0	0	0	0
5/6/2023	Hail	4	0	0	0	0
5/6/2023	Hail	2.5	0	0	0	0
5/6/2023	Hail	1.75	0	0	0	0
5/6/2023	Hail	2.75	0	0	0	0

5/6/2023	Hail	2.75	0	0	0	0
8/11/2023	Hail	1	0	0	0	0
8/11/2023	Hail	1	0	0	0	0
8/11/2023	Hail	1	0	0	0	0
4/27/2024	Hail	1	0	0	0	0
4/27/2024	Hail	1	0	0	0	0
5/24/2024	Hail	1	0	0	0	0
Total	**110**		0	0	**300,000**	**0**
Total All hazards	**202**		**0**	**0**	**$346,600**	**0**

Source: NCEI Storm data – July 2025

Table 3.61. Event Summaries

5/23/2004	Thunderstorm Wind	Large tree limbs down.
5/27/2004	Hail	There was extensive damage to roofs and cars. Power lines were also reported down.
6/12/2004	Thunderstorm Wind	Tree landed on house.
8/28/2005	Thunderstorm Wind	6-inch tree limb downed.
8/6/2006	Thunderstorm Wind	Tree blown over onto Highway 6.
8/6/2006	Thunderstorm Wind	Several trees blown down near County Road P and Highway 6 junction.
8/6/2006	Thunderstorm Wind	Shingles off roofs and pine trees uprooted.
8/7/2007	Thunderstorm Wind	Tree limbs down...estimated up to a foot in diameter.
8/8/2007	Thunderstorm Wind	Aquila Energy reports power lines down...152 customers without power.
6/12/2008	Thunderstorm Wind	Doors were torn off a horse barn.
6/15/2008	Thunderstorm Wind	Tree limbs up to eight inches in diameter were reported down.
8/28/2008	Thunderstorm Wind	Large tree limb was reported down and blocking traffic on Maple Road. Tree limbs were also reported down on Merrill Road.
6/7/2009	Thunderstorm Wind	Winds were estimated to have gusted to 65 mph.
8/4/2009	Thunderstorm Wind	An 8-to-12-inch diameter tree limb was blown down at 9th and Harris.
4/2/2010	Thunderstorm Wind	An abandoned mobile home had a roof blown off, with debris scattered about 100 yards. Several tree limbs were snapped off.
4/2/2010	Thunderstorm Wind	A metal flagpole was bent over by thunderstorm wind gusts to 70 mph. A large tree was snapped off on Highway 65.
5/12/2010	Thunderstorm Wind	Thunderstorms winds were reported to have gusted to 70 mph.
5/12/2010	Thunderstorm Wind	Two foot diameter tree limbs fell on to a house. A three foot diameter tree was snapped off in the downtown area.
9/13/2010	Thunderstorm Wind	A tree was reported to have blown down on a house, and a traffic light was blown down. Thunderstorm wind gusts were estimated up to 60 mph.
3/22/2011	Thunderstorm Wind	Thunderstorm wind gusts were estimated up to 60 mph.
5/21/2011	Thunderstorm Wind	Thunderstorm wind gusts were estimated up to 60 mph.
6/9/2011	Thunderstorm Wind	Part of a tree was blown down. Thunderstorm wind gusts were estimated up to 60 mph.
6/26/2011	Thunderstorm Wind	Tree was reported down and blocking Highway 65. Thunderstorm wind gusts were estimated up to 60 mph.
6/26/2011	Thunderstorm Wind	Trees and power lines were reported down on Tindall Avenue. Thunderstorm wind gusts were estimated up to 60 mph.
6/26/2011	Thunderstorm Wind	Thunderstorm wind gusts were estimated up to 80 mph. Power lines were snapped and an outbuilding was destroyed.
6/26/2011	Thunderstorm Wind	Thunderstorm wind gusts were estimated up to 70 mph.
3/19/2012	Thunderstorm Wind	Thunderstorm wind gusts estimated up to 70 mph, destroyed several sheds and snapped several trees off.
7/7/2012	Thunderstorm Wind	Thunderstorm wind gusts were estimated up to 60 mph.
5/19/2013	Thunderstorm Wind	A very large tree was reported down, which required a tractor to move it out of the way. Thunderstorm wind gusts were estimated up to 60 mph.
5/26/2013	Hail	This hail was reported at Leisure Lake.
6/24/2013	Thunderstorm Wind	A thunderstorm wind gust was measured at 59 mph.
4/27/2014	Thunderstorm Wind	Ten inch diameter tree limbs down.
5/10/2014	Hail	Softball sized hail was reported near Crowder State Park. Power lines were also reported down in West Trenton at 5:15 PM.
5/10/2014	Hail	This hail report was relayed to the office via social media.
6/3/2014	Hail	One inch hail covered the ground.
6/3/2014	Thunderstorm Wind	The power was also knocked out.
6/30/2014	Thunderstorm Wind	Several barns damaged with numerous tree limbs down.
7/7/2014	Thunderstorm Wind	A large tree limb was reported snapped and laying across Lulu St. in Trenton.
7/7/2014	Thunderstorm Wind	A large tree was snapped and laying across Crowder Road, near Trenton.
8/1/2015	Thunderstorm Wind	A tree and a power pole was snapped. The damage was confined to a 3 block radius.
8/2/2015	Thunderstorm Wind	An emergency manager reported 60 mph wind near Highway 6 and Road WW

		near Jamesport.
11/11/2015	Thunderstorm Wind	A large portion of a shingled roof was blown off along Route W.
11/11/2015	Thunderstorm Wind	The emergency manager for Grundy County reported sheet metal damage near Tindall from 60 to 70 mph winds.
11/11/2015	Thunderstorm Wind	A large tree was down on Route C.
5/27/2016	Thunderstorm Wind	A 60 mph wind was reported in Spickard.
5/27/2016	Hail	No narrative for event
7/7/2016	Thunderstorm Wind	A one foot tree limb of unknown condition was broken near Trenton.
8/28/2016	Thunderstorm Wind	A tree of unknown size or condition snapped in half and fell on some power lines in Trenton.
9/19/2016	Thunderstorm Wind	Multiple trees and limbs were down in Trenton. There was a roof blown off an industrial building.
6/15/2017	Thunderstorm Wind	A tree was blocking Crowder Road at Mable Street.
6/16/2017	Thunderstorm Wind	A fire department employee reported a 50-60 mph wind.
6/28/2017	Thunderstorm Wind	Numerous large trees were down between Mill Grove and Tindall.
6/28/2017	Thunderstorm Wind	There were several reports of trees and power poles down across Trenton.
9/16/2017	Thunderstorm Wind	A 6 inch tree limb was down, and a powerline was down near Trenton.
6/2/2018	Thunderstorm Wind	Some 12 to 18 inch tree limbs broke off on the east side of Trenton.
6/11/2018	Thunderstorm Wind	This was a delayed report of 2 to 3 inch tree limbs down.
8/28/2018	Thunderstorm Wind	Winds were estimated at 60-65 mph near Brimson.
8/28/2018	Thunderstorm Wind	A tree was down along Highway 65 just north of Trenton.
8/28/2018	Thunderstorm Wind	A few large trees were blown down and a shed was blown in just west of Galt.
8/28/2018	Thunderstorm Wind	A large maple tree was down in Galt.
8/28/2018	Thunderstorm Wind	Several large tree limbs around 6 inches in diameter broke due to strong winds.
5/28/2019	Thunderstorm Wind	An emergency manager reported 60 mph winds.
6/15/2019	Thunderstorm Wind	A report of 60 mph wind was received.
6/15/2019	Thunderstorm Wind	A two foot diameter tree was blown down.
6/22/2019	Thunderstorm Wind	Several structures were damaged near Trenton. Several power lines were also down.
6/22/2019	Thunderstorm Wind	Emergency management reported 60 mph wind.
9/8/2019	Thunderstorm Wind	A 60 to 70 mph wind report came from Emergency Management in Trenton.
9/19/2019	Thunderstorm Wind	Emergency Management in Grundy County reported several large trees down between Laredo and Trenton. The trees were described as 6 to 12 inches in diameter and healthy.
5/25/2020	Thunderstorm Wind	Emergency management relayed from amateur radio of 2 to 3 inch tree limbs down in the Laredo area.
5/25/2020	Thunderstorm Wind	A large tree limb split near Spickard.
8/10/2020	Thunderstorm Wind	Several large limbs and power lines were down on Highway F near the intersection of Highway U.
6/24/2021	Thunderstorm Wind	Emergency management reported 60 mph winds.
6/24/2021	Thunderstorm Wind	Numerous trees were down across Trenton after 60 to 70 mph wind went through the city.
6/24/2021	Thunderstorm Wind	Route V was closed due to several trees in the road.
12/15/2021	Thunderstorm Wind	First responders in Brimson, Missouri reported 60 mph wind.
12/15/2021	Thunderstorm Wind	Numerous trees and powerlines were blown down in Trenton. A roof was also blown off of a structure.
6/8/2022	Thunderstorm Wind	Several two to three foot diameter trees were brought down by 60 to 70 mph wind.
6/17/2022	Thunderstorm Wind	Half of a large tree was blown down near Trenton.
6/17/2022	Thunderstorm Wind	A light pole was snapped in Galt.
3/31/2023	Thunderstorm Wind	A tree and powerlines were knocked down.
5/6/2023	Hail	Softball sized hail was reported southwest of Trenton along Missouri Route 6.
5/6/2023	Hail	Tennis ball sized hail was reported about 4 miles west of Trenton near Edinburg.
5/6/2023	Hail	Golf ball size hail was reported in Trenton.
5/6/2023	Hail	Baseball size hail was reported on the east side of Trenton.
5/6/2023	Hail	Baseball size hail was reported about 5 miles south of Trenton.
6/29/2023	Thunderstorm Wind	Max wind gust of 78 mph was recorded on a personal weather station west of Spickard.
6/29/2023	Thunderstorm Wind	Large tree branched were downed across Spickard along with power outages.
6/29/2023	Thunderstorm Wind	Measured wind gust of 62 mph in Tindall.
6/30/2023	Thunderstorm Wind	Tree branches downed in Trenton.
7/29/2023	Thunderstorm Wind	Estimated wind gusts up to 60 mph in Spickard.
8/11/2023	Hail	Quarter sized hail was reported southwest of Trenton.
8/11/2023	Hail	Quarter sized hail was reported southwest of Trenton.
8/11/2023	Hail	Quarter sized hail was reported just south of Tindall.
4/27/2024	Hail	Quarter sized hail was reported on the north side of Spickard.
4/27/2024	Hail	Quarter sized hail was reported just southeast of Trenton.
5/24/2024	Hail	Quarter sized hail reported in Spickard.
6/25/2024	Thunderstorm Wind	Estimated 60 mph wind gusts in Spickard.

6/25/2024	Thunderstorm Wind	Estimated gusts up to 60 mph with power outages reported in Trenton.
6/25/2024	Thunderstorm Wind	Downed wires and power outages in Laredo.
3/14/2025	Thunderstorm Wind	MU Barton Farm Campus Mesonet recorded 69 mph gust.
3/14/2025	Thunderstorm Wind	Damage to garage.
3/14/2025	Thunderstorm Wind	Radio station in Trenton reports 70 mph wind gusts.
3/14/2025	Thunderstorm Wind	EM reports partial building collapse at East Gate Shopping Center.

Source: NCEI Database

Probability of Future Occurrence

The probability of Grundy County experiencing a thunderstorm event is calculated below. The calculations also differentiate between thunderstorm events that contain hail and high winds in the planning area

$$\boldsymbol{Probability\ of thunderstorms = \frac{\#\ of\ events}{Years} = \frac{202}{21} = 9.76}$$

According to the above calculation, the planning area of Grundy County should experience an average of 9.7 thunderstorms annually.

The probability of Grundy County experiencing a severe thunderstorm wind event is calculated below.

$$\boldsymbol{Probability\ of\ severe\ wind\ event = \frac{\#\ of\ events}{Years} = \frac{92}{21} = 4.38}$$

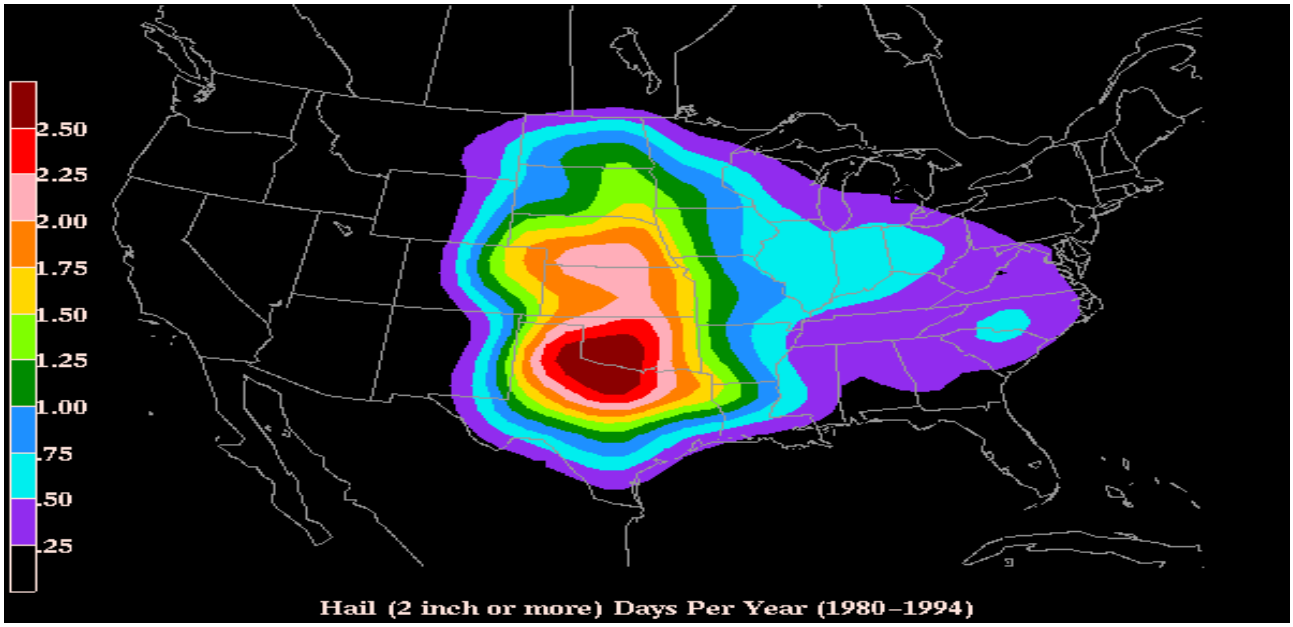
According to the above calculation, the planning area of Grundy County should experience an average of 4.38 thunderstorm wind events annually.

The probability of Grundy County experiencing a thunderstorm accompanied by hail is calculated below.

$$\boldsymbol{Probability\ of\ hail = \frac{\#\ of\ events}{Years} = \frac{110}{21} = 5.23}$$

According to the above calculation, the planning area of Grundy County should experience an average of 5.23 thunderstorm wind events annually.

Figure 3.29. Annual Hailstorm Probability (2" diameter or larger), U 1980- 1994



Source: NSSL, http://www.nssl.noaa.gov/users/brooks/public_html/bighail.gif Note:

Changing Future Conditions Considerations

As temperatures increase with climate change, the severity of storms is likely to increase, as warm air is the key component of thunderstorms. Due to higher levels of convection, there could be a higher frequency and severity of storm events.

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 are 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.

The method used to determine vulnerability to severe thunderstorms across Missouri was statistical analysis of data from several sources: National Centers for Environmental Information (NCEI) storm events data (1996 to December 31, 2021), HAZUS Building Exposure Value data, housing density and mobile home data from the U.S. Census (2019), 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.

From the statistical data collected, six factors were considered in determining overall vulnerability to lightning as follows: housing density, building exposure, percentage of mobile homes, social vulnerability, likelihood of occurrence, and average annual property loss. Based on natural breaks in the statistical data, a rating value of 1 through 5 was assigned to each factor. 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. This vulnerability rating was taken from the 2023 Missouri State Hazard Mitigation Plan.

These rating values correspond to the following descriptive terms:

1) Low
2) Medium-Low
3) Medium
4) Medium-High
5) High

Table 3.62. Housing Density, Building Exposure, SOVI, and Mobile Home Data for Grundy County

Total Building Exposure (HAZUS)	Building Exposure Rating	Housing Density	Housing Density Rating	SOVI Rating	SOVI Ranking Rating	Percent Mobile Homes	Percent Mobile Homes Rating
$1,2**34,611,000**	1	11.49	1	Medium High	4	5.5	2

Source: 2023 Missouri State Hazard Mitigation Plan

Table 3.63. High Wind, Hail, and Lightning Events, Likelihood of Occurrence, and Associated Ratings for Grundy 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
108	4.15	2	136	5.23	3	0	0.00	1

Source: 2023 Missouri State Hazard Mitigation Plan

Potential Losses to Existing Development

According to historical data reported for thunderstorm wind, high wind, hail, and lightning by NCEI, from 2014-2024, Grundy County sustained $346,000 in property damage. Grundy County, according to the USDA Risk Management Agency, sustained $124,809.00 in crop loss claims for the same time frame. Using this past data to calculate potential future losses, Grundy County could experience, on average, $23,540 in financial losses annually due to the effects of thunderstorms, wind, high wind, hail, and lightning.

Previous and Future Development

Any additional development that occurs in Grundy County will result in increased exposure and thus increased vulnerability to severe thunderstorms and their associated wind, hail, and lightning. However, none of the participating jurisdictions have completed or plan to complete any new development that would increase vulnerability.

Hazard Summary by Jurisdiction

Thunderstorms, high winds, lightning, and hail events are area-wide and expected to occur uniformly across the planning area. However, the magnitude of impacts may vary by jurisdiction based on the physical vulnerability of structures.

The following table details the percentage of housing built before 1939 and the percentage of manufactured housing units in each jurisdiction, as both characteristics may indicate increased vulnerability to severe thunderstorms that are accompanied by strong winds and hail.

Table 3.64. Housing Vulnerability Indicators by Grundy County Jurisdiction

Jurisdiction	Mobile Home	% Mobile Home	Homes Built Before 1939	% Homes Built Before 1939
Grundy County	217	5.7%	942	24.6%
City of Galt	15	16.9%	15	16.9%
City of Laredo	3	5.1%	22	37.3%
City of Spickard	1	0.6%	45	28.7%
Village of Tindall	2	6.7%	10	33.3%
City of Trenton	61	2.8%	557	25.7%

Source: US Census Bureau

Problem Statement

- Severe Thunderstorm events are highly likely to occur in Grundy County annually. Possible solutions for vulnerability to wind include a review of local ordinance and building codes that would address high winds and/or construction techniques to include structural bracing, straps and clips, or anchor bolts.
- Possible solutions for vulnerability to lightning include installation of lightning rods and surge protection.
- Possible solutions for vulnerability to hail include use of building materials less prone to damage.
- Possible solutions for vulnerability to hail and high winds associated with thunderstorms would be to encourage farmers to purchase crop insurance.

3.4.7 Severe Winter Weather

Hazard Profile

Hazard Description

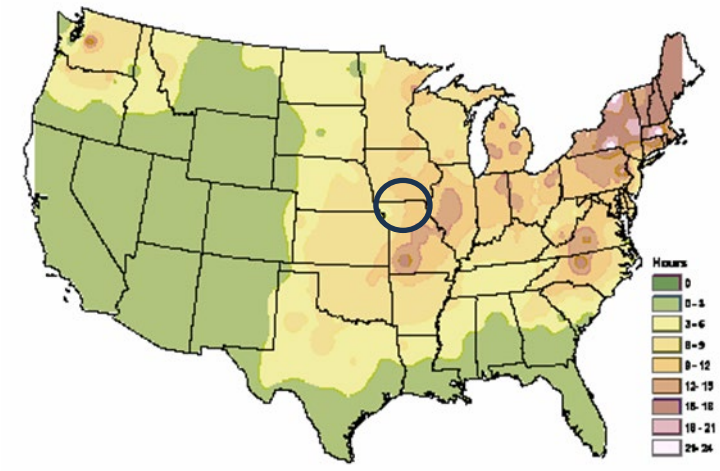
A major winter storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall, and cold temperatures. The National Weather Service describes different types of winter storm events as follows.

- **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 storms impact large geographic areas at the same time, no one part of the county is more or less threatened by a winter storm.

Figure 3.30. NWS Statewide Average Number of Hours per Year with Freezing Rain



[Insert Map]

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 heavy snowfall, ice, and strong winds which can push the wind chill well below zero degrees in the planning area.

For severe weather conditions, the National Weather Service issues some or all of the following products as conditions warrant across the State of Missouri. NWS local offices in Missouri may collaborate with local partners to determine when an alert should be issued for a local area.

- Winter Weather Advisory — Winter weather conditions are expected to cause significant inconveniences and may be hazardous. If caution is exercised, these situations should not become life threatening. Often the greatest hazard is to motorists.
- Winter Storm Watch — Severe winter conditions, such as heavy snow and/or ice are possible within the next day or two.
- Winter Storm Warning — Severe winter conditions have begun or are about to begin.
- Blizzard Warning — Snow and strong winds will combine to produce a blinding snow (near zero visibility), deep drifts, and life-threatening wind chill.
- Ice Storm Warning -- Dangerous accumulations of ice are expected with generally over one quarter inch of ice on exposed surfaces. Travel is impacted, and widespread downed trees and power lines often result.
- Wind Chill Advisory -- Combination of low temperatures and strong winds will result in wind chill readings of -20 degrees F or lower.
- Wind Chill Warning -- Wind chill temperatures of -35 degrees F or lower are expected. This is a life-threatening situation.

Previous Occurrences

Table 3.65. NCEI Winter storm events for Grundy County 1994-2024

Blizzard			
Date	Deaths	Injuries	Damage
12/7/2009	0	0	0
2/1/2011	0	0	0
11/25/2018	0	0	0
Total: 3	**0**	**0**	**0**
Heavy Snow			
4/10/1997	0	2	$3,000,000
12/5/1999	0	0	0
2/27/2001	0	0	0
3/15/2001	0	0	0
1/30/2002	0	0	0
2/5/2008	0	0	0
12/21/2013	0	0	0
2/4/2014	0	0	0
1/31/2015	0	0	0
2/1/2015	0	0	0
1/21/2023	0	0	0
Total: 11	**0**	**0**	**$3,000,000**
Ice Storm			
1/4/1998	0	0	0
1/4/2005	0	0	0
11/29/2006	0	0	0
12/1/2007	0	0	0

12/10/2007	0	0	$5,000
12/18/2008	0	0	0
2/7/2019	0	0	0
Total: 7	**0**	**0**	**$5,000**
Winter Storm			
2/21/1997	0	0	0
12/11/2000	0	0	0
1/28/2001	0	0	0
2/9/2001	0	0	0
3/2/2002	0	0	0
12/10/2003	0	0	0
2/5/2004	0	0	0
12/22/2007	0	0	0
2/16/2008	0	0	0
3/28/2009	0	0	0
12/24/2009	0	0	0
1/6/2010	0	0	0
2/21/2010	0	0	0
2/24/2011	0	0	0
12/20/2012	0	0	0
2/21/2013	0	0	0
2/25/2013	0	0	0
12/27/2015	0	0	0
1/11/2019	0	0	0
1/10/2020	0	0	0
12/29/2020	0	0	0
1/14/2022	0	0	0
Total: 22	**0**	**0**	**0**
Total of all events: 43	**0**	**0**	**$225,000**

Source: NWS NCEI Data accessed July 2025

Table 3.66. Crop Insurance Claims Paid in Grundy County 2014-2024

Year	Crop Name	Cause of Loss	Insurance Paid ($)
2014	Wheat	Cold Winter	$96,769.00
	Wheat	Freeze	$53,184.00
	Soybeans	Freeze	$15,286.00
2015	Wheat	Cold Winter	$14,912.64
2016	Corn	Cold Winter	$124.00
2017	No Claim		$0
2018	No Claim		$0
2019	Wheat	Cold Winter	$27,509.74
2020	No Claim		$0
2021	No Claim		$0
2022	No Claim		$0
2023	Wheat	Freeze	$1,375.00
2024	No Claim		$0
Total			**$209,160.38**

Source: USDA Risk Management Agency http://www.rma.usda.gov/data/cause

Table 3.67. NCEI Storm event summaries 2005-2025

Begin Date	Event Narrative
11/29/2006	One quarter to one half inch of ice reported across the county.
12/1/2007	One quarter of an inch of ice was reported across the county.
12/10/2007	One quarter to one half inch of ice was reported across the county. Many tree branches and power lines were reported down.
12/22/2007	Six to seven inches of snow was reported near Trenton. Snow drifts were as high as four feet with travel extremely dangerous.

2/5/2008	Five to seven inches of snow fell across the county.
2/16/2008	Three to four inches of snow was reported across the county. There was also blowing and drifting of the snow.
12/18/2008	One half inch of ice was reported.
3/28/2009	One to three inches of snow, sleet, and freezing rain, was reported across the county.
12/7/2009	Blizzard conditions were observed across the county. Snowfall amounts up to 8 inches were observed.
12/24/2009	Up to 8 inches of snow fell across the county. Gusty northwest winds caused blowing and drifting of the snow.
1/6/2010	Up to 5 inches of snow was reported across the county. Strong gusty northwest winds caused blowing and drifting snow.
2/21/2010	Nine- and one-half inches of snow was reported in Trenton. Blowing and drifting snow caused hazardous driving conditions.
1/10/2011	Up to 6 inches of snow was reported across the county.
2/1/2011	Blizzard conditions were observed across the county, with frequent wind gusts up to 45 mph, visibilities less than 1/4 of a mile, and heavy snow of up to 12 inches. Travel was nearly impossible, with the blowing and drifting snow, and the very low visibilities.
2/24/2011	The combination of up to 6 inches of snow, and blowing and drifting snow, led to hazardous driving conditions across the county.
1/11/2012	The town of Trenton reported 2.0 inches of snow.
1/11/2012	The observer in Spickard reported 1.0 inches of snow.
1/27/2012	The observer in Spickard measured one inch of snow.
2/13/2012	Two to four inches of snow was observed across the county.
12/20/2012	The combination of high winds and snowfall of one to three inches, caused near blizzard conditions across the county.
1/30/2013	Snowfall was measured at 2.0 inches in Trenton.
2/21/2013	Trenton measured six inches of snow.
2/25/2013	Eleven inches of snow was measured in Trenton.
5/2/2013	Trenton measured 5.0 inches of snow.
12/21/2013	Light to moderate snow picked up during the afternoon hours on December 21. Preceding the snow freezing rain produced some minor icing in and around the area. Once the snow began it quickly accumulated between 5 and 7 inches across the area. The highest amount received came from Chillicothe, Missouri where 6 to 7 inches of snow fell. While there were several vehicle spin-outs across the area, and despite the ice accumulation the widespread effects were rather minimal.
2/4/2014	A major winter storm trekked through Kansas and Missouri on February 4 and 5. By the time the storm finished it dropped around a foot of snow across the entire area.
1/31/2015	Light snow fell for a long duration across northern Missouri through the evening and overnight hours on January 1 through the early morning hours on February 2. Strong winds moved into the area while the snow was falling and caused visibility problems and drifting on the roads. Generally, 8 to 10 inches fell across the county with the highest reported total from the county coming from Trenton, where 9 inches fell. Numerous vehicle accidents occurred due to the poor driving conditions, but no serious injuries were reported.
2/1/2015	Light snow fell for a long duration across northern Missouri through the evening and overnight hours on January 1 through the early morning hours on February 2. Strong winds moved into the area while the snow was falling, and caused visibility problems and drifting on the roads. Generally, 8 to 10 inches fell across the county with the highest reported total from the county coming from Trenton, where 9 inches fell. Numerous vehicle accidents occurred due to the poor driving conditions, but no serious injuries were reported.
12/27/2015	Several areas across northeast Kansas and northwest Missouri saw ice accumulation approaching a quarter inch as well as sleet ranging from a quarter to a half inch in most locations, with some locations reporting over an inch of sleet. Once the sleet ended another 3 to 4 inches of snow fell before the system moved out.
11/25/2018	Blizzard conditions started after a few hours of light to moderately falling snow. Once the heavy snow arrived winds gusted up to 40 mph for nearly 4 hours, creating whiteout conditions, officially measured by the ASOS at nearby KTVK as sub-quarter mile for that duration. Despite the heavy impacts from this system affecting Thanksgiving weekend return traffic, no serious injuries occurred from this event.

1/11/2019	Between 8 and 12 inches of snow fell across Grundy County, with most of it falling over the course of the first 12 hours. Light snow continued into the next day (January 12), but it was fairly light, and only accounted for 1 to 2 inches.
2/7/2019	While light freezing drizzle occurred off and on February 5, the bulk of the freezing rain fell during the overnight period on February 6 into February 7. Over the course of the event Grundy County received approximately a quarter inch of ice accumulation. Numerous vehicle accidents occurred area-wide and minor tree damage occurred.
1/10/2020	Freezing rain occurred through much of the night going into January 11 and caused around a quarter to one-third inch accumulation. This occurred prior to about 2 to 3 inches of snow falling. This resulted in several auto accidents.
12/29/2020	During the day on December 29, a potent winter storm moved into the area. The precipitation started as primarily snow during the morning hours producing a couple inches of accumulation but switched to freezing rain just before 1 pm as warm air aloft moved over the area. Moderate, to at times heavy rain ensued through the rest of the morning and early to middle afternoon hours, before eventually moving out by the evening hours. The main impact from this storm was several power outages around the area. Due to the rain rates, not all of the nearly 1 inch of liquid precipitation accreted on surfaces, but a quarter to half inch did accrete, causing a significant disruption to the power, and closing numerous roads.
1/14/2022	Several reports from across the area indicated around 6 inches of snow in Grundy County.
1/21/2023	Up to 6 of snow fell across Grundy County on Jan 21st.

Source: NCEI Storm summaries – June 2025

Probability of Future Occurrence

The probability of a winter storm event is calculated below using the formula of events divided by the number of years

$$\boldsymbol{Probability = \frac{number\ of\ events}{number\ of\ years} = \frac{43}{30} = 1.43}$$

This calculation indicates that Grundy County could expect to experience on average, 1.43 winter weather events annually.

Changing Future Conditions Considerations

With higher average temperatures occurring across the globe due to climate change, one might assume that winters would be milder. However, with the increase in the atmosphere's water-holding capacity, there is an increased likelihood of heavy snow events. Changes in the jet stream patterns can also result in allowing pools of very cold air to sink further south than usual. In summation, the changing climate could result in more severe storms, both in duration and amount of precipitation.

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.
Winter storms may lead to significant damage and disruption, in 1997 a major snow event led to over $3,000,000 in building damage in Grundy County. Crop losses due to winter storms over the past 10 years have resulted in crop insurance payouts of $209,160.38. The largest payout was in 2014 when nearly $100,000 in crop insurance was paid out.

On an annualized basis, crop insurance payouts would total $20,916.03. Other damages are harder to annualize with any degree of accuracy due to a lack of data.

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 BCA Toolkit 6.0 Release Notes, the economic impact as a result of loss of power is $174 per person per day of lost service.

From the 2023 Missouri Hazard Mitigation Plan, the method used to determine vulnerability to severe winter weather across Missouri was statistical analysis of data from several sources: National Centers for Environmental Information (NCEI) storm events data (1996 to December 31, 2021), HAZUS Building Exposure Value Data, housing density data from the US Census, and the calculated Social Vulnerability Index for Missouri Counties from the Hazard 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. Based on natural breaks in the statistical data, a rating value of 1 through 5 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

Once the individual ratings were determined for the above factors, a combined vulnerability rating was computed for severe winter weather events. The following table provides the calculated ranges applied to determine overall vulnerability of Missouri counties to severe winter weather

Table 3.68. 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: 2023 Missouri State Hazard Mitigation Plan

Table 3.69. Housing Density, Building Exposure, and SOVI Data for Grundy County

	Total Building Exposure (HAZUS)	Building Exposure Rating	Housing Density	Housing Density Rating	SOVI Ranking	SOVI Rating
Grundy	$1,234.611.000	1	11.49	1	Medium High	4

Source: 2023 Missouri State Hazard Mitigation Plan

The following information was taken from the 2023 Missouri State Hazard Mitigation Plan. It includes the factors considered for severe winter weather exposure to Grundy County.

Table 3.70. Additional Statistical Data Compiled for Vulnerability Analysis for Grundy County

Total # 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
49	1.88	3	$1156,577	1	10	Medium Low

Source: 2023 Missouri State Hazard Mitigation Plan

Table 3.71. Annualized Severe Winter Weather Damages in Grundy County

Annualized Blizzard Property Loss ($)	Annualized Heavy Snow Property Loss ($)	Annualized Ice Storm Property Loss ($)	Annualized Winter Storm Property Loss ($)	Annualized Winter Weather Property Loss ($)	Total Annualized Winter Weather Property Loss ($)
0	$115,385	$192	$0	$0	$115,577

Source: 2023 Missouri State Hazard Mitigation Plan

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 freezing. Fallen tree limbs also pose a threat to various structures/infrastructures across the country.

Previous and Future Development

Future development could potentially increase vulnerability to this hazard by increasing demand on the utilities and increasing the exposure of infrastructure networks. At this time, there is little expected in the way of new development that would lead to an increased risk to the planning area.

Hazard Summary by Jurisdiction

Although crop loss as a result of severe winter weather occurs more in the unincorporated portions of the planning area, the density of vulnerable populations is higher in the urban areas of the planning areas. It is considered that the magnitude of this hazard is relatively equal. The factors of

probability, warning time, and duration are also equal across the planning area. Therefore, the conclusion is that the hazard does not substantially vary by jurisdiction

Problem Statement

Grundy County is expected to experience at least one severe winter weather event annually. The county has a low-medium vulnerability rating. Jurisdictions should enhance their weather monitoring to be better prepared for sever 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 as preparing for power outages. Education needs to occur to ensure all residents are aware of the shelters in the County and what types of emergency supplies to keep on hand, in the event of a major storm event.

3.4.8 Tornado

Hazard Profile

Hazard Description

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. The unique geography of the central United States allows for the development of thunderstorms that spawn tornadoes. The jet stream, which is a high-velocity stream of air, determines which area of the central United States will be prone to tornado development. The jet stream normally 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.

Tornadoes spawn from the largest thunderstorms. The associated cumulonimbus clouds can reach heights of up to 55,000 feet above ground level and are commonly formed when Gulf air is warmed by solar heating. The moist, warm air is overridden by the dry cool air provided by the jet stream. This cold air presses down on the warm air, preventing it from rising, but only temporarily. Soon, the warm air forces its way through the cool air and the cool air moves downward past the rising warm air. This air movement, along with the deflection of the earth's surface, can cause the air masses to start rotating. This rotational movement around the location of the breakthrough forms a vortex, or funnel. If the newly created funnel stays in the sky, it is referred to as a funnel cloud. However, if it touches the ground, the funnel officially becomes a tornado.

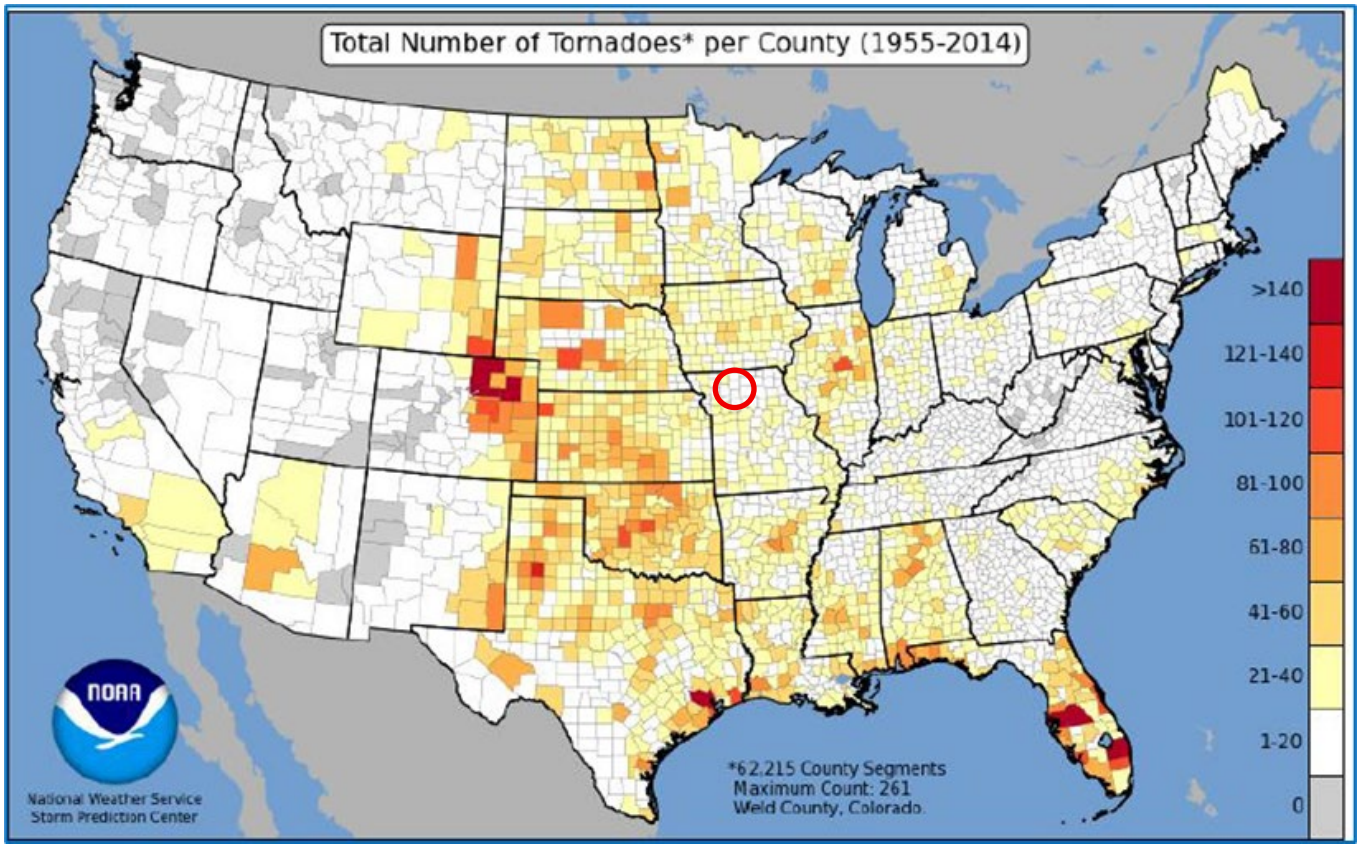
A typical tornado can be described as a funnel-shaped cloud that is "anchored" to a cloud, usually a cumulonimbus that is also in contact with the earth's surface. This contact on average lasts 30 minutes and covers an average distance of 15 miles. The width of the tornado (and its path of destruction) 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

Tornadoes can occur anywhere in the planning area. The following map was obtained from the 2023 Missouri State Hazard Mitigation Plan and shows the total number of tornadoes per county. Grundy County (indicated with a circle) shows the total number of tornadoes within the planning area as between 1-20.

Figure 3.31. Tornado Activity in the United States 1955-2014



Strength/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 (see table below) 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 EF SCALE	
F Number	Fastest ¼-mile (mph)	3 Second Gust (mph)	EF Nu	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110

2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

Source: 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 the table below. 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. Information on the Enhanced Fujita Scale's damage indicators and degrees or damage is located online at www.spc.noaa.gov/efscale/ef-scale.html.

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
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

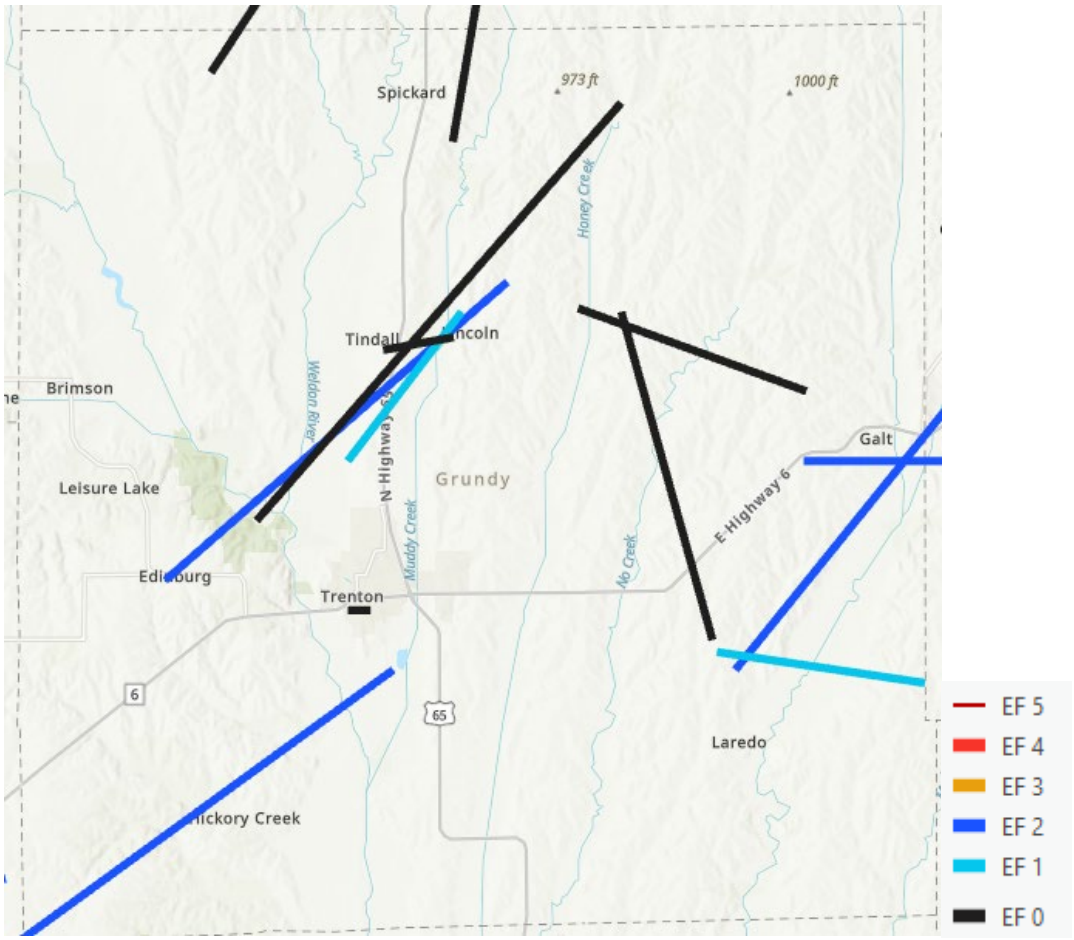
There are limitations to the use of NCEI tornado data that must be noted. For example, one tornado may contain multiple segments as it moves geographically. A tornado that crosses a county line or state line is considered a separate segment for the purposes of reporting to the NCEI. Also, a tornado that 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 Grundy County, 1993 – 2025

Date	Beginning Location	Ending Location	Length (miles)	Width (yards)	F/EF Rating	Death	Injury	Property Damage	Crop Damages
05/27/04	4W TRENTON	4W TRENTON	0.5	50	F0	0	0	0	0
05/29/04	4W SPICKARD	4W SPICKARD	1.0	100	F0	0	0	0	0
07/21/08	4NNW DUNLAP	2NNW LAREDO	7.9	25	EF0	0	0	0	0
3/27/14	2SSW	5E SPICKARD	12.84	500	Ef3	0	0	Yes	0
5/30/16	3SSE EDINBURG	3SSE	0.1	10	EF0	0	0	0	0
5/30/16	1SSW BRIMSON	1SSW BRIMSON	0.1	10	EF0	0	0	0	0
10/9/18	2WSW SPICKARD	2WSW	0.02	25	EF0	0	0	0	0
6/24/21	1SSW TINDALL	2ESE TINDALL	1.66	25	EF0	0	0	Yes	0
6/24/21	4NNW DUNLAP	2WNW GALT	5.66	50	EF0	0	0	Yes	0
6/24/21	2NNW LAREDO	2S LINDLEY	4.88	75	EF1	0	0	Yes	0
5/6/23	1S TRENTON	1SE TRENTON	0.53	25	EF0	0	0	Yes	0
4/27/24	2SE SPICKARD	2ENE	2.62	75	EF0	0	0	0	0

Source: National Centers for Environmental Information, http://www.NCEI.noaa.gov/stormevents/
Note: "Yes" -- Storm report database showed zero damage numbers, but narratives indicated damage was observed.

Figure 3.32. Grundy County Map of Historic Tornado Events by F/EF Rating



Source: ArcGIS Pro: Tornado Tracks Layer

Probability of Future Occurrence

There is a 38% chance of a tornado in Grundy County in any given year based on previous occurrences.

$$Probability\ of\ Tornado\ Incident = \frac{12}{31} = 0.38$$

Changing Future Conditions Considerations

According to the Missouri State Hazard Mitigation Plan, scientists do not know how the frequency and severity of tornadoes will change. Research published in 2015 suggests that changes in heat and moisture content in the atmosphere, brought on by a warming world, could be playing a role in making tornado outbreaks more common and severe in the US. The research concluded that the number of days with large outbreaks has been increasing since the 1950's and that densely concentrated tornado outbreaks are on the rise. It is notable that the research shows that the area of tornado activity is not expanding, but rather the areas already subject to tornado activity are seeing more densely packed tornadoes. Because Chariton County experiences approximately one tornado every four years, and based on the research, the frequency of such events could increase in the future.

Vulnerability

Vulnerability Overview

The 2023 Missouri State Hazard Mitigation Plan provided the following vulnerability analysis of Grundy County to tornadoes.

The method used to determine vulnerability to tornadoes across Missouri was statistical analysis of data from several sources: HAZUS building exposure value data, population density and mobile home data from the U.S. Census (2019), 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, 2021) from the National Centers for Environmental Information (NCEI). It is important to realize that one limitation to the NCEI data is that many tornadoes that might have occurred in uninhabited areas, as well as some in inhabited areas, may not have been reported. The incompleteness of the data suggests that it is not appropriate for use in parametric modeling. In addition, NOAA data cannot show a realistic frequency distribution of different Fujita scale tornado events, except for recent years. Thus, 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. It is based on past experience and forecasts the expected results for the immediate or extended future.

From the statistical data collected, 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 1 through 5 was assigned to each factor. Once the ranges were determined and applied to all factors considered in the analysis, the ratings were combed to determine an overall vulnerability rating for tornadoes. These rating values correspond to the following descriptive terms:

1) Low
2) Medium-Low
3) Medium
4) Medium-High
5) High

Table 3.75. Likelihood of Occurrence, Annual Property Loss, and Overall Vulnerability Rating for Grundy County by Tornadoes

Total Number of Tornadoes	17
Likelihood of Occurrence	0.236
Likelihood of Occurrence Rating	2
Total Annualized Property Loss	$8,681
Total Annualized Property Loss Rating	1
Overall Vulnerability Rating	11
Overall Vulnerability Rating Description	Medium Low

Source: 2023 Missouri State Hazard Mitigation Plan

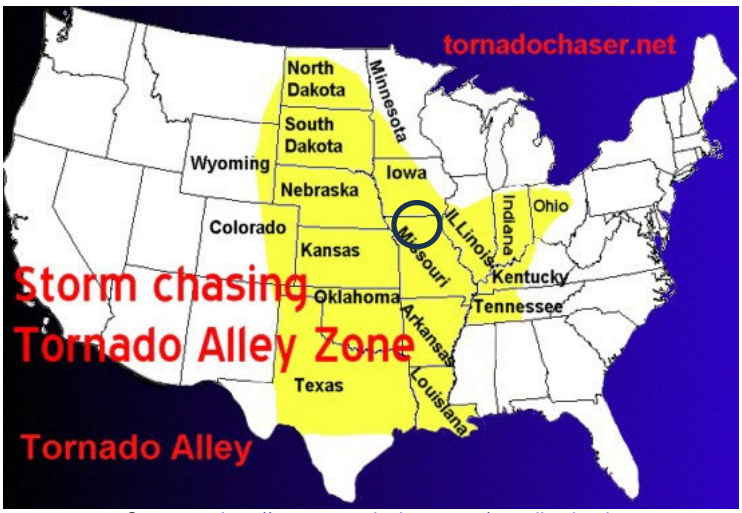
Table 3.76. Tornado Vulnerability Rating for Grundy County

Vulnerability	Data for Grundy County
Total Building Exposure	$1,234,611,000
Exposure Rating	1
Population Density	22.63
Population Density Rating	1
SOVI Index Ranking	Medium High
SOVI Rating	4
Percent of Mobile Homes	5.5
Mobile Home Rating	2

Source: 2023 Missouri State Hazard Mitigation Plan

Grundy County is a region of the U.S. with high frequency of dangerous and destructive tornadoes referred to as “Tornado Alley”, illustrated below. (Indicated by red arrow).

Figure 3.33. Tornado Alley in the U.S.



Source: http://www.tornadochaser.net/tornalley.html

Potential Losses to Existing Development

While the National Centers for Environmental Information (NCEI) reports do indicate tornado

damage and include some associated dollar figures for Grundy County, the available data is often too limited and inconsistent. This sparsity makes it challenging to accurately calculate a reliable annualized damage assessment for the county.
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Previous and Future Development

New building development and community growth can significantly heighten vulnerability to tornadoes in several ways, even in areas historically prone to them. Primarily, as urban and suburban areas expand, they often sprawl into previously undeveloped or sparsely populated regions. This "urban sprawl" directly increases the number of people and properties within a tornado's potential path. A tornado passing through an open field causes minimal damage, but the same tornado traversing a newly developed subdivision with hundreds of homes will result in far greater economic loss and risk to human life, regardless of its intensity.

Hazard Summary by Jurisdiction

While the physical hazards of a tornado remain consistent throughout the county, the scale of its impact—measured by potential casualties and property damage—varies significantly depending on the population density of the affected community.

Problem Statement

Grundy County has inadequate tornado shelters throughout the county, not everyone utilizes social media and/or texting, the rural areas do not have warning sirens, lack of awareness for available shelters and more education needs to occur. Possible solutions include promoting the use of NOAA weather radios and conducting public education and outreach activities to increase awareness of tornado risk.

3.4.9 Wildfire

Hazard Profile

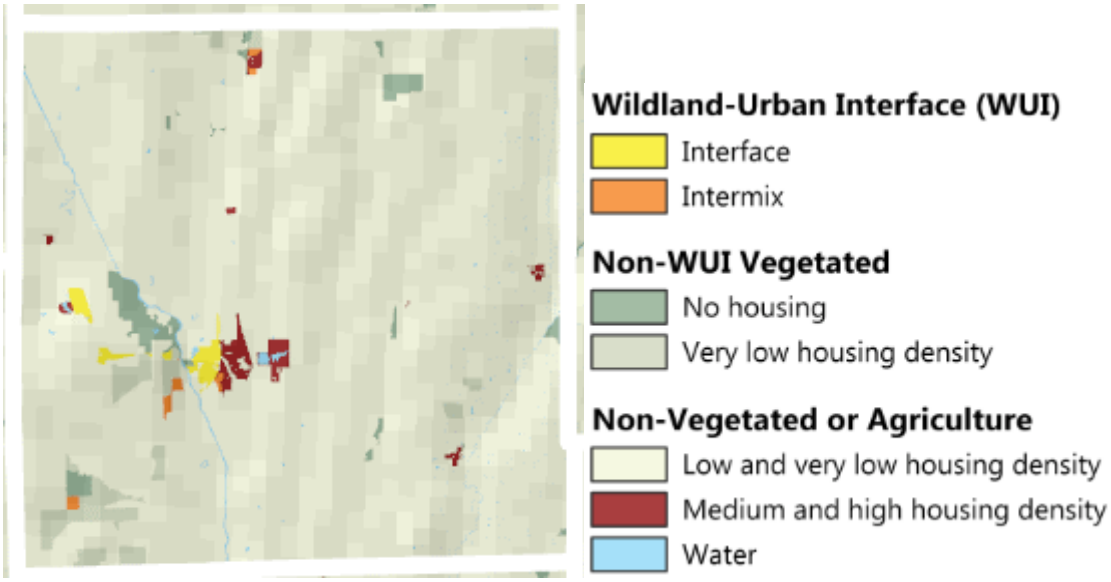
Hazard Description

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 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, more than 900 rural fire departments in Missouri have mutual aid agreements with the Forestry Division to obtain assistance in wildfire protection if needed.
Most of Missouri fires occur during the spring season between February and May. The length and severity of wildland fires depend largely on weather conditions. Spring in Missouri is usually characterized by low humidity and high winds. These conditions result in higher fire danger. In addition, due to the recent lack of moisture throughout many areas of the state, conditions are likely to increase the risk of wildfires. 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

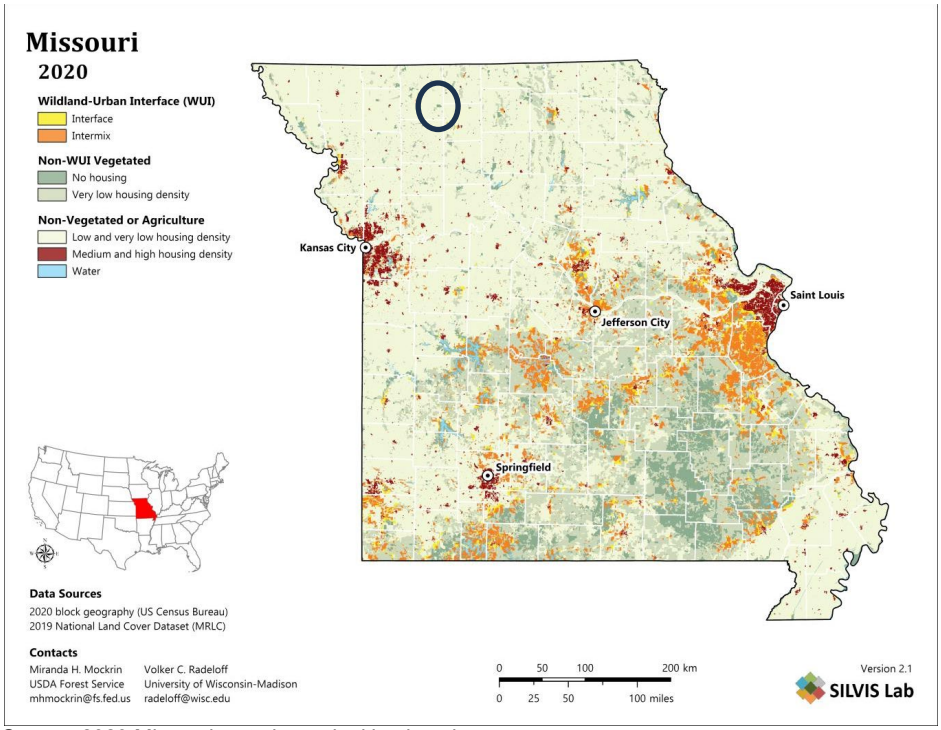
While all of Grundy County is at risk for the possibility of wildfires, areas with a higher Wildland Urban interface (WUI) are more susceptible to losses from a wildfire situation.

Figure 3.34. University of Wisconsin Wildland Urban Map showing Grundy County



Source: University of Wisconsin Global Wildland-Urban Interface (WUI) – 2020 accessed June 2025

Figure 3.35. Wildfire Urban Interface (WUI) Areas, 2020



Source: 2023 Missouri state hazard mitigation plan

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.

Often wildfires in Missouri 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.

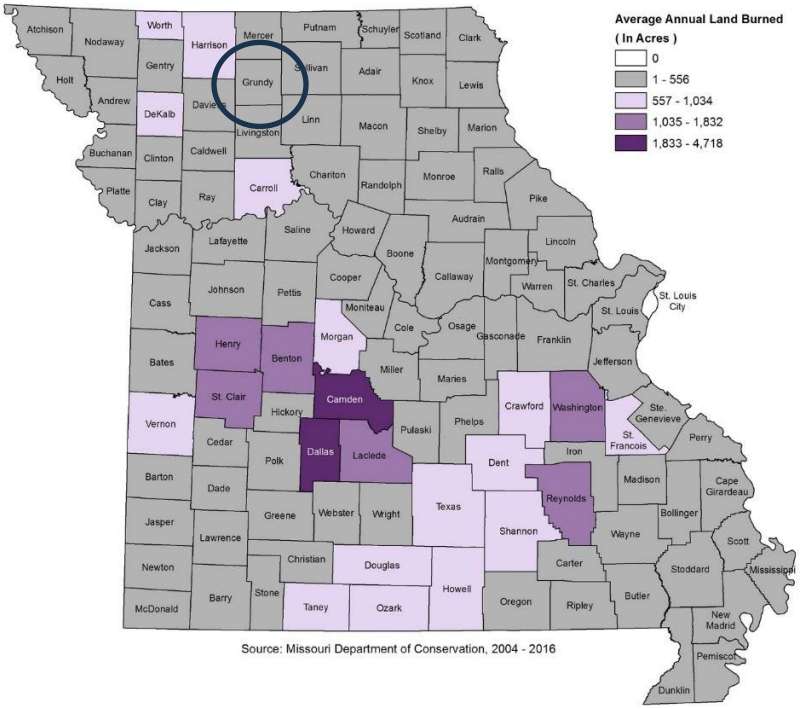
Previous Occurrences

Table 3.77. Fires Per Year and Acreage Burned for Grundy County (2015-2024)

Year	Number of fires reported	Acres Burned
2015	25	231
2016	4	57
2017	36	311
2018	7	3.291
2019	5	9.556
2020	3	3.388
2021	7	10.871
2022	14	29.922
2023	13	21.828
2024	5	21.138
Total	**119**	**70**
Average	**12**	**698.994**

Source: Missouri department of conservation wildfire reporting system

Figure 3.36. Average Annual Acreage Burned



Source: 2023 Missouri State Hazard Mitigation Plan

Table 3.78. Causes of Fire by type and count

Cause	Number of fires
Unknown	121
Debris	5
Equipment	1

Source: Missouri department of conservation wildfire reporting system.

Probability of Future Occurrence

The probability of wildfires is calculated by dividing the total of fires, 119, by the total number of years reviewed, 10, this yields a probability of 1.19. This indicates that the planning area could expect at least 11.9 wildfires annually.

$$Probability\ of\ wildland\ fire\ Incident = \frac{119}{10} = 11.9$$

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 more than 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 is likely to increase, while the population of hickory trees is likely to decrease. 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 within both the urban and rural settings.

Vulnerability

Vulnerability Overview

Potential Losses to Existing Development

Table 3.79. **Estimated numbers and Values of Structures and Population Vulnerable to Wildfire in Grundy County**

Type of Property	Number of Structures	Value of Structures	Population
Government	7	$1,919,487	0
Residential	948	$190,469,663	2332
Agriculture	119	$318,305	0
Commercia	56	$16,146,485	0
Industrial	1	$305,949	0
Education	3	$2,921,429	0
Total	**1134**	**$212,081,318.00**	**2332**

Source: 2023 Missouri hazard mitigation plan

Table 3.80. **Statistical Data for Wildfire Hazard in Grundy County**

Number of Wildfires 2015-2025	Likelihood of Occurrence (#/year)	Total Acres Burned	Average Annual Acreage Burned
119	12	698.994	70

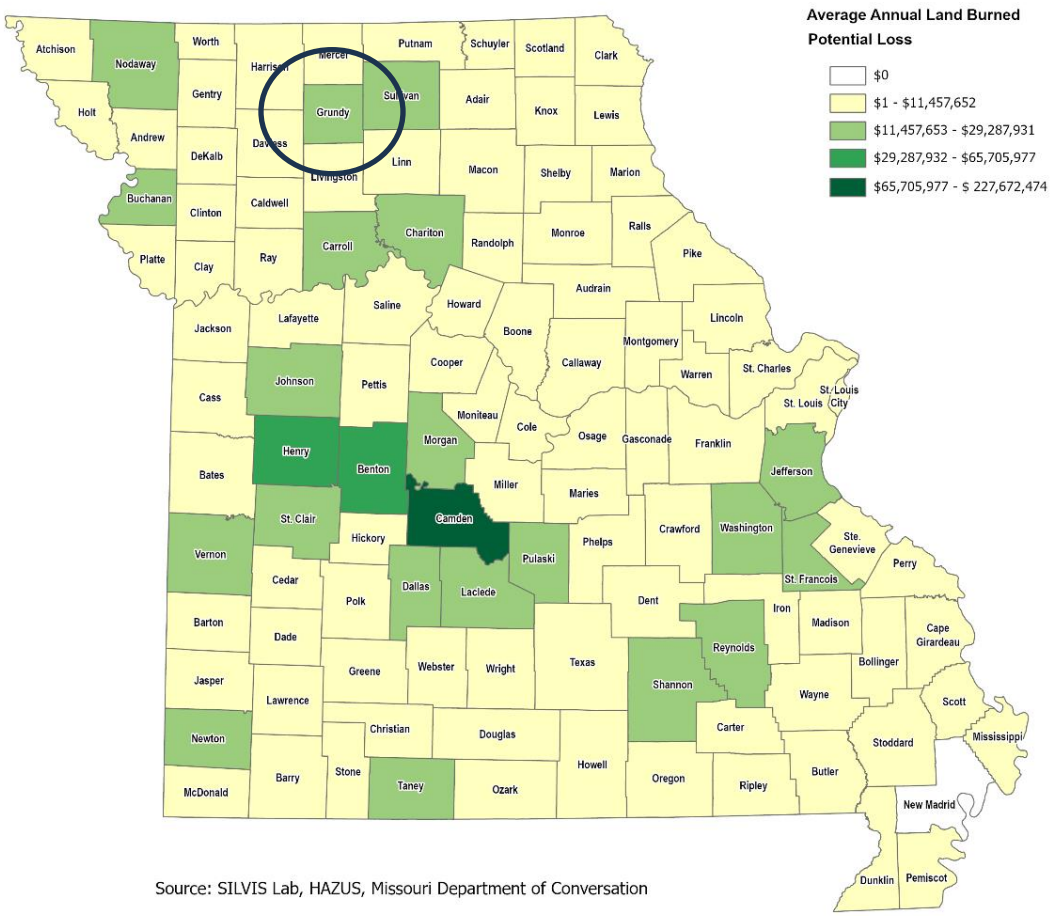
Source: 2023 Missouri State Hazard Mitigation Plan

Table 3.81. Wildfire Potential Loss Estimates in Grundy County

Total WUI Acreage	Total Structure Value Within WUI	Average Value/Acre within WUI	Average Annual Acreage Burned	Potential Loss
1,951.87	$212,077,818	$108,654	70	$13,685,230

Source: 2023 Missouri State Hazard Mitigation Plan

Figure 3.37. Wildfire Potential Loss Estimate



Source: 2023 Missouri State Hazard Mitigation Plan

Impact of Previous and Future Development

Future and previous development in the wildland-urban interface would increase vulnerability to the hazard. There are no known developments within the county that would increase the vulnerability.

Hazard Summary by Jurisdiction

The rural jurisdictions in the planning area are all surrounded by undeveloped agricultural land and

face the possibility of a wildfire event. The school districts are mostly located in a rural area and do not face danger of wildfire due to barriers in place around the schools. Future wildfires in Grundy County should have a negligible adverse impact on the community, as it would affect a small percentage of the population. Nonetheless, homes and businesses located in unincorporated areas are at higher risk from wildfires due to proximity to wood and distance from fire services. Variations in both structural/urban and wildfires are not able to be determined at this time due to lack of data. However, both fire types are expected to occur on an annual basis across the county.

Problem Statement

Residents do not comply with burn bans, education is not readily available for the levels of burn bans, many residents lack education in fire safety, and not all residents utilize social media and texting. Education should occur on the dangers of not complying with burn bans, more education for fire safety, and utilization of social media and texting for early warning.

Due to the region's high drought risk they may be more susceptible to fires. The plan could address this potential for high crop losses during drought and lessen the risk of wildfires during drought

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 updated by the Mitigation Planning Committee (MPC) based on the [updated] risk assessment. The mitigation strategy was developed through a collaborative group process. The process included review of [updated] 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 Mitigation Planning Policy Guide (2023)*

- **Goals** are broad, long-term policy and vision statements that explain what is to be achieved by implementing the mitigation strategy.

- A **mitigation action** is a measure, project, plan or activity proposed to reduce current and future vulnerabilities described in the risk assessment.

4.1 Goals

This planning effort is an update to Grundy County's existing hazard mitigation plan approved by FEMA on June 3rd, 2021. Therefore, the goals from the 2021 Grundy 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 second meeting to review and update the plan goals. To ensure that the goals developed for this update were comprehensive and supported State goals, the 2023 State Hazard Mitigation Plan goals were reviewed. The MPC also reviewed the goals from current surrounding county plans.

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 second MPC meeting, the results of the risk assessment update were provided to the MPC members for review, and the key issues were identified for specific hazards. Changes in risk since adoption of the previously approved plan were discussed. 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 MPC included problem statements in the plan update at the end of each hazard profile. The problem statements summarize the risk to the planning area presented by each hazard and include possible methods to reduce that risk. Use of the problem statements allowed the MPC to recognize new and innovative strategies for mitigating risks in the planning area.

The focus of Meeting #3 was update of the mitigation strategy. For a comprehensive range of mitigation actions to consider, the MPC reviewed the following information during Meeting #3:

- A list of actions proposed in the previous mitigation plan, the current 2023 State Plan, and approved plans in surrounding counties,
- Key issues from the risk assessments, including the problem statements concluding each hazard profile and vulnerability analysis,
- State priorities established for HMA grants, and
- Public input during meetings, responses to data collection questionnaires, and other efforts to involve the public in the plan development process.

For Meeting #3, individual jurisdictions, including school and special districts, developed final mitigation strategy for submission to the MPC. They were encouraged to review the details of the risk assessment vulnerability analysis specific to their jurisdiction. They were also 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.

The MPC reviewed the actions from the previously approved plan for progress made since the plan had been adopted, using worksheets included in Appendix C of this plan. Prior to Meeting #3, the list of actions for each jurisdiction was emailed to that jurisdiction's MPC representative along with the worksheets. Each jurisdiction was instructed to provide information regarding the "Action Status" with one of the following status choices:

- Completed, with a description of the progress.
- Ongoing, with a description of the progress made to date; or
- Not Yet Started, with a discussion of the reasons for lack of progress.

Additionally, the future inclusion of each mitigation action in the plan update was identified as either keep, delete, or modify. Based on the status updates, there were 41 completed actions, 48 continuing actions (either ongoing or modified), and 24 deleted actions.

Table 4.1 provides a summary of the action statuses for each jurisdiction:

Table 4.1. Action Status Summary

Jurisdiction	Completed Actions	Continuing Actions (ongoing or modify)	Deleted Actions
Grundy County	8	11	9
City of Galt	4	6	2
City of Laredo	3	6	2
City of Spickard	3	6	2
City of Trenton	4	5	4
Grundy County R-V	3	3	1
Pleasant View R-VI	4	3	1
Spickard R-II	4	3	1
Trenton R-IX	4	2	1
NCMC	4	3	1
Total:	**41**	**48**	**24**

Table 4.2 provides a summary of the completed and deleted actions from the previous plan.

Table 4.2. Summary of Completed and Deleted Actions from the Previous Plan

Completed Actions	Completion Details (date, amount, funding source)
County 2020.1	Completed using local funding
County 2020.5	Completed with local funds, safety audit of county owned buildings completed.
County 2020.14	Completed using local funds every 2 years
County 2020.19	Completed using local funding, contact information posted to website
County 2020.20	Completed using local funding, agreements in place with other counties and services.
County 2020.21	Completed during 2026 plan update using local funds
County 2020.22	Completed during 2026 plan update using local funds
County 2020.29	Completed using local funding, ordinances up to date as of 11/2025
CG 2020.8	Completed during 2026 plan update using local funds
CG 2020.12	Completed annually using local funding.
CL 2020.8	Completed during 2026 plan update using local funds
CS 2020.3	Completed using local funds, information on file at city hall, in various publications
CS 2020.8	Completed during 2026 plan update using local funds
CT 2020.3	Information online and in publications
CT 2020.6	Agreements in place with agencies for support
CT 2020.8	Completed during 2026 plan update
CT 2020.10	Completed in 2024, conducted every 2 years
GSD 2020.3	Agreements in place
GSD 2020.5	Completed during 2026 plan update using local funds
GSD 2020.6	Completed during 2026 plan update using local funds
PVSD 2020.1	Completed using local funds
PVSD 2020.3	Agreements in place
PVSD 2020.5	Completed during 2026 plan update using local funds
PVSD 2020.6	Completed during 2026 plan update using local funds
SSD 2025.1	Completed using local funding as required
SSD 2025.3	Completed agreements in place
SSD 2020.5	Completed during 2026 plan update using local funds
SSD 2020.6	Completed during 2026 plan update using local funds
TSD 2020.5	Completed during 2026 plan update using local funds
TSD 2020.6	Completed during 2026 plan update using local funds
NCMC 2020.1	Completed annually using local funding

NCMC 2020.3	Agreements in place as needed
NCMC 2020.5	Completed during 2026 plan update using local funds
NCMC 2020.6	Completed during 2026 plan update using local funds
Deleted Actions	**Reason for Deletion**
County 2020.5	Combined with other actions
County 2020.7	Combined with other actions
County 2020.12	County no longer wishes to perform this action
County 2020.17	Combined with other actions
County 2020.23	No storm drain system in the county
County 2020.24	Combined with other actions
County 2020.25	County wanted removed, no longer wanted to pursue
County 2020.27	Hazard no longer covered in plan
County 2020.27	Hazard no longer covered in plan
County 2020.28	Hazard no longer covered in plan
CG 2020.7	Hazard no longer covered in plan
CL 2020.7	Hazard no longer covered in plan
CL 2020.10	Not a city function, covered by fire district
CS 2020.7	Hazard no longer covered in plan
CS 2020.10	Not a city function – handled by the fire district
CT 2020.7	Hazard no longer covered in plan
CT 2020.11	Deemed impractical given staffing and resources
CT 2020.12	Hazard no longer covered in plan
CT 2020.13	Hazard no longer covered in plan
GSD 2020.4	Hazard no longer covered in plan
LSD 2020.1	Jurisdiction did not participate
LSD 2020.2	Jurisdiction did not participate
LSD 2020.3	Jurisdiction did not participate
LSD 2020.4	Jurisdiction did not participate
LSD 2020.5	Jurisdiction did not participate
LSD 2020.6	Jurisdiction did not participate
LSD 2020.7	Jurisdiction did not participate
LSD 2020.8	Jurisdiction did not participate
PVSD 2020.4	Hazard no longer covered in plan
SSD 2020.4	Hazard no longer covered in plan
TSD2020.3	Hazard no longer covered in plan
NCMC 2020.4	Hazard no longer covered in plan

Source: Previously approved County Hazard Mitigation Plan; Data Collection Questionnaires.

Table 4.3. Summary of 2021 plan actions

Status	Action from Previous Plan	
Complete	County 2020.1	Inventory of shelters and safe rooms
Complete	County 2020.2	Safety Audit and Self Inspection Training for Critical Facilities
Continued/Modified	County 2020.3	Mitigation Education
Continued	County 2020.4	Snow removal
Removed	County 2020.5	Maintain emergency management education
Continued/Modified	County 2020.6	Weather alerts
Removed	County 2020.7	Public Education Event for Early Warning Systems
Continued	County 2020.8	Tree trimming maintenance
Continued	County 2020.9	Flood warning system
Continued	County 2020.10	County-Wide Disaster Drills and Exercises
Continued	County 2020.11	Structure grants for road and bridge upgrades
Removed	County 2020.12	Hazard Audits for Vulnerable Structures by Government Experts
Continued	County 2020.13	Flood risk reduction projects
Completed	County 2020.14	Weather spotter training
Continued	County 2020.15	Survey flood plain areas
Continued	County 2020.16	Critical facilities back-up
Continued/Modified	County 2020.17	Construction upgrades to protect infrastructure
Continued	County 2020.18	Debris removal
Complete	County 2020.19	Accessible contact information
Complete	County 2020.20	Mutual aid agreements
Completed	County 2020.21	Public review of hazard mitigation plans

Completed	County 2020.22	Plan reassessment
Removed	County 2020.23	Storm drain system
Removed	County 2020.24	Warning siren coverage
Removed	County 2020.25	Creation of a county-level municipality committee
Removed	County 2020.27	Pandemic personal protective equipment (ppe)
Removed	County 2020.27	Economic stabilization during pandemic
Removed	County 2020.28	Pandemic response / disease prevention and management
Continued	County 2020.29	Participation in nfip (national floodplain insurance program)
Continued/Modified	CG 2020.1	Mitigation education
Continued	CG 2020.2	Weather alerts
Complete	CG 2020.3	Accessible contact information
Continued	CG 2020.4	Critical facilities back-up
Continued	CG 2020.5	Debris removal
Complete	CG 2020.6	Mutual aid agreements
Removed	CG 2020.7	Pandemic personal protective equipment (ppe)
Completed	CG 2020.8	Representative for county hazard mitigation steering committee
Continued	CG 2020.9	Storm shelters
Removed	CG 2020.10	Weather spotter training
Continued	CG 2020.11	Vulnerable population identification
Completed	CG 2020.12	Participation in nfip (national floodplain insurance program)
Continued/Modified	CL 2020.1	Emergency preparedness education
Continued/Modified	CL 2020.2	Weather alerts
Complete	CL 2020.3	Accessible contact information
Continued	CL 2020.4	Critical facilities back-up
Continued	CL 2020.5	Debris removal
Complete	CL 2020.6	Mutual aid agreements
Removed	CL 2020.7	Pandemic personal protective equipment (ppe)
Completed	CL 2020.8	Representative for county hazard mitigation steering committee
Continued	CL 2020.9	Storm shelters
Removed	CL 2020.10	Weather spotter training
Continued	CL 2020.11	Vulnerable population identification
Continued/Modified	CS 2020.1	Mitigation education
Continued/Modified	CS 2020.2	Weather alerts
Complete	CS 2020.3	Accessible contact information
Continued	CS 2020.4	Critical facilities back-up
Continued	CS 2020.5	Debris removal
Complete	CS 2020.6	Mutual aid agreements
Removed	CS 2020.7	Pandemic personal protective equipment (ppe)
Completed	CS 2020.8	Representative for county hazard mitigation steering committee
Continued	CS 2020.9	Storm shelters
Removed	CS 2020.10	Weather spotter training
Continued	CS 2020.11	Vulnerable population identification
Continued/Modified	CT 2020.1	Mitigation education
Continued/Modified	CT 2020.2	Weather alerts
Complete	CT 2020.3	Accessible contact information
Continued	CT 2020.4	Critical facilities back-up
Continued	CT 2020.5	Debris removal
Complete	CT 2020.6	Mutual aid agreements
Removed	CT 2020.7	Pandemic personal protective equipment (ppe)
Completed	CT 2020.8	Representative for county hazard mitigation steering committee
Continued	CT 2020.9	Storm shelters
Completed	CT 2020.10	Weather spotter training
Removed	CT 2020.11	Vulnerable population identification
Removed	CT 2020.12	Economic stabilization during pandemic
Removed	CT 2020.13	Pandemic response / disease prevention and management
Continued	CT 2020.14	Participation in nfip (national floodplain insurance program)
Complete	GSD 2020.1	Emergency action and disaster plan
Continued	GSD 2020.2	Mitigation education
Complete	GSD 2020.3	Mutual aid agreements
Removed	GSD 2020.4	Pandemic personal protective equipment (ppe)
Completed	GSD 2020.5	Plan reassessment
Completed	GSD 2020.6	Representative for county hazard mitigation steering committee

Continued	GSD 2020.7	Storm shelter / safe room
Continued	GSD 2020.8	Generator
Removed	LSD 2020.1	Emergency action and disaster plan
Removed	LSD 2020.2	Mitigation education
Removed	LSD 2020.3	Mutual aid agreements
Removed	LSD 2020.4	Pandemic personal protective equipment (ppe)
Removed	LSD 2020.5	Plan reassessment
Removed	LSD 2020.6	Representative for county hazard mitigation steering committee
Removed	LSD 2020.7	Storm shelter / safe room
Removed	LSD 2020.8	Generator
Complete	PVSD 2020.1	Emergency action and disaster plan
Continued	PVSD 2020.2	Mitigation education
Complete	PVSD 2020.3	Mutual aid agreements
Removed	PVSD 2020.4	Pandemic personal protective equipment (ppe)
Completed	PVSD 2020.5	Plan reassessment
Completed	PVSD 2020.6	Representative for county hazard mitigation steering committee
Continued	PVSD 2020.7	Storm shelter / safe room
Continued	PVSD 2020.8	Generator
Complete	SSD 2020.1	Emergency action and disaster plan
Continued	SSD 2020.2	Mitigation education
Complete	SSD 2020.3	Mutual aid agreements
Removed	SSD 2020.4	Pandemic personal protective equipment (ppe)
Completed	SSD 2020.5	Plan reassessment
Completed	SSD 2020.6	Representative for county hazard mitigation steering committee
Continued	SSD 2020.7	Storm shelter / safe room
Continued	SSD 2020.8	Generator
Continued	TSD 2020.1	Mitigation education
Complete	TSD 2020.2	Mutual aid agreements
Removed	TSD2020.3	Pandemic personal protective equipment (ppe)
Completed	TSD 2020.4	Plan reassessment
Completed	TSD 2020.5	Representative for county hazard mitigation steering committee
Complete	TSD 2020.6	Emergency action and disaster plan
Continued	TSD 2020.8	Generator
Complete	NCMC 2020.1	Emergency action and disaster plan
Continued	NCMC 2020.2	Mitigation education
Complete	NCMC 2020.3	Mutual aid agreements
Removed	NCMC 2020.4	Pandemic personal protective equipment (ppe)
Completed	NCMC 2020.5	Plan reassessment
Completed	NCMC 2020.6	Representative for county hazard mitigation steering committee
Continued	NCMC 2020.7	Demolition of underused/vacant/hazardous buildings
Continued	NCMC 2020.8	Generator

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 finalize the actions to be submitted for 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 2023 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 close 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 jurisdictions used worksheets to assign scores. The worksheets 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 point
Definitely NO = 0 points

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 in disaster damage?

The final scores are listed below in the analysis of each action. The worksheets are attached to this plan as Appendix C. The STAPLEE final score for each action, absent other considerations, such as a localized need for a project, determined the priority. Low priority action items were those that had a total score of between 0 and 24. Moderate priority actions were those scoring between 25 and 29. High priority actions scored 30 or above. A blank STAPLEE worksheet is shown in Figure 4.1

Figure 4.1. Blank STAPLEE Worksheet

STAPLEE Worksheet		
Name of Jurisdiction:		
Action or Project		
Action/Project Number:	Insert a unique action number for this action for future tracking purposes. This can be a combination of the jurisdiction name, followed by the goal number and action number (i.e. Joplin1.1)	
Name of Action or Project:		
Mitigation Category:	Prevention; Structure and Infrastructure Projects; Natural Systems Protection; Education and Outreach; Emergency Services	
STAPLEE Criteria **Evaluation Rating** Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0		**Score**
S: Is it **Socially** Acceptable		
T: Is it **Technically** feasible and potentially successful?		
A: Does the jurisdiction have the **administrative** capacity to execute this action?		
P: Is it **Politically** acceptable?		
L: Is there **Legal** authority to implement?		
E: Is it **Economically** beneficial?		
E: Will the project have either a neutral or positive impact on the natural **Environment**?		
Will historic structures be saved or protected?		
Could it be implemented quickly?		
STAPLEE SCORE		
Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives will be saved.	
Will the implemented action result in a reduction in disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	
MITIGATION EFFECTIVENESS SCORE		
TOTAL SCORE (STAPLEE + Mitigation Effectiveness)		

☐ **High Priority (30+ points)**	☐ **Medium Priority (25 - 29 points)**	☐ **Low Priority (<25 points)**

Completed by
(Name, Title, Phone Number) _____

Action Worksheet	
Name of Jurisdiction:	**Grundy County**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
Problem being Mitigated:	Mitigation remains the best option to limit the threats of hazard events on the residents of Grundy County.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	County 2025.1
Name of Action or Project:	**Mitigation education**
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens of the Livingston County to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the county's social media page and included in utility bills with the cooperation of the jurisdictions and utility companies within the county.
Estimated Cost:	$500
Benefits:	The general population and elected officials will increase understanding of how to prepare for natural disasters potentially affecting the city
Plan for Implementation	
Responsible Organization/Department:	County Commission
Supporting Organization/Department:	County EMD, Fire Districts
Action/Project Priority:	HIGH
Timeline for Completion:	1 - 5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued/Modified
Report of Progress:	On-going

Action Worksheet	
Name of Jurisdiction:	**Grundy County**
Risk / Vulnerability	
Hazard(s) Addressed:	Sever winter storm
Problem being Mitigated:	Transportation routes can be disrupted by hazardous conditions.
Action or Project	
Applicable Goal Statement:	Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather
Action/Project Number:	County 2025.2
Name of Action or Project:	**Snow removal**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Annually assess the previous year's snow removal efforts and develop a mitigation strategy to address gaps in staffing and equipment.
Estimated Cost:	$1,000 - $5,000
Benefits:	Providing for more staffing and upgraded equipment will result in quicker response to a snow event reducing the overall risk to life and property due to adverse winter weather conditions.
Plan for Implementation	
Responsible Organization/Department:	Road and Bridge Department, Contractors
Supporting Organization/Department:	
Action/Project Priority:	High
Timeline for Completion:	1-5 years
Potential Fund Sources:	Transportation budget
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	On-going

Action Worksheet	
Name of Jurisdiction:	**Grundy County**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Extreme temperatures, Severe thunderstorm, Tornado
Problem being Mitigated:	Early Warning Sirens
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather
Action/Project Number:	County 2025.3
Name of Action or Project:	**Installation of warning siren, Weather Alerts, Education**
Mitigation Category:	Structure and Infrastructure Projects, Education and Outreach
Action or Project Description:	Installation of early warning sirens, Weather radios, and mass notification systems along with educating the public and elected officials about the systems and processes in place for weather alerts
Estimated Cost:	$500,000
Benefits:	With adequate time for warning of storms, residents are able to seek cover to help minimize the loss of life.
Plan for Implementation	
Responsible Organization/Department:	County Commission
Supporting Organization/Department:	
Action/Project Priority:	Medium
Timeline for Completion:	1-5 years
Potential Fund Sources:	Hazard Mitigation Grant Funds, Capital projects
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued/Modified
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**Grundy County**
Risk / Vulnerability	
Hazard(s) Addressed:	Severe Thunderstorms, Severe Winter Weather
Problem being Mitigated:	The electrical grid and transportation system are most affected by severe weather.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.
Action/Project Number:	County 2025.4
Name of Action or Project:	**TREE TRIMMING MAINTENANCE**
Mitigation Category:	Structure and Infrastructure Projects, Natural systems protection
Action or Project Description:	Mitigate the future losses of service, and damage to infrastructure by keeping vegetation cleared from utility lines
Estimated Cost:	$5,000 annually
Benefits:	Trimming and maintaining tree branches will reduce the number of down power lines during a hazard event.
Plan for Implementation	
Responsible Organization/Department:	Road and Bridge department
Supporting Organization/Department:	
Action/Project Priority:	Medium
Timeline for Completion:	1-5 years
Potential Fund Sources:	Operations budget
Local Planning Mechanisms to be Used in Implementation, if any:	N/A
Progress Report	
Action Status:	Continued
Report of Progress:	As needed

Action Worksheet	
Name of Jurisdiction:	**Grundy County**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding
Problem being Mitigated:	Inadequate warning of pending flooding
Action or Project	
Applicable Goal Statement:	Goal 2: Minimize property damage due to flooding, levee failure or dam incidents.
Action/Project Number:	County 2025.5
Name of Action or Project:	**Flood warning systems**
Mitigation Category:	Structure and infrastructure
Action or Project Description:	Install, or upgrade water level monitoring systems on area creeks and streams to provide advance warning to residents of Livingston county that flooding may begin soon to allow residents to take advance actions to save life and property.
Estimated Cost:	$1,000
Benefits:	Residents will have more time to react and take actions to reduce loss of life and property.
Plan for Implementation	
Responsible Organization/Department:	County Emergency Management
Supporting Organization/Department:	Emergency Management/Floodplain Administrator
Action/Project Priority:	Medium
Timeline for Completion:	1-5 years
Potential Fund Sources:	HMGP, Capital projects
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**Grundy County**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
Problem being Mitigated:	Efficiency, Timing, and Effectiveness of Warning, Response, and Recovery Efforts
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	County 2025.6
Name of Action or Project:	**County-wide disaster drills and exercises**
Mitigation Category:	Emergency Services
Action or Project Description:	1. Emergency Management will coordinate with local response agencies and facilities to plan and execute tabletop and full-scale exercise to address above goal. 2. They will design and implement county-wide drills involving agencies, public and private entities, including schools, businesses and nursing facilities. 3. They will publicize county-wide or city-wide drills.
Estimated Cost:	$1000
Benefits:	Improve efficiency, timing and effectiveness of the disaster preparedness programming in the county
Plan for Implementation	
Responsible Organization/Department:	County Emergency Management
Supporting Organization/Department:	Police, Fire, EMS, Businesses and Schools, Nursing Facilities
Action/Project Priority:	Medium
Timeline for Completion:	1-5 years
Potential Fund Sources:	Emergency Management Grant Funding
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Under development

Action Worksheet	
Name of Jurisdiction:	**Grundy County**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding
Problem being Mitigated:	Emergency responses are affected by problematic transportation routes, improving infrastructure will mitigate damage caused by natural disasters and improve emergency response times, mitigating loss of life.
Action or Project	
Applicable Goal Statement:	Goal 2: Minimize property damage due to flooding, levee failure or dam incidents.
Action/Project Number:	County 2025.7
Name of Action or Project:	**Structure grants for road and bridge upgrades**
Mitigation Category:	Structure and Infrastructure projects
Action or Project Description:	• Structure grant proposals for road/bridge upgrades so that hazard mitigation concerns are also met, and address mitigation needs in transportation planning via the local Transportation Advisory Committee and its needs assessments, which form the basis of MoDOT's 5-year plans. • The County Commission shall present local transportation concerns to the regional transportation advisory committee, where they can be incorporated into MoDOT's planning structure. The County and City will also seek CDBG and MoDOT grant funding to address specific issues as they are discovered.
Estimated Cost:	$500
Benefits:	The cost of participating in planning and applying for grant funds is considered to be minimal compared to the potential benefits.
Plan for Implementation	
Responsible Organization/Department:	County Commissioners
Supporting Organization/Department:	MoDOT; CDBG
Action/Project Priority:	Medium
Timeline for Completion:	2025
Potential Fund Sources:	MoDOT; CDBG
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**Grundy County**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding
Problem being Mitigated:	Emergency responses are affected by problematic transportation routes, improving infrastructure will mitigate damage caused by natural disasters and improve emergency response times, mitigating loss of life.
Action or Project	
Applicable Goal Statement:	Goal 2: Minimize property damage due to flooding, levee failure or dam incidents.
Action/Project Number:	County 2025.8
Name of Action or Project:	**Flood risk reduction projects**
Mitigation Category:	Structure and Infrastructure projects
Action or Project Description:	Install upgraded culverts and drainage systems to address storm water flows to reduce repetitive damages.
Estimated Cost:	$500,000
Benefits:	Reduce or eliminate the areas of frequent washouts due to underperforming culverts
Plan for Implementation	
Responsible Organization/Department:	County Commissioners
Supporting Organization/Department:	MoDOT; CDBG
Action/Project Priority:	Medium
Timeline for Completion:	2025
Potential Fund Sources:	MoDOT; CDBG, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**Grundy County**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding
Problem being Mitigated:	Unregulated development within the flood plain
Action or Project	
Applicable Goal Statement:	Goal 2: Minimize property damage due to flooding, levee failure or dam incidents.
Action/Project Number:	County 2025.9
Name of Action or Project:	**Survey of flood plain areas**
Mitigation Category:	Planning and regulation
Action or Project Description:	Work with county officials to determine new development within the regulated flood plain to ensure compliance with the NFIP ordinance
Estimated Cost:	$100
Benefits:	Reduce future costs by managing unregulated development within the flood plain
Plan for Implementation	
Responsible Organization/Department:	Flood plain administrator
Supporting Organization/Department:	n/a
Action/Project Priority:	Low
Timeline for Completion:	2025
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	On-Going

Action Worksheet	
Name of Jurisdiction:	**Grundy County**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
Problem being Mitigated:	Facilities with auxiliary power supplies should be available to residents affected by power outages.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	County 2025.10
Name of Action or Project:	**Critical facilities back-up**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Equip critical facilities with transfer switches and/or generators to ensure no loss of functions in the event of power outages due to natural disaster.
Estimated Cost:	$50,000-$5.000.000
Benefits:	Critical facilities, such as shelters, can continue to operate in the event of a disaster.
Plan for Implementation	
Responsible Organization/Department:	County Commission, County EMD
Supporting Organization/Department:	n/a
Action/Project Priority:	HIGH
Timeline for Completion:	1 year
Potential Fund Sources:	General Revenue, Capital projects, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**Grundy County**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado
Problem being Mitigated:	Transportation routes can be disrupted by debris caused by natural disasters.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	County 2025.11
Name of Action or Project:	**Debris removal**
Mitigation Category:	Structure and Infrastructure Projects, Natural systems protection
Action or Project Description:	Mitigate the risk to life and property by ensuring that debris does not interfere with draining systems thus increasing the risk for losses due to flooding.
Estimated Cost:	$500,000
Benefits:	Frequent removal of debris will help clear roadways and drainage systems. Reducing the likelihood of future flooding events..
Plan for Implementation	
Responsible Organization/Department:	Road and Bridge Department
Supporting Organization/Department:	n/a
Action/Project Priority:	High
Timeline for Completion:	1-5 years
Potential Fund Sources:	Transportation budget, FEMA Recovery funds, Emergency budget
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	On going as needed

Action Worksheet	
Name of Jurisdiction:	**Grundy County**
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
Action/Project Number:	County 2025.12
Name of Action or Project:	**Educate on best practices during drought**
Mitigation Category:	Education and Outreach, Natural systems protection
Action or Project Description:	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential for wildfires.
Estimated Cost:	$100
Benefits:	Citizens would have the best information about best practices of water usage during periods of drought.
Plan for Implementation	
Responsible Organization/Department:	County commission
Supporting Organization/Department:	Hazard Mitigation Planning Committees
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status:	New
Report of Progress:	New Project

Action Worksheet	
Name of Jurisdiction:	**City of Galt**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
Problem being Mitigated:	Preparedness remains the best option to limit the threats of hazard events on the residents of Bogard
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	CG 2025.1
Name of Action or Project:	**Mitigation education**
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens of Galt to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the city's social media page and included in utility bills or other regular mailings.
Estimated Cost:	$500
Benefits:	The general population and elected officials will increase understanding of how to prepare for natural disasters potentially affecting the city
Plan for Implementation	
Responsible Organization/Department:	City council or Mayor
Supporting Organization/Department:	County EMD, Fire Districts
Action/Project Priority:	High
Timeline for Completion:	1 - 5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued/Modified
Report of Progress:	On-going

Action Worksheet	
Name of Jurisdiction:	**City of Galt**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Extreme temperatures, Severe thunderstorm, Tornado
Problem being Mitigated:	Early Warning Sirens
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather
Action/Project Number:	CG 2025.2
Name of Action or Project:	**Installation of warning siren, Weather Alerts, Education**
Mitigation Category:	Structure and Infrastructure Projects, Education and Outreach
Action or Project Description:	Installation of early warning sirens, Weather radios, and mass notification systems along with educating the public and elected officials about the systems and processes in place for weather alerts
Estimated Cost:	$500,000
Benefits:	With adequate time for warning of storms, residents are able to seek cover to help minimize the loss of life.
Plan for Implementation	
Responsible Organization/Department:	City Council or Mayor
Supporting Organization/Department:	
Action/Project Priority:	Medium
Timeline for Completion:	1-5 years
Potential Fund Sources:	Hazard Mitigation Grant Funds, Capital projects
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued/Modified
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**City of Galt**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
Problem being Mitigated:	Facilities with auxiliary power supplies should be available to residents affected by power outages.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	CG 2025.3
Name of Action or Project:	**Critical facilities back-up**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Equip critical facilities with transfer switches and/or generators to ensure no loss of functions in the event of power outages due to natural disaster.
Estimated Cost:	$50,000-$5.000.000
Benefits:	Critical facilities, such as shelters, can continue to operate in the event of a disaster.
Plan for Implementation	
Responsible Organization/Department:	City Council
Supporting Organization/Department:	n/a
Action/Project Priority:	HIGH
Timeline for Completion:	1 year
Potential Fund Sources:	General Revenue, Capital projects, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**City of Galt**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado
Problem being Mitigated:	Transportation routes can be disrupted by debris caused by natural disasters.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	CG 2025.4
Name of Action or Project:	**Debris removal**
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Mitigate the risk to life and property by ensuring that debris does not interfere with draining systems thus increasing the risk for losses due to flooding.
Estimated Cost:	$500,000
Benefits:	Frequent removal of debris will help clear roadways and drainage systems. Reducing the likelihood of future flooding events..
Plan for Implementation	
Responsible Organization/Department:	City maintenance
Supporting Organization/Department:	n/a
Action/Project Priority:	High
Timeline for Completion:	1-5 years
Potential Fund Sources:	Transportation budget, FEMA Recovery funds, Emergency budget
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	On going as needed

Action Worksheet	
Name of Jurisdiction:	**City of Galt**
Risk / Vulnerability	
Hazard(s) Addressed:	Severe Thunderstorms, Tornado
Problem being Mitigated:	FEMA-approved storm shelters have proven effective in mitigating the loss of property and life during tornados. A community-wide shelter program should be adopted for residents who may not have adequate shelter in their homes to minimize the potential for loss of life. School safe rooms can protect students from injury during a thunderstorm, tornado or natural wind event/disaster.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.
Action/Project Number:	CG 2025.5
Name of Action or Project:	**Storm shelter/safe room**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Utilize grant funds and local resources to construct or install storm shelters in locations with insufficient protection including, but not limited to, schools, local recreation areas, and public facilities.
Estimated Cost:	$2M
Benefits:	Storm shelters can protect the lives of individuals in a thunderstorm, tornado or hazardous wind event who may not have other options for sufficient shelter.
Plan for Implementation	
Responsible Organization/Department:	City Council
Supporting Organization/Department:	County Commissioners, Local Police Departments, GHRPC, County EMD
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Capital projects budget, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**City of Galt**
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
Action/Project Number:	CG 2025.6
Name of Action or Project:	**Educate on best practices during drought**
Mitigation Category:	Education and Outreach, Natural systems protection
Action or Project Description:	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential for wildfires.
Estimated Cost:	$100
Benefits:	Citizens would have the best information about best practices of water usage during periods of drought.
Plan for Implementation	
Responsible Organization/Department:	Mayor, Town council
Supporting Organization/Department:	Hazard Mitigation Planning Committees
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status:	New
Report of Progress:	New Project

Action Worksheet	
Name of Jurisdiction:	**City of Laredo**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
Problem being Mitigated:	Preparedness remains the best option to limit the threats of hazard events on the residents of Bogard
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	CL 2025.1
Name of Action or Project:	**Mitigation education**
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens of Laredo to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the city's social media page and included in utility bills or other regular mailings.
Estimated Cost:	$500
Benefits:	The general population and elected officials will increase understanding of how to prepare for natural disasters potentially affecting the city
Plan for Implementation	
Responsible Organization/Department:	City council or Mayor
Supporting Organization/Department:	County EMD, Fire Districts
Action/Project Priority:	High
Timeline for Completion:	1 - 5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued/Modified
Report of Progress:	On-going

Action Worksheet	
Name of Jurisdiction:	**City of Laredo**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Extreme temperatures, Severe thunderstorm, Tornado
Problem being Mitigated:	Early Warning Sirens
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather
Action/Project Number:	CL 2025.2
Name of Action or Project:	**Installation of warning siren, Weather Alerts, Education**
Mitigation Category:	Structure and Infrastructure Projects, Education and Outreach
Action or Project Description:	Installation of early warning sirens, Weather radios, and mass notification systems along with educating the public and elected officials about the systems and processes in place for weather alerts
Estimated Cost:	$500,000
Benefits:	With adequate time for warning of storms, residents are able to seek cover to help minimize the loss of life.
Plan for Implementation	
Responsible Organization/Department:	City Council or Mayor
Supporting Organization/Department:	
Action/Project Priority:	Medium
Timeline for Completion:	1-5 years
Potential Fund Sources:	Hazard Mitigation Grant Funds, Capital projects
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued/Modified
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**City of Laredo**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
Problem being Mitigated:	Facilities with auxiliary power supplies should be available to residents affected by power outages.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	CL 2025.3
Name of Action or Project:	**Critical facilities back-up**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Equip critical facilities with transfer switches and/or generators to ensure no loss of functions in the event of power outages due to natural disaster.
Estimated Cost:	$50,000-$5.000.000
Benefits:	Critical facilities, such as shelters, can continue to operate in the event of a disaster.
Plan for Implementation	
Responsible Organization/Department:	City Council
Supporting Organization/Department:	n/a
Action/Project Priority:	HIGH
Timeline for Completion:	1 year
Potential Fund Sources:	General Revenue, Capital projects, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**City of Laredo**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado
Problem being Mitigated:	Transportation routes can be disrupted by debris caused by natural disasters.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	CL 2025.4
Name of Action or Project:	**Debris removal**
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Mitigate the risk to life and property by ensuring that debris does not interfere with draining systems thus increasing the risk for losses due to flooding.
Estimated Cost:	$500,000
Benefits:	Frequent removal of debris will help clear roadways and drainage systems. Reducing the likelihood of future flooding events..
Plan for Implementation	
Responsible Organization/Department:	City maintenance
Supporting Organization/Department:	n/a
Action/Project Priority:	High
Timeline for Completion:	1-5 years
Potential Fund Sources:	Transportation budget, FEMA Recovery funds, Emergency budget
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	On going as needed

Action Worksheet	
Name of Jurisdiction:	**City of Laredo**
Risk / Vulnerability	
Hazard(s) Addressed:	Severe Thunderstorms, Tornado
Problem being Mitigated:	FEMA-approved storm shelters have proven effective in mitigating the loss of property and life during tornados. A community-wide shelter program should be adopted for residents who may not have adequate shelter in their homes to minimize the potential for loss of life. School safe rooms can protect students from injury during a thunderstorm, tornado or natural wind event/disaster.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.
Action/Project Number:	CL 2025.5
Name of Action or Project:	**Storm shelter/safe room**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Utilize grant funds and local resources to construct or install storm shelters in locations with insufficient protection including, but not limited to, schools, local recreation areas, and public facilities.
Estimated Cost:	$2M
Benefits:	Storm shelters can protect the lives of individuals in a thunderstorm, tornado or hazardous wind event who may not have other options for sufficient shelter.
Plan for Implementation	
Responsible Organization/Department:	City Council
Supporting Organization/Department:	County Commissioners, Local Police Departments, GHRPC, County EMD
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Capital projects budget, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**City of Laredo**
Risk / Vulnerability	
Hazard(s) Addressed:	Extreme Temperatures
Problem being Mitigated:	Extreme temperatures (severe heat and severe cold) present hardship and high risk for injury or death to county citizens, especially the very young and old.
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
Action/Project Number:	CL 2025.6
Name of Action or Project:	**Vulnerable population identification**
Mitigation Category:	Emergency Services, Education and outreach
Action or Project Description:	Identify and maintain list of local vulnerable populations that are the most susceptible to extreme heat and cold to ensure that local public safety officials confirm their well-being during episodes of extreme temperature, reducing the risk of loss of life due to hazardous conditions and natural hazards.
Estimated Cost:	$500
Benefits:	Lives could be saved through identification of vulnerable populations for well-being checks during natural hazards.
Plan for Implementation	
Responsible Organization/Department:	City Council
Supporting Organization/Department:	County EMD, County Health Department, Coordination with Senior Centers, DHHS, local doctor's offices, County Sheriff's Department, Fire District, Ambulance District
Action/Project Priority:	High
Timeline for Completion:	1-5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	N/A
Progress Report	
Action Status:	Continued
Report of Progress:	Limited progress

Action Worksheet	
Name of Jurisdiction:	**City of Laredo**
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
Action/Project Number:	CL 2025.7
Name of Action or Project:	**Educate on best practices during drought**
Mitigation Category:	Education and Outreach, Natural systems protection
Action or Project Description:	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential for wildfires.
Estimated Cost:	$100
Benefits:	Citizens would have the best information about best practices of water usage during periods of drought.
Plan for Implementation	
Responsible Organization/Department:	Mayor, City council
Supporting Organization/Department:	Hazard Mitigation Planning Committees
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status:	New
Report of Progress:	New Project

Action Worksheet	
Name of Jurisdiction:	**City of Spickard**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
Problem being Mitigated:	Preparedness remains the best option to limit the threats of hazard events on the residents of Bogard
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	CS 2025.1
Name of Action or Project:	**Mitigation education**
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens of Spickard to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the city's social media page and included in utility bills or other regular mailings.
Estimated Cost:	$500
Benefits:	The general population and elected officials will increase understanding of how to prepare for natural disasters potentially affecting the city
Plan for Implementation	
Responsible Organization/Department:	City council or Mayor
Supporting Organization/Department:	County EMD, Fire Districts
Action/Project Priority:	High
Timeline for Completion:	1 - 5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued/Modified
Report of Progress:	On-going

Action Worksheet	
Name of Jurisdiction:	**City of Spickard**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Extreme temperatures, Severe thunderstorm, Tornado
Problem being Mitigated:	Early Warning Sirens
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather
Action/Project Number:	CS 2025.2
Name of Action or Project:	**Installation of warning siren, Weather Alerts, Education**
Mitigation Category:	Structure and Infrastructure Projects, Education and Outreach
Action or Project Description:	Installation of early warning sirens, Weather radios, and mass notification systems along with educating the public and elected officials about the systems and processes in place for weather alerts
Estimated Cost:	$500,000
Benefits:	With adequate time for warning of storms, residents are able to seek cover to help minimize the loss of life.
Plan for Implementation	
Responsible Organization/Department:	City Council or Mayor
Supporting Organization/Department:	
Action/Project Priority:	Medium
Timeline for Completion:	1-5 years
Potential Fund Sources:	Hazard Mitigation Grant Funds, Capital projects
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued/Modified
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**City of Spickard**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
Problem being Mitigated:	Facilities with auxiliary power supplies should be available to residents affected by power outages.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	CS 2025.3
Name of Action or Project:	**Critical facilities back-up**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Equip critical facilities with transfer switches and/or generators to ensure no loss of functions in the event of power outages due to natural disaster.
Estimated Cost:	$50,000-$5.000.000
Benefits:	Critical facilities, such as shelters, can continue to operate in the event of a disaster.
Plan for Implementation	
Responsible Organization/Department:	City Council
Supporting Organization/Department:	n/a
Action/Project Priority:	HIGH
Timeline for Completion:	1 year
Potential Fund Sources:	General Revenue, Capital projects, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**City of Spickard**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado
Problem being Mitigated:	Transportation routes can be disrupted by debris caused by natural disasters.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	CS 2025.4
Name of Action or Project:	**Debris removal**
Mitigation Category:	Structure and Infrastructure Projects
Action or Project Description:	Mitigate the risk to life and property by ensuring that debris does not interfere with draining systems thus increasing the risk for losses due to flooding.
Estimated Cost:	$500,000
Benefits:	Frequent removal of debris will help clear roadways and drainage systems. Reducing the likelihood of future flooding events..
Plan for Implementation	
Responsible Organization/Department:	City maintenance
Supporting Organization/Department:	n/a
Action/Project Priority:	High
Timeline for Completion:	1-5 years
Potential Fund Sources:	Transportation budget, FEMA Recovery funds, Emergency budget
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	On going as needed

Action Worksheet	
Name of Jurisdiction:	**City of Spickard**
Risk / Vulnerability	
Hazard(s) Addressed:	Severe Thunderstorms, Tornado
Problem being Mitigated:	FEMA-approved storm shelters have proven effective in mitigating the loss of property and life during tornados. A community-wide shelter program should be adopted for residents who may not have adequate shelter in their homes to minimize the potential for loss of life. School safe rooms can protect students from injury during a thunderstorm, tornado or natural wind event/disaster.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.
Action/Project Number:	CS 2025.5
Name of Action or Project:	**Storm shelter/safe room**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Utilize grant funds and local resources to construct or install storm shelters in locations with insufficient protection including, but not limited to, schools, local recreation areas, and public facilities.
Estimated Cost:	$2M
Benefits:	Storm shelters can protect the lives of individuals in a thunderstorm, tornado or hazardous wind event who may not have other options for sufficient shelter.
Plan for Implementation	
Responsible Organization/Department:	City Council
Supporting Organization/Department:	County Commissioners, Local Police Departments, GHRPC, County EMD
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Capital projects budget, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**City of Spickard**
Risk / Vulnerability	
Hazard(s) Addressed:	Extreme Temperatures
Problem being Mitigated:	Extreme temperatures (severe heat and severe cold) present hardship and high risk for injury or death to county citizens, especially the very young and old.
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
Action/Project Number:	CS 2025.6
Name of Action or Project:	**Vulnerable population identification**
Mitigation Category:	Emergency Services, Education and outreach
Action or Project Description:	Identify and maintain list of local vulnerable populations that are the most susceptible to extreme heat and cold to ensure that local public safety officials confirm their well-being during episodes of extreme temperature, reducing the risk of loss of life due to hazardous conditions and natural hazards.
Estimated Cost:	$500
Benefits:	Lives could be saved through identification of vulnerable populations for well-being checks during natural hazards.
Plan for Implementation	
Responsible Organization/Department:	City Council
Supporting Organization/Department:	County EMD, County Health Department, Coordination with Senior Centers, DHHS, local doctor's offices, County Sheriff's Department, Fire District, Ambulance District
Action/Project Priority:	High
Timeline for Completion:	1-5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	N/A
Progress Report	
Action Status:	Continued
Report of Progress:	Limited progress

Action Worksheet	
Name of Jurisdiction:	**City of Spickard**
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
Action/Project Number:	CS 2025.7
Name of Action or Project:	**Educate on best practices during drought**
Mitigation Category:	Education and Outreach, Natural systems protection
Action or Project Description:	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential for wildfires.
Estimated Cost:	$100
Benefits:	Citizens would have the best information about best practices of water usage during periods of drought.
Plan for Implementation	
Responsible Organization/Department:	Mayor, City council
Supporting Organization/Department:	Hazard Mitigation Planning Committees
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status:	New
Report of Progress:	New Project

Action Worksheet	
Name of Jurisdiction:	**City of Trenton**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
Problem being Mitigated:	Preparedness remains the best option to limit the threats of hazard events on the residents of Bogard
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	CT 2025.1
Name of Action or Project:	**Mitigation education**
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens of Trenton to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the city's social media page and included in utility bills or other regular mailings.
Estimated Cost:	$500
Benefits:	The general population and elected officials will increase understanding of how to prepare for natural disasters potentially affecting the city
Plan for Implementation	
Responsible Organization/Department:	City council or Mayor
Supporting Organization/Department:	County EMD, Fire Districts
Action/Project Priority:	High
Timeline for Completion:	1 - 5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued/Modified
Report of Progress:	On-going

Action Worksheet	
Name of Jurisdiction:	**City of Trenton**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Extreme temperatures, Severe thunderstorm, Tornado
Problem being Mitigated:	Early Warning Sirens
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather
Action/Project Number:	CT 2025.2
Name of Action or Project:	**Installation of warning siren, Weather Alerts, Education**
Mitigation Category:	Structure and Infrastructure Projects, Education and Outreach
Action or Project Description:	Installation of early warning sirens, Weather radios, and mass notification systems along with educating the public and elected officials about the systems and processes in place for weather alerts
Estimated Cost:	$500,000
Benefits:	With adequate time for warning of storms, residents are able to seek cover to help minimize the loss of life.
Plan for Implementation	
Responsible Organization/Department:	City Council or Mayor
Supporting Organization/Department:	
Action/Project Priority:	Medium
Timeline for Completion:	1-5 years
Potential Fund Sources:	Hazard Mitigation Grant Funds, Capital projects
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued/Modified
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**City of Trenton**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
Problem being Mitigated:	Facilities with auxiliary power supplies should be available to residents affected by power outages.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	CT 2025.3
Name of Action or Project:	**Critical facilities back-up**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Equip critical facilities with transfer switches and/or generators to ensure no loss of functions in the event of power outages due to natural disaster.
Estimated Cost:	$50,000-$5.000.000
Benefits:	Critical facilities, such as shelters, can continue to operate in the event of a disaster.
Plan for Implementation	
Responsible Organization/Department:	City Council
Supporting Organization/Department:	n/a
Action/Project Priority:	HIGH
Timeline for Completion:	1 year
Potential Fund Sources:	General Revenue, Capital projects, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**City of Trenton**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado
Problem being Mitigated:	Transportation routes can be disrupted by debris caused by natural disasters.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	CT 2025.4
Name of Action or Project:	**Debris removal**
Mitigation Category:	Structure and Infrastructure Projects, Natural systems protection
Action or Project Description:	Mitigate the risk to life and property by ensuring that debris does not interfere with draining systems thus increasing the risk for losses due to flooding.
Estimated Cost:	$500,000
Benefits:	Frequent removal of debris will help clear roadways and drainage systems. Reducing the likelihood of future flooding events..
Plan for Implementation	
Responsible Organization/Department:	City maintenance
Supporting Organization/Department:	n/a
Action/Project Priority:	High
Timeline for Completion:	1-5 years
Potential Fund Sources:	Transportation budget, FEMA Recovery funds, Emergency budget
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	On going as needed

Action Worksheet	
Name of Jurisdiction:	**City of Trenton**
Risk / Vulnerability	
Hazard(s) Addressed:	Severe Thunderstorms, Tornado
Problem being Mitigated:	FEMA-approved storm shelters have proven effective in mitigating the loss of property and life during tornados. A community-wide shelter program should be adopted for residents who may not have adequate shelter in their homes to minimize the potential for loss of life. School safe rooms can protect students from injury during a thunderstorm, tornado or natural wind event/disaster.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.
Action/Project Number:	CT 2025.5
Name of Action or Project:	**Storm shelter/safe room**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Utilize grant funds and local resources to construct or install storm shelters in locations with insufficient protection including, but not limited to, schools, local recreation areas, and public facilities.
Estimated Cost:	$2M
Benefits:	Storm shelters can protect the lives of individuals in a thunderstorm, tornado or hazardous wind event who may not have other options for sufficient shelter.
Plan for Implementation	
Responsible Organization/Department:	City Council
Supporting Organization/Department:	County Commissioners, Local Police Departments, GHRPC, County EMD
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Capital projects budget, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**City of Trenton**
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
Action/Project Number:	CT 2025.6
Name of Action or Project:	**Educate on best practices during drought**
Mitigation Category:	Education and Outreach, Natural systems protection
Action or Project Description:	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential for wildfires.
Estimated Cost:	$100
Benefits:	Citizens would have the best information about best practices of water usage during periods of drought.
Plan for Implementation	
Responsible Organization/Department:	Mayor, City council
Supporting Organization/Department:	Hazard Mitigation Planning Committees
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status:	New
Report of Progress:	New Project

Action Worksheet	
Name of Jurisdiction:	**Grundy County R-V School District**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Levee Failure, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
Problem being Mitigated:	Preparedness remains the best option to limit the threats of hazard events on the residents of Bogard
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	GSD 2025.1
Name of Action or Project:	**Mitigation education**
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens of the Grundy R-V district to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the district's social media page, included in regular mailings, and shared with local media outlets.
Estimated Cost:	$500
Benefits:	The general population and elected officials will increase understanding of how to prepare for natural disasters potentially affecting the city
Plan for Implementation	
Responsible Organization/Department:	School Board
Supporting Organization/Department:	County EMD, Fire Districts
Action/Project Priority:	High
Timeline for Completion:	1 - 5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued/Modified
Report of Progress:	On-going

Action Worksheet	
Name of Jurisdiction:	**Grundy County R-V School District**
Risk / Vulnerability	
Hazard(s) Addressed:	Severe Thunderstorms, Tornado
Problem being Mitigated:	FEMA-approved storm shelters have proven effective in mitigating the loss of property and life during tornados. A community-wide shelter program should be adopted for residents who may not have adequate shelter in their homes to minimize the potential for loss of life. School safe rooms can protect students from injury during a thunderstorm, tornado or natural wind event/disaster.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.
Action/Project Number:	GSD 2025.2
Name of Action or Project:	**Storm shelter/safe room**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Utilize grant funds and local resources to construct or install storm shelters in locations with insufficient protection including, but not limited to, schools, local recreation areas, and public facilities.
Estimated Cost:	$2M
Benefits:	Storm shelters can protect the lives of individuals in a thunderstorm, tornado or hazardous wind event who may not have other options for sufficient shelter.
Plan for Implementation	
Responsible Organization/Department:	School board
Supporting Organization/Department:	County Commissioners, Local Police Departments, GHRPC, County EMD
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Capital projects budget, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**Grundy County R-V School District**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
Problem being Mitigated:	Facilities with auxiliary power supplies should be available to residents affected by power outages.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	GSD 2025.3
Name of Action or Project:	**Generators**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Equip school facilities with transfer switches and/or generators to ensure no loss of functions in the event of power outages due to natural disaster.
Estimated Cost:	$50,000-$5.000.000
Benefits:	Critical facilities, such as shelters, can continue to operate in the event of a disaster.
Plan for Implementation	
Responsible Organization/Department:	School Board
Supporting Organization/Department:	n/a
Action/Project Priority:	HIGH
Timeline for Completion:	1 year
Potential Fund Sources:	General Revenue, Capital projects, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**Grundy R-V school district**
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
Action/Project Number:	GSD 2025.4
Name of Action or Project:	**Educate on best practices during drought**
Mitigation Category:	Education and Outreach, Natural systems protection
Action or Project Description:	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential for wildfires.
Estimated Cost:	$100
Benefits:	Citizens would have the best information about best practices of water usage during periods of drought.
Plan for Implementation	
Responsible Organization/Department:	School board, School staff
Supporting Organization/Department:	Hazard Mitigation Planning Committees
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status:	New
Report of Progress:	New Project

Action Worksheet	
Name of Jurisdiction:	**Pleasant View R-VI School District**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
Problem being Mitigated:	Preparedness remains the best option to limit the threats of hazard events on the residents of Bogard
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	PVSD 2025.1
Name of Action or Project:	**Mitigation education**
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens of the Pleasant View R-VI district to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the district's social media page, included in regular mailings, and shared with local media outlets.
Estimated Cost:	$500
Benefits:	The general population and elected officials will increase understanding of how to prepare for natural disasters potentially affecting the city
Plan for Implementation	
Responsible Organization/Department:	School Board
Supporting Organization/Department:	County EMD, Fire Districts
Action/Project Priority:	High
Timeline for Completion:	1 - 5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued/Modified
Report of Progress:	On-going

Action Worksheet	
Name of Jurisdiction:	**Pleasant View R-VI School District**
Risk / Vulnerability	
Hazard(s) Addressed:	Severe Thunderstorms, Tornado
Problem being Mitigated:	FEMA-approved storm shelters have proven effective in mitigating the loss of property and life during tornados. A community-wide shelter program should be adopted for residents who may not have adequate shelter in their homes to minimize the potential for loss of life. School safe rooms can protect students from injury during a thunderstorm, tornado or natural wind event/disaster.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.
Action/Project Number:	PVSD 2025.2
Name of Action or Project:	**Storm shelter/safe room**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Utilize grant funds and local resources to construct or install storm shelters in locations with insufficient protection including, but not limited to, schools, local recreation areas, and public facilities.
Estimated Cost:	$2M
Benefits:	Storm shelters can protect the lives of individuals in a thunderstorm, tornado or hazardous wind event who may not have other options for sufficient shelter.
Plan for Implementation	
Responsible Organization/Department:	School board
Supporting Organization/Department:	County Commissioners, Local Police Departments, GHRPC, County EMD
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Capital projects budget, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**Pleasant View R-VI School District**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
Problem being Mitigated:	Facilities with auxiliary power supplies should be available to residents affected by power outages.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	PVSD 2025.3
Name of Action or Project:	**Generators**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Equip school facilities with transfer switches and/or generators to ensure no loss of functions in the event of power outages due to natural disaster.
Estimated Cost:	$50,000-$5.000.000
Benefits:	Critical facilities, such as shelters, can continue to operate in the event of a disaster.
Plan for Implementation	
Responsible Organization/Department:	School Board
Supporting Organization/Department:	n/a
Action/Project Priority:	HIGH
Timeline for Completion:	1 year
Potential Fund Sources:	General Revenue, Capital projects, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**Pleasant View R-VI School district**
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
Action/Project Number:	PVSD 2025.4
Name of Action or Project:	**Educate on best practices during drought**
Mitigation Category:	Education and Outreach, Natural systems protection
Action or Project Description:	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential for wildfires.
Estimated Cost:	$100
Benefits:	Citizens would have the best information about best practices of water usage during periods of drought.
Plan for Implementation	
Responsible Organization/Department:	School board, School staff
Supporting Organization/Department:	Hazard Mitigation Planning Committees
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status:	New
Report of Progress:	New Project

Action Worksheet	
Name of Jurisdiction:	**Spickard R-II School District**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
Problem being Mitigated:	Preparedness remains the best option to limit the threats of hazard events on the residents of Bogard
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	SSD 2025.1
Name of Action or Project:	**Mitigation education**
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens of the Spickard R-II district to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the district's social media page, included in regular mailings, and shared with local media outlets.
Estimated Cost:	$500
Benefits:	The general population and elected officials will increase understanding of how to prepare for natural disasters potentially affecting the city
Plan for Implementation	
Responsible Organization/Department:	School Board
Supporting Organization/Department:	County EMD, Fire Districts
Action/Project Priority:	High
Timeline for Completion:	1 - 5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued/Modified
Report of Progress:	On-going

Action Worksheet	
Name of Jurisdiction:	**Spickard R-II School District**
Risk / Vulnerability	
Hazard(s) Addressed:	Severe Thunderstorms, Tornado
Problem being Mitigated:	FEMA-approved storm shelters have proven effective in mitigating the loss of property and life during tornados. A community-wide shelter program should be adopted for residents who may not have adequate shelter in their homes to minimize the potential for loss of life. School safe rooms can protect students from injury during a thunderstorm, tornado or natural wind event/disaster.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning.
Action/Project Number:	SSD 2025.2
Name of Action or Project:	**Storm shelter/safe room**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Utilize grant funds and local resources to construct or install storm shelters in locations with insufficient protection including, but not limited to, schools, local recreation areas, and public facilities.
Estimated Cost:	$2M
Benefits:	Storm shelters can protect the lives of individuals in a thunderstorm, tornado or hazardous wind event who may not have other options for sufficient shelter.
Plan for Implementation	
Responsible Organization/Department:	School board
Supporting Organization/Department:	County Commissioners, Local Police Departments, GHRPC, County EMD
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Capital projects budget, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**Spickard R-II School District**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
Problem being Mitigated:	Facilities with auxiliary power supplies should be available to residents affected by power outages.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	SSD 2025.3
Name of Action or Project:	**Generators**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Equip school facilities with transfer switches and/or generators to ensure no loss of functions in the event of power outages due to natural disaster.
Estimated Cost:	$50,000-$5.000.000
Benefits:	Critical facilities, such as shelters, can continue to operate in the event of a disaster.
Plan for Implementation	
Responsible Organization/Department:	School Board
Supporting Organization/Department:	n/a
Action/Project Priority:	HIGH
Timeline for Completion:	1 year
Potential Fund Sources:	General Revenue, Capital projects, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**Spickard R-II school district**
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
Action/Project Number:	SSD 2025.4
Name of Action or Project:	**Educate on best practices during drought**
Mitigation Category:	Education and Outreach, Natural systems protection
Action or Project Description:	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential for wildfires.
Estimated Cost:	$100
Benefits:	Citizens would have the best information about best practices of water usage during periods of drought.
Plan for Implementation	
Responsible Organization/Department:	School Board, School staff
Supporting Organization/Department:	Hazard Mitigation Planning Committees
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status:	New
Report of Progress:	New Project

Action Worksheet	
Name of Jurisdiction:	**Trenton R-IX School District**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
Problem being Mitigated:	Preparedness remains the best option to limit the threats of hazard events on the residents of Bogard
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	TSD 2025.1
Name of Action or Project:	**Mitigation education**
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens of the Trenton R-IX district to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the district's social media page, included in regular mailings, and shared with local media outlets.
Estimated Cost:	$500
Benefits:	The general population and elected officials will increase understanding of how to prepare for natural disasters potentially affecting the city
Plan for Implementation	
Responsible Organization/Department:	School Board
Supporting Organization/Department:	County EMD, Fire Districts
Action/Project Priority:	High
Timeline for Completion:	1 - 5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued/Modified
Report of Progress:	On-going

Action Worksheet	
Name of Jurisdiction:	**Trenton R-IX School District**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
Problem being Mitigated:	Facilities with auxiliary power supplies should be available to residents affected by power outages.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	TSD 2025.2
Name of Action or Project:	**Generators**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Equip school facilities with transfer switches and/or generators to ensure no loss of functions in the event of power outages due to natural disaster.
Estimated Cost:	$50,000-$5.000.000
Benefits:	Critical facilities, such as shelters, can continue to operate in the event of a disaster.
Plan for Implementation	
Responsible Organization/Department:	School Board
Supporting Organization/Department:	n/a
Action/Project Priority:	HIGH
Timeline for Completion:	1 year
Potential Fund Sources:	General Revenue, Capital projects, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**Trenton R-IX school district**
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
Action/Project Number:	TSD 2025.3
Name of Action or Project:	**Educate on best practices during drought**
Mitigation Category:	Education and Outreach, Natural systems protection
Action or Project Description:	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential for wildfires.
Estimated Cost:	$100
Benefits:	Citizens would have the best information about best practices of water usage during periods of drought.
Plan for Implementation	
Responsible Organization/Department:	School board, School Staff
Supporting Organization/Department:	Hazard Mitigation Planning Committees
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status:	New
Report of Progress:	New Project

Action Worksheet	
Name of Jurisdiction:	**North Central Missouri college**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire
Problem being Mitigated:	Preparedness remains the best option to limit the threats of hazard events on the residents of Bogard
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	NCMC 2025.1
Name of Action or Project:	**Mitigation education**
Mitigation Category:	Education and Outreach
Action or Project Description:	Provide education to the citizens, and students of College's Area campuses to reduce risk to life and property due to natural hazards in the region. The information regarding these mitigation measures would be obtained from FEMA's website and posted to the district's social media page, included in regular mailings, and shared with local media outlets.
Estimated Cost:	$500
Benefits:	The general population and elected officials will increase understanding of how to prepare for natural disasters potentially affecting the city
Plan for Implementation	
Responsible Organization/Department:	Board of trustees
Supporting Organization/Department:	County EMD, Fire Districts
Action/Project Priority:	High
Timeline for Completion:	1 - 5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued/Modified
Report of Progress:	On-going

Action Worksheet	
Name of Jurisdiction:	**North Central Missouri College**
Risk / Vulnerability	
Hazard(s) Addressed:	Earthquakes, Severe thunderstorms, Severe winter weather, Tornado,
Problem being Mitigated:	Dangerous, poor condition buildings
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	NCMC 2025.2
Name of Action or Project:	**Structure demolition program**
Mitigation Category:	Structure and infrastructure
Action or Project Description:	Remove dangerous, dilapidated structures that pose a threat to public safety
Estimated Cost:	$10,000 to $100,000
Benefits:	Remove structures that may be in poor condition that pose a threat to the health and safety of the campus
Plan for Implementation	
Responsible Organization/Department:	Board of Trustees
Supporting Organization/Department:	
Action/Project Priority:	Medium
Timeline for Completion:	1 – 5 years
Potential Fund Sources:	Hazard mitigation grant funding, Capital projects, Community development block grants
Local Planning Mechanisms to be Used in Implementation, if any:	n/a
Progress Report	
Action Status:	Continued
Report of Progress:	Evaluated annually

Action Worksheet	
Name of Jurisdiction:	**North Central Missouri College**
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado
Problem being Mitigated:	Facilities with auxiliary power supplies should be available to residents affected by power outages.
Action or Project	
Applicable Goal Statement:	Goal 1: Eliminate loss of life, minimize injuries, and reduce property damage caused by tornadoes, severe thunderstorm high winds, hail and lightning. Goal 2: Minimize property damage due to flooding, levee failure or dam incidents. Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire. Goal 4: Maintain public services, protect life, and minimize the risk of property damage caused by severe winter weather. Goal 5: Minimize injuries and property damage due to seismic and/or geological events.
Action/Project Number:	NCMC 2025.3
Name of Action or Project:	**Generators**
Mitigation Category:	Structure and Infrastructure
Action or Project Description:	Equip college facilities with transfer switches and/or generators to ensure no loss of functions in the event of power outages due to natural disaster.
Estimated Cost:	$50,000-$5.000.000
Benefits:	Critical facilities, such as shelters, can continue to operate in the event of a disaster.
Plan for Implementation	
Responsible Organization/Department:	School Board
Supporting Organization/Department:	n/a
Action/Project Priority:	HIGH
Timeline for Completion:	1 year
Potential Fund Sources:	General Revenue, Capital projects, HMGP
Local Planning Mechanisms to be Used in Implementation, if any:	NA
Progress Report	
Action Status:	Continued
Report of Progress:	Awaiting funding

Action Worksheet	
Name of Jurisdiction:	**North Central Missouri College**
Risk / Vulnerability	
Hazard(s) Addressed:	Drought, Wildfire
Problem being Mitigated:	Reduce the strain on existing water supplies and vulnerability to wildfires during periods of drought.
Action or Project	
Applicable Goal Statement:	Goal 3: Minimize the impact to natural and human resources caused by drought, extreme temperatures and wildfire
Action/Project Number:	NCMC 2025.4
Name of Action or Project:	**Educate on best practices during drought**
Mitigation Category:	Education and Outreach, Natural systems protection
Action or Project Description:	Provide education, and information to the citizens to reduce risk to agricultural assets and risk of wildfire during periods of drought. Provide educational and informational materials about best practices in water conservation, how to reduce fire danger and the spread of fires, and how to reduce the potential for wildfires.
Estimated Cost:	$100
Benefits:	Citizens would have the best information about best practices of water usage during periods of drought.
Plan for Implementation	
Responsible Organization/Department:	Board of trustees
Supporting Organization/Department:	Hazard Mitigation Planning Committees
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	General revenue
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status:	New
Report of Progress:	New Project

Table 4.4. Mitigation Action Matrix

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
Structure and Infrastructure Projects								
County 2025.2	Snow removal	Grundy Co	Low	4	Severe winter weather	X	X	
County 2025.3	Weather Alerts, Sirens and education	Grundy Co	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
County 2025.4	Tree trimming/Maintenance	Grundy Co.	Medium	1	Severe thunderstorm, Severe winter weather	X	X	
County 2025.5	Flood warning systems	Grundy Co	Medium	2	Flooding	X	X	
County 2025.7	Structure improvement grants	Grundy Co	High	2	Flooding	X	X	
County 2025.8	Food reduction projects	Grundy Co	High	2	Flooding	X	X	X
County 2025.10	Critical facilities backups	Grundy Co	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
County 2025.11	Debris removal	Grundy Co	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CG 2025.2	Weather Alerts, Sirens and education	Galt	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CG 2025.3	Critical facilities backups	Galt	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CG 2025.4	Debris removal	Galt	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CG 2025.5	Storm shelters and safe rooms	Galt	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CL 2025.2	Weather Alerts, Sirens and education	Laredo	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CL 2025.3	Critical facilities backups	Laredo	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CL 2025.4	Debris removal	Laredo	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CL 2025.5	Storm shelters and safe rooms	Laredo	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CS 2025.2	Weather Alerts, Sirens and education	Spickard	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CS 2025.3	Critical facilities backups	Spickard	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CS 2025.4	Debris removal	Spickard	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CS 2025.5	Storm shelters and safe rooms	Spickard	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CT 2025.2	Weather Alerts, Sirens and education	Trenton	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CT 2025.3	Critical facilities backups	Trenton	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CT 2025.4	Debris removal	Trenton	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CT 2025.5	Storm shelters and safe rooms	Trenton	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
GSD 2025.2	Storm shelters and safe rooms	Grundy Co. R-V	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
GSD 2025.3	Generators	Grundy Co. R-V	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
LSD 2025.2	Storm shelters and safe rooms	Laredo R-VII	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
PVSD 2025.2	Storm shelters and safe rooms	Pleasant View R-VI	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
PVSD 2025.3	Generators	Pleasant View R-VI	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
SSD 2025.2	Storm shelters and safe rooms	Spickard R-II	High	1,3,4,5	Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
SSD 2025.3	Generators	Spickard R-II	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
TSD 2025.3	Generators	Trenton R-IX	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
NCMC 2025.2	Structure demolition program	North Central Missouri College	High	1 4 5	Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X		
NCMC 2025.3	Generators	North Central Missouri College	Low	1,3,4,5	Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado	X	X	
Natural Systems Protection								
County 2025.4	Tree trimming/Maintenance	Grundy Co.	Medium	1	Severe thunderstorm, Severe winter weather	X	X	
County 2025.8	Flood reduction projects	Grundy Co	High	2	Flooding	X	X	X
County 2025.11	Debris removal	Grundy Co	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
County 2025.12	Drought and wildfire education	Grundy Co	Medium	3	Drought, Wildfire	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CG 2025.4	Debris removal	Galt	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CG 2025.6	Drought and wildfire education	Galt	Medium	3	Drought, Wildfire	X	X	
CL 2025.4	Debris removal	Laredo	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CL 2025.7	Drought and wildfire education	Laredo	Medium	3	Drought, Wildfire	X	X	
CS 2025.4	Debris removal	Spickard	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CS 2025.7	Drought and wildfire education	Spickard	Medium	3	Drought, Wildfire	X	X	
CT 2025.4	Debris removal	Trenton	Low	1,4,5	Flooding, Earthquakes, Severe thunderstorms, Severe winter weather, Tornado	X	X	
CT 2025.6	Drought and wildfire education	Trenton	Medium	3	Drought, Wildfire	X	X	
GSD 2025.4	Drought and wildfire education	Grundy R-V	Medium	3	Drought, Wildfire	X	X	
PVSD 2025.4	Drought and wildfire education	Pleasant View R-VI	Medium	3	Drought, Wildfire	X	X	
SSD 2025.4	Drought and wildfire education	Spickard R-II	Medium	3	Drought, Wildfire	X	X	
TSD 2025.3	Drought and wildfire education	Trenton R-IX	Medium	3	Drought, Wildfire	X	X	
NCMC 2025.4	Drought and wildfire education	NCMC	Medium	3	Drought, Wildfire	X	X	
Planning and Regulation								
County 2025.9	Survey of flood plain areas	Grundy Co	Low	2	Flooding	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CG 2025.6	Participation in the NFIP	Galt	High	2	Flooding	X	X	X
Education and Outreach								
County 2025.1	Mitigation education	Grundy Co	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	X
County 2025.3	Weather Alerts, Sirens and education	Grundy Co	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
County 2025.12	Drought and wildfire education	Grundy Co	Medium	3	Drought, Wildfire	X	X	
CG 2025.1	Mitigation education	Galt	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	X
CG 2025.2	Weather Alerts, Sirens and education	Galt	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CG 2025.6	Drought and wildfire education	Galt	Medium	3	Drought, Wildfire	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CL 2025.1	Mitigation education	Laredo	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	X
CL 2025.2	Weather Alerts, Sirens and education	Laredo	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CL 2025.6	Vulnerable population identification	Laredo	High	3	Extreme Temperatures	X	X	
CL 2025.7	Drought and wildfire education	Laredo	Medium	3	Drought, Wildfire	X	X	
CS 2025.1	Mitigation education	Spickard	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	X
CS 2025.2	Weather Alerts, Sirens and education	Spickard	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CS 2025.6	Vulnerable population identification	Spickard	High	3	Extreme Temperatures	X	X	
CS 2025.7	Drought and wildfire education	Spickard	Medium	3	Drought, Wildfire	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
CT 2025.1	Mitigation education	Trenton	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
CT 2025.2	Weather Alerts, Sirens and education	Trenton	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CT 2025.6	Drought and wildfire education	Trenton	Medium	3	Drought, Wildfire	X	X	
GSD 2025.1	Mitigation education	Grundy Co. R-V	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
GSD 2025.4	Drought and wildfire education	Grundy R-V	Medium	3	Drought, Wildfire	X	X	
PVSD 2025.1	Mitigation education	Pleasant View R-VI	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
PVSD 2025.4	Drought and wildfire education	Pleasant View R-VI	Medium	3	Drought, Wildfire	X	X	

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
SSD 2025.1	Mitigation education	Spickard R-II	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
SSD 2025.4	Drought and wildfire education	Spickard R-II	Medium	3	Drought, Wildfire	X	X	
TSD 2025.1	Mitigation education	Trenton R-IX	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
TSD 2025.3	Drought and wildfire education	Trenton R-IX	Medium	3	Drought, Wildfire	X	X	
NCMC 2025.1	Mitigation education	North Central Missouri College	High	1,2,3,4,5	Flooding, Dam failure, Drought, Earthquakes, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
NCMC 2025.4	Drought and wildfire education	NCMC	Medium	3	Drought, Wildfire	X	X	
Emergency Services								

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
County 2025.6	Disaster drills and exercises	Grundy Co	High	1,2,3,4,5	Flooding, Dam Failure, Earthquakes, Drought, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado, Wildfire	X	X	
CL 2025.6	Vulnerable population identification	Laredo	High	1,2,3,4	Flooding, Extreme Temperatures, Severe thunderstorms, Severe winter weather, Tornado,	X	X	
CS 2025.6	Vulnerable population identification	Spickard	High	3	Extreme Temperatures	X	X	

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

The State Emergency Management Agency (SEMA) requires that Hazard Mitigation Plans be reviewed periodically, at least annually, to ensure that goals and objectives are being considered. Revisions to the actions or strategies may be required, as well as acknowledging completed successful mitigations. This section of the Grundy County Multi-jurisdictional Hazard Mitigation Plan provides the process to review, revise, and update the plan.

The maintenance of the plan shall be delegated to the County Emergency Management Committee. They meet quarterly and following any disaster declarations, and will invite members of the MPC to attend these meetings to discuss the plan progress and determine if any updates or amendments need to be considered.

Maintenance shall involve agreement of the participating jurisdictions, including school and special districts, to:

- 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 Commissioners and governing bodies of participating jurisdictions; and
- Inform and solicit input from the public.

The Grundy County Emergency Management Committee is an advisory body and can only make recommendations to county, city, town, or district elected officials. Its primary duty is to coordinate emergency departments within the county. It will attempt 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 agrees to meet annually and after a state or federally declared hazard event as appropriate to monitor progress and update the mitigation strategy. The Grundy County Emergency Management Director will be responsible for initiating the plan reviews and will invite members of the MPC and other interested parties to the meeting.

In coordination with all participating jurisdictions, the Emergency Management Director will be responsible for initiating a five-year written update of the plan to 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

There were no changes made in the plan due to changes in priorities of any jurisdiction that participated in the development of the plan. The plan MUST describe the process for evaluating the plan for effectiveness, including evaluation criteria, when it will be evaluated for effectiveness, and who will be responsible for this evaluation.

The plan must identify how, when and by whom the plan will be assessed for effectiveness at achieving its stated purpose and goals (evaluating). Progress on the proposed actions can be monitored by evaluating changes in vulnerabilities identified in the plan. The MPC (and the Grundy County Emergency Committee) 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 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 member will determine necessary remedial action, making any required modifications to the plan.
- If new actions are identified to implement mitigation activities, the jurisdictional MPC member will take necessary actions to amend the plan. GHRPC staff currently handles such requests.

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 in cooperation with the Grundy County Emergency Committee deems appropriate and necessary. Changes will be approved by the Grundy County Commissioners 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.

Prior to the development of this plan, the participating jurisdictions did not integrate information from the previous hazard mitigation plan into other planning mechanisms. The participating jurisdictions will attempt to remedy this lack of integration moving forward by applying the identified hazard mitigation actions into updates of other planning mechanisms.

Where possible, plan participants, including school and special districts, will use existing plans and/or programs to implement hazard mitigation actions. Based on the capability assessments of the participating jurisdictions, communities in Grundy 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:

- General or master plans of participating jurisdictions;
- Ordinances of participating jurisdictions;
- Grundy County Emergency Operations Plan;
- 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 Grundy County Emergency Management Director will provide the updated Mitigation Strategy with current status of each mitigation action to the County Commissioners as well as all Mayors, City Clerks, and School District Superintendents. The Emergency Management Director 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
Grundy County	Transportation Advisory Committee (TAC)	Member of TAC attended all planning meetings and identified actions relating to transportation infrastructure were included in annual update to Unfunded Needs List and the State Transportation Improvement Plan, and the Regional Transportation Plan	Member of TAC attended all planning meetings and identified actions relating to transportation infrastructure were included in annual update to unfunded needs list, the State Transportation Improvement Plan, and the Regional Transportation Plan
	Grundy County Emergency Plan	The Commissioners attended planning meetings and identified actions relating to infrastructure were included in annual update to Comprehensive Plan	The Commissioners and EMD attended all planning meetings. Identified new actions or ongoing actions relating to infrastructure will be included in annual update to Comprehensive Plan
	CEDS, LEPC, Council Budgeting Session	Annual review, county emergency plan review	Annual CEDS review, County Emergency Plan Review
City of Trenton	Local Budget, CEDS, Emergency Plan, City Ordinances	Annual review	Annual CEDS review, Emergency Plan Review, Regional Transportation Plan

City of Galt	Local Budget, CEDS, Emergency Plan, City Ordinances, Floodplain Ordinance	Annual Review	Annual CEDS review, Emergency Plan Review, Regional Transportation Plan
City of Laredo	Local Budget, CEDS, Emergency Plan, City Ordinances	Annual Review	Annual CEDS review, Emergency Plan Review, Regional Transportation Plan
City of Spickard	Local Budget, CEDS, Emergency Plan	Annual Review	Annual CEDS review, Emergency Plan Review, Regional Transportation Plan
Grundy County Health Department	Facilities Plan, Hazard Awareness Program	Annual Review	Annual Review of Facilities Plan and Hazard Awareness Plan
Grundy County R-V	Emergency Plan, Weapons Policy	Annual Review	Annual Review of Emergency Plan, Weapons Policy
Pleasantview R-VI	Capital Improvement Plan, Emergency Plan, Weapons Policy	Annual Review	Annual Review of Capital Improvement Plan, Emergency Plan, Weapons Policy
Spickard R-II	Capital Improvement Plan, Emergency Plan, Weapons Policy	Annual Review	Annual Review of Capital Improvement Plan, Emergency Plan, Weapons Policy
Trenton R-IX	Master Plan, Capital Improvement Plan, Emergency Plan, Weapons Policy	Annual Review	Annual Review of Master Plan, Capital Improvement Plan, Emergency Plan, Weapons Policy
NCMC	Master Plan, Capital Improvement Plan, Emergency Plan, Weapons Policy	Annual Review	Annual Review of Master Plan, Capital Improvement Plan, Emergency Plan, Weapons Policy

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 Grundy County website following each annual review of the mitigation plan and will solicit comments from the public based on the annual review.

The Grundy County emergency management director and the MPC will be responsible for publicizing success stories if mitigation activities are completed by issuing press releases and publicizing information on the Grundy County and/or Jurisdiction's website.

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.