CLINTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 2023

Draft March 2023

Mo-Kan Regional Council, 224 N. 7th Street, St. Joseph, MO 64501

CONTRIBUTORS

Clinton County Hazard Mitigation Planning Committee

Jurisdictional Representatives

Name	Title	Department	Jurisdiction/Agency/Organization
Blair Shock	Emergency Management Director	Health Department	Clinton County
Tammy Clough	Health Department	Health Department	Clinton County
Patrick Clark	Presiding Commissioner	County Commission	Clinton County
Richard Riddell	2nd District Commissioner	County Commission	Clinton County
Jay Bettis	1st District Commissioner	County Commission	Clinton County
Tim Wymes	Director of Economic Development	Economic Development	Cameron
Kenneth Pike	Mayor	Administration	Gower
Bob Burns	City Administrator	Administration	Lathrop
Jennifer Eads-Morrison	Mayor	Administration	Lathrop
Ryan Jensen	Sergeant	City Police Department	Plattsburg
Mark Graham	Mayor	Administration	Trimble
Matt Robinson	Superintendent	Administration	Cameron R-I School District
Chris Fine	Superintendent	Administration	Lathrop R-II School District
Sandy Stegall	Superintendent	Administration	Clinton County R-III School District

Stakeholder Representatives

Name	Title	Department	Jurisdiction/Agency/Organization
Tricia Knight	Planning & Zoning	Planning & Zoning	Clinton County
Larry Fish	Sheriff	Sherriff's Office	Clinton County
Rick Bashor	Police Chief	City Police Department	Cameron
Adam Hill	Police Chief	City Police Department	Gower

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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. Clinton 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. The plan is an update of a plan that was approved on November 5, 2018. 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 County Multi-Hazard Mitigation Plan is a multi-jurisdictional plan that covers the following jurisdictions that participated in the planning process:

- Unincorporated Clinton County
- City of Cameron
- City of Gower
- City of Lathrop
- City of Plattsburg
- City of Trimble
- Cameron R-I School District
- Lathrop R-II School District
- Clinton County R-III School District

The Village of Turney was invited to participate in the planning process, but did not meet all of the established requirements for official participation. When the future five-year update is developed for this plan, this village again will be invited again to participate.

Clinton County and the entities listed above developed a Multi-Jurisdictional Hazard Mitigation Plan that was approved by FEMA on November 5, 2018 (hereafter referred to as the *2018 Hazard Mitigation Plan*). This current planning effort serves to update that previously approved plan.

The plan update process followed a methodology in accordance with FEMA guidance, which began with the formation of a Mitigation Planning Committee (MPC) comprised of representatives from Clinton County and participating jurisdictions. The MPC updated the risk assessment that identified and profiled hazards that pose a risk to County A 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 tornadoes 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: Protect the Lives, Property and Livelihoods of All Citizens.

- Objective 1.1: Protect the lives and property of Clinton County residents.
- Objective 1.2: Provide sufficient warning of impending disasters.
- Objective 1.3: Identify the citizens most vulnerable to disasters and plan accordingly.

Goal 2: Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices.

- Objective 2.1: Decrease the impact of natural hazards.
- Objective 2.2: Decrease the cost of the next disaster.
- Objective 2.3: Increase Clinton County's economic resistance to disasters.

Goal 3: Ensure Continued Operation of Government and Emergency Functions in a Disaster.

- Objective 3.1: Increase disaster mitigation management capability in local governments.
- Objective 3.2: Strengthen critical infrastructure.

Goal 4: Ensure Access to Information About Hazard Preparation and Recovery.

- Objective 4.1: Increase knowledge among citizens about disaster safety.

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 Develop ment	Continued Compliance with NFIP
	Prevention Public Education							
1.3.2	Vulnerable Citizens Awareness	Trimble	Low	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	
1.3.3	Vulnerable Citizens Awareness	Turney	Low	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	
2.1.1	Water-Saving Measures	Turney	Low	2	Drought			X
4.1.4	Inundation Zone Awareness	Clinton County	Medium	2	Dam Failure, Flood	X	X	X
	Structure and Infrastructure Projects							
1.1.2	Safe Room for Lathrop school District	Lathrop R-II	High	2	Thunderstorm, Tornado	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
1.1.4	Backup Generators	**Cameron R-I**	**High**	3	Earthquake, Flood, Thunderstorm, Winter Weather, and Tornado	X	X	X
1.1.5	Generator / Emergency Power	**Lathrop**	**High**	3	Earthquake, Thunderstorm, Winter Weather, Tornado	X	X	X
1.1.7	Above Ground Storm Shelters	**Plattsburg**	**High**	3	Tornado	X	X	X
1.2.2	Outdoor Warning Siren	**Cameron**	**Medium**	2	Thunderstorm, Tornado	X	X	X
1.2.3	Outdoor Warning Sirens	**Plattsburg**	**High**	2	Tornadoes, Attack, Civil Disorder, Hazardous Materials Release	X	X	X
1.2.5	Outdoor Warning Siren	**Trimble**	**Medium**	2	Thunderstorm, Tornado	X	X	X
1.2.6	Outdoor Warning Siren	**Turney**	**Low**	2	Thunderstorm, Tornado	X	X	X
1.2.7	Outdoor Warning Siren	**Lathrop**	**High**	2	Thunderstorm, Tornado	X	X	X
1.2.10	Outdoor Warning Siren	**Clinton County**	**High**	2	Thunderstorm, Tornado	X	X	X
1.3.1	Wind-Resistant Shelters at New Trailer Parks	**Lathrop**	**High**	3	Thunderstorm, Tornado	X	X	X
1.3.4	Residential Severe Weather Shelters	**Plattsburg**	**High**	3	Tornado	X	X	X
2.1.5	Closed-Pipe Stormwater System	**Plattsburg**	**Medium**	2	Flooding, Flash Flooding	X	X	X
2.2.1	NFIP Participation	**Clinton County**	**High**	3	Flood	X	X	X
2.2.2	NFIP Participation	**Cameron**	**High**	3	Flood	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
2.2.3	NFIP Participation	**Lathrop**	**High**	3	Flood	X	X	X
2.2.4	NFIP Participation	**Plattsburg**	**High**	3	Flood	X	X	X
2.2.5	NFIP Participation	**Trimble**	**High**	3	Flood	X	X	X
2.2.6	Hazard Buffer Zones	**Clinton County**	**Medium**	2	Dam Failure, Flood, Fire	X	X	X
2.2.7	Purchase Floodplain Properties	**Plattsburg**	**Medium**	2	Flooding, Flash Flooding	X	X	X
2.3.2	Backup Water System	**Trimble**	**Medium**	2	Dam Failure, Drought, Earthquake, Flood, Thunderstorm, Winter Weather and Tornado	X	X	X
3.2.1	Backup Generators	**Lathrop**	**High**	3	Earthquake, Flood, Thunderstorm, Winter Weather and Tornado	X	X	X
3.2.2	Upgrades or Retrofits for Critical Infrastructures	**Clinton County**	**High**	2	Earthquake, Flood, Thunderstorm, Winter Weather and Tornado	X	X	X
3.2.3	Backup Water System	**Clinton County**	**Medium**	2	Dam Failure, Drought, Earthquake, Flood, Thunderstorm, Winter Weather and Tornado	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
3.2.4	Vulnerable Infrastructure	**Lathrop**	**High**	2	Drought, Earthquake, Flood, Thunderstorm, Winter Weather and Tornado	X	X	X
3.2.5	Vulnerable Infrastructure	**Turney**	**Low**	2	Earthquake, Flood, Thunderstorm, Winter Weather and Tornado	X	X	X
3.2.6	Backup Generators	**Plattsburg**	**Medium**	2	Earthquake, Severe Thunderstorms, Severe Winter Weather, Tornadoes, Utility Emergencies	X	X	X
	Natural Systems Protection							
2.1.2	Stormwater / Watershed Management Plan	Clinton County	Low	3	Dam Failure, Flood, Thunderstorm	X	X	X
2.1.3	Stormwater Dredging	**Plattsburg**	**High**	2	Flooding, Flash Flooding	X	X	X
2.1.4	Stormwater Channeling	**Plattsburg**	**Medium**	2	Flooding, Flash Flooding	X	X	X
	Emergency Services							
1.1.1	Emergency Access Routes	Clinton County	High	2	Dam Failure, Flood, Winter Weather	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Develop ment	Continued Compliance with NFIP
1.1.3	Address List	Lathrop	High	4	Earthquake, Thunderstorm, Winter Weather, Tornado, Fire	X	X	X
1.1.6	Marked Safe Areas	**Lathrop R-II**	**Medium**	2	Earthquake, Thunderstorm, Tornado	X	X	X
1.1.8	Community Shelter / Emergency Operations Center	**Plattsburg**	**Medium**	3	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
2.3.1	Disaster Plans	**Lathrop**	**Medium**	3	Earthquake, Flood, Thunderstorm, Winter Storm, Tornado	X	X	X
3.1.2	Emergency List	**Lathrop**	**High**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
3.1.3	Emergency List	**Lathrop R-II**	**High**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
3.1.4	Mutual Aid Agreements	**Clinton County**	**High**	3	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
3.1.5	Coordinate and Link Websites	**Clinton County**	**Low**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
3.1.6	GIS Hazard Information Availability	**Clinton County**	**Medium**	2	Dam, Earthquake, Flood, Thunderstorm, Winter Weather, Tornado	X	X	X
3.1.7	Website Links	**Lathrop R-II**	**Low**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
3.1.8	Website Links	**Lathrop**	**Low**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
3.1.9	Coordinate and Link	**Lathrop**	**Low**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
3.1.10	Safeguard Records	**Clinton County**	**High**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
3.1.11	Safeguard Records	**Lathrop**	**High**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
3.1.12	Safeguard Records	**Plattsburg**	**High**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
3.1.13	Safeguard Records / Files	**Turney**	**Low**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
4.1.3	Access to Hazard Maps	**Clinton County**	**Medium**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
	Education and Outreach							
1.2.1	Weather Radios and Weather Phone Apps	**Gower**	**High**	2	Flood, Thunderstorm, Winter Storm, Tornado	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
1.2.4	Use electronic media to alert residents of emergencies and to provide necessary information.	**Clinton County**	**High**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
1.2.8	Weather Radios	**Turney**	**Low**	2	Flood, Thunderstorm, Winter Storm, Tornado	X	X	X
1.2.9	Weather Electronic Notification	**Gower**	**Low**	2	Thunderstorm, Tornado	X	X	X
3.1.1	Accessible List	**Clinton County**	**High**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
4.1.1	Uninformed/Unprepared Citizens	**Clinton County**	**High**	1	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
4.1.2	Grade School Disaster Preparedness	**Cameron R-I**	**High**	1	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
4.1.5	Grade School Disaster Preparedness	**Clinton County R-III**	**High**	1	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	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 D, 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 the (local governing body/school district); and

WHEREAS the (*local governing body/school district*) has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the (*plan name*), hereafter referred to as the *Plan*, in accordance with the Disaster Mitigation Act of 2000; and

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

WHEREAS the (*local governing body*) recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the (*local governing body/school district*) will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by the (*local governing body/school district*) demonstrates their 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:

In accordance with (*local rule for adopting resolutions*), the (*local governing body/school district*) adopts the final *FEMA-approved Plan*.

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 any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. Mitigation activities may be implemented prior to, during or after an incident. However, it has been demonstrated that hazard mitigation is most effective when based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs (http://www.fema.gov/what-mitigation).

Federal Emergency Management Agency (FEMA) has implemented the various hazard mitigation planning provisions through the Code of Federal Regulations (CFR) at 44 CFR Part 201. The CFR provisions set forth the mitigation plan requirement for local and tribal governments as a condition of receiving FEMA hazard mitigation assistance. Under 44 CFR §201.6, local governments, schools or other publicly funded districts must have adopted a FEMA-approved local hazard mitigation plan in order to apply for hazard mitigation project grants. Section 322 of the Robert T. Stafford Relief and Emergency Assistance Act (P.L. 93-288), as amended by the Disaster Mitigation Act of 2000 (DMA) (P.L. 106-390), provides for States, Tribes and local governments to undertake a risk-based approach to reducing risks to natural hazards through mitigation planning.

The plan also meets the minimum planning requirements for all FEMA mitigation programs, such as Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA), Pre-Disaster Mitigation (PDM) and where appropriate, other FEMA mitigation related programs such as the National Earthquake Hazards Reduction Program (NEHRP), the National Flood Insurance Program (NFIP) and the Community Rating System (CRS). Entities that do not adopt the plan will not be eligible for mitigation grants.

The Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations set forth by the Interim Final Rule were published in the Federal Register on February 26, 2002, (44 CFR §201.6) and finalized on October 31, 2007. (Hereafter, these requirements and regulations will be referred to collectively as the Disaster Mitigation Act or DMA). The DMA established the requirements for local hazard mitigation plans are in the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288). The communities and school districts were informed that adopting the plan is a prerequisite for mitigation grant eligibility. Entities that do not adopt the plan will not be eligible for mitigation grants.

1.2 BACKGROUND AND SCOPE

As required by 44 CFR §201.6(d)(3), local jurisdictions must review and revise their plan to reflect changes in development, progress in local mitigation efforts and changes in priorities and resubmit it for approval every five (5) years in order to continue to be eligible for mitigation project grant funding. The 2023 Clinton County Multi-Jurisdictional Hazard Mitigation Plan is a revision of the previous five-year update adopted in November 2018 which was the second update of the original plan.

Jurisdictions that participated in the last plan and are continuing participation in the 2023 include:

- Clinton County
- City of Cameron
- City of Gower
- City of Lathrop
- City of Plattsburg
- City of Trimble
- Cameron R-I School District
- Lathrop R-II School District

The Village of Grayson participated in the 2013 plan. As it is now unincorporated, it will be covered under the county's participation. The Clinton County R-III is participating in this plan update for the first time after not participating in the prior 2018 update. While the East Buchanan School District does partially fall into Clinton County, it participated in Buchanan County's 2021 Hazard Mitigation Plan Update.

The Village of Turney was contacted on several occasions but has chosen not to participate in the plan update.

Several jurisdictions have boundaries in two counties. The jurisdictions of Cameron, Stewartsville, and Osborn are located in DeKalb and Clinton counties. Cameron is participating in Clinton County's plan while Stewartsville and Osborn are participating in DeKalb County's plan. Holt is located in Clay and Clinton counties but is participating in Clay County's plan. Information in the plan will be used to help guide and coordinate mitigation activities and decisions for local land use policies in the future.

1.3 PLAN ORGANIZATION

Set forth the outline of the plan. If there are changes in the format from the previously approved plan, explain what they are and why the changes were made.

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

The plan format has been standardized across the state in order to create hazard mitigation plans that are more consistent with each other, making it easier to locate information, as well as making plans more consistent from update to update. Chapter 5, Plan Maintenance, was added

to expand the amount of information on maintaining the plan between updates. In the 2013 update, plan maintenance information was located in Section 4, Mitigation Strategy. Routine review and maintenance of mitigation actions and goals is important to make sure actions are being implemented on schedule and for the plan's goals to guide mitigation efforts. By increasing the focus on plan maintenance through the addition of a separate chapter, this aspect will receive the attention it deserves.

Table 1.1. Changes Made in Plan Update

Plan Section	Summary of Updates
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	Noted new Census info for participating jurisdictions.
Chapter 3 - Risk Assessment	Combined extreme heat and extreme cold into one hazard: extreme temperatures.
Chapter 4 - Mitigation Strategy	The mitigation category of each action was added to the action worksheets.
Chapter 5 - Plan Implementation and Maintenance	Updated MPC meetings for evaluating and updating the plan to quarterly.

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.

Mo-Kan Regional Council contracted to facilitate the plan's updating process. Mo-Kan staff met with the Clinton County commissioners for an informational meeting to develop a list of area stakeholders and local jurisdiction representatives for the Mitigation Planning Committee (MPC). The updating process included the kick-off meeting and three subsequent MPC meetings, as well as monthly Local Emergency Planning Committee (LEPC) meetings. Mo-Kan staff produced the draft and final plan update in a FEMA approved document, and coordinated with the Missouri State Emergency Management Agency (SEMA) and FEMA plan reviews.

The main topics at the MPC meetings are discussed in Section 1.4.2. Mo-Kan solicited public involvement in the planning process. The MPC meetings were held on December 9, 2021, February 24, 2022, April 21, 2022 and June 30, 2022. Appendix A provides the results from the survey that was distributed to the public for input into the risk analysis and planning process.

The draft of the plan was posted on the Mo-Kan website for public review and comment. Input from city and county officials was solicited through distribution of drafts of the plan to their jurisdictions.

Table 1.2 shows the MPC members and the entities they represent, along with their titles.

Table 1.2. Jurisdictional Representatives of DeKalb County Mitigation Planning Committee

Name	Title	Department	Jurisdiction/Agency/Organization
Blair Shock	Emergency Management Director	Health Department	Clinton County
Tammy Clough	Health Department	Health Department	Clinton County
Patrick Clark	Presiding Commissioner	County Commission	Clinton County
Richard Riddell	2nd District Commissioner	County Commission	Clinton County
Jay Bettis	1st District Commissioner	County Commission	Clinton County
Tim Wymes	Director of Economic Development	Economic Development	Cameron
Kenneth Pike	Mayor	Administration	Gower
Bob Burns	City Administrator	Administration	Lathrop
Jennifer Eads-Morrison	Mayor	Administration	Lathrop
Ryan Jensen	Sergeant	City Police Department	Plattsburg
Mark Graham	Mayor	Administration	Trimble
Matt Robinson	Superintendent	Administration	Cameron R-I School District
Chris Fine	Superintendent	Administration	Lathrop R-II School District
Sandy Stegall	Superintendent	Administration	Clinton County R-III School District

Table 1.3 demonstrates each member's expertise in the six mitigation categories (Preventive Measures, Property Protection, Natural Resource Protection, Emergency Services, Structural Flood Control Projects, and Public Information)

Table 1.3. Flood Control Projects and PublicMPC 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			
Clinton County	X		X	X	X	X
Cameron	X	X			X	X
Gower	X	X			X	X
Lathrop	X	X			X	X
Plattsburg	X	X			X	X
Trimble	X	X			X	X
Turney	X	X			X	X

Cameron R-I School District	X	X			X	
Clinton County R-III School District	X	X			X	
Lathrop R-II School District	X	X			X	

1.4.1 Multi-Jurisdictional Participation

Each jurisdiction is required to participate in the planning process and officially adopt the plan, in order to be eligible for mitigation funding grants. The MPC established a minimum criteria that each jurisdiction must meet in order to be considered a "participant." Plan participation requirements were defined as:

- Designation of a representative from each participating jurisdiction to serve on the MPC;
- Participation in at least one MPC meetings by either direct participation or authorized representation or host a work session with the specific jurisdiction;
- Each participating jurisdiction must provide to the MPC sufficient information to support plan development by completion and return of data collection questionnaires and validating/correcting critical facility inventories;
- Eliminated 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
- All participants should formally adopt the mitigation plan prior to submittal to FEMA for final approval.

Table 1.4. Jurisdictional Participation in Planning Process

Jurisdiction	Kickoff Meeting	Meeting #2	Meeting #3	Meeting #4	Data Collection Questionnaire Response	Update/Develop Mitigation Actions	Adoption Resolution	Sufficient Contact with Mo-Kan
Clinton County	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cameron	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gower	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lathrop	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Plattsburg	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Trimble	No	No	No	No	Yes	Yes	Yes	Yes
Turney	No	No	No	No	No	No	No	No
Cameron R-I School District	No	No	No	No	Yes	Yes	Yes	Yes
Clinton County R-III School District	Yes	No	No	Yes	Yes	Yes	Yes	Yes
Lathrop R-II School District	No	Yes	No	No	Yes	Yes	Yes	Yes

1.4.2 The Planning Steps

FEMA's Local Mitigation Planning Handbook (March 2013), Local Mitigation Plan Review Guide (October 1, 2013), and Integrating Hazard Mitigation into Local Planning: Case Studies and Tools for Community Officials (March 1, 2013) were used as the sources for the HMP update. The update followed the 10-step planning process adapted from FEMA's Community Rating System (CRS) and Flood Mitigation Assistance programs. The10-step process allows the Plan to meet funding eligibility requirements of the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, Community Rating System, and Flood Mitigation Assistance Program. **Table 1.5** shows how the CRS process aligns with the Nine Task Process outlined in the 2013 Local Mitigation Planning Handbook.

Table 1.5. County Mitigation Plan Update Process

Community Rating System (CRS) Planning Steps (Activity 510)	Local Mitigation Planning Handbook Tasks (44 CFR Part 201)
Step 1. Organize	Task 1: Determine the Planning Area and Resources
	Task 2: Build the Planning Team 44 CFR 201.6(c)(1)
Step 2. Involve the public	Task 3: Create an Outreach Strategy 44 CFR 201.6(b)(1)
Step 3. Coordinate	Task 4: Review Community Capabilities 44 CFR 201.6(b)(2) & (3)
Step 4. Assess the hazard	Task 5: Conduct a Risk Assessment 44 CFR 201.6(c)(2)(i) 44 CFR 201.6(c)(2)(ii) & (iii)
Step 5. Assess the problem	
Step 6. Set goals	Task 6: Develop a Mitigation Strategy 44 CFR 201.6(c)(3)(i); 44 CFR 201.6(c)(3)(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 4)

In October 2020, Mo-Kan entered into cooperative agreements with SEMA and Clinton County to prepare this multi-jurisdictional plan for local jurisdictions in DeKalb County. Discussions on the development of the Clinton County Multi-Jurisdictional Hazard Mitigation Plan began on October 12, 2021, with a meeting attended by Mo-Kan staff and the Clinton County Commissioners. This meeting was conducted to discuss the timeline for developing the hazard mitigation plan, the planning process, identification of stakeholders and community organizations to include in the planning process and a date for the kick-off meeting. Attendees identified a list of potential participants to invite, and Mo-Kan staff mailed invitations for the kick-off meeting. The list of invitees included local elected officials, municipal and county government staff, emergency services personnel, school administrators, county township representatives, past hazard mitigation plan participants, and public health partners. For a complete list of those invited to participate, see Appendix A.

The MPC met on four occasions from December 2021 to June 2022 to collaborate on the plan update. Participants assisted in data collection; reviewed and revised goals, objectives, and mitigation strategies; and provided reviews and comments on the plan throughout the update process. Communication with MPC members occurred throughout the planning process through face-to-face meetings, phone interviews, and email correspondence in addition to committee meetings. Public notices, press releases, agendas and sign-in sheets for those in-person meetings are in Appendix B. **Table 1.6** documents all meetings held.

Table 1.6. Schedule of MPC Meetings

Meeting	Topic	Date
Informational Meeting	Met with the Clinton County Commission to discuss the composition of the Mitigation Planning Committee. Discussed risk assessment methodology and the timeline for updating the plan.	October 12, 2021
Kick-off Meeting	Discussion on the background and importance of HMP, timeline and participation requirements, review of 2013 plan and began working on community data questionnaire forms.	December 9, 2021
Planning Meeting #2	Review of goals and actions, discussion of past and potential mitigation projects and began working on hazard analysis and cascading disasters.	February 24, 2022
Planning Meeting #3	Discussion achievements and creating new actions.	April 21, 2022
Planning Meeting #4	Discussion on the adoption process and revisiting the goals and objectives.	June 30, 2022

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

The MPC held its kick-off meeting on December 9, 2021. Some of the MPC members had participated in the 2018 update but the updating process was new for some attendees. There was discussion on soliciting public input and the importance of public outreach. It was determined to hold a series of public meetings and left up to individual jurisdictions to disseminate information at their own meetings and events. Mo-Kan staff disseminated public notices, urging public attendance and input. A survey was created to get the public's feedback about what hazards they were the most concerned with and what mitigation actions they would like to see included in the update. The online survey was posted on the Mo-Kan website and a link to the survey was made available to jurisdictions to disseminate. The survey results are in Appendix A. Ready-In-Three materials were distributed to the public at planning & zoning meetings in Plattsburg.

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

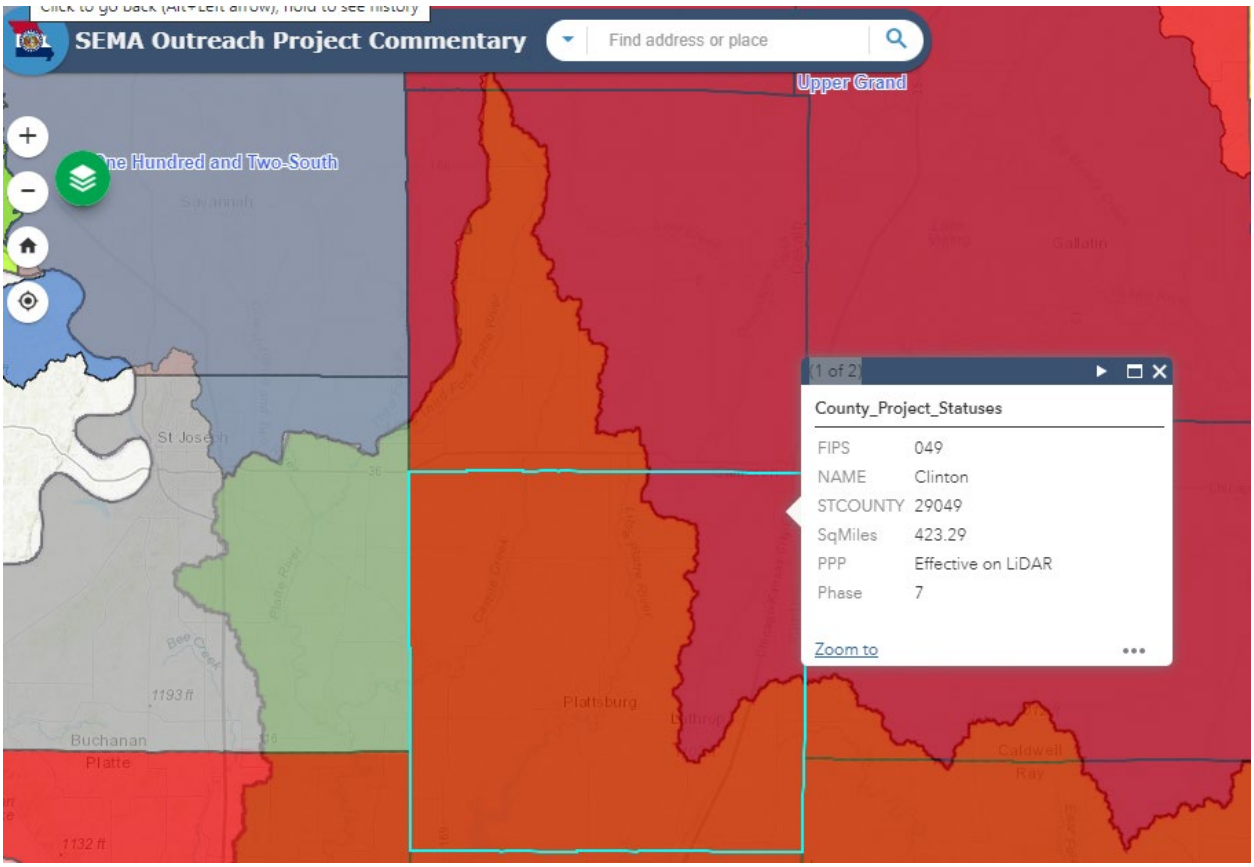
At the informational meeting, held October 12, 2021, the Clinton County commissioners assisted with compiling a list of organizations they determined to be integral to hazard mitigation planning to invite to participate in the plan update. Invitations were sent to all jurisdictions located in Clinton County, school districts, emergency service personnel. A list of organizations and agencies that received invitations is in Appendix B. The MPC was comprised of those who responded to plan update invitations.

Coordination with FEMA Risk MAP Project

Risk Mapping, Assessment, and Planning (Risk MAP) is the Federal Emergency Management Agency (FEMA) Program that provides communities with flood information and tools they can use to enhance their mitigation plans and act to better protect their citizens. Through collaboration with State, Tribal, and local entities, Risk MAP delivers quality data that increases public awareness and leads to action that reduces risk to life and property.

FEMA is in the discovery phase of updating flood risk maps in Clinton County. While there are several FIS/DFIRMs (available from the Map Service Center), the most current DFIRM for the county is from 2003, and this was used for the floodplain maps created for this update. A timeline for updating the maps was outlined in a recent communication from SEMA, with field survey collection anticipated for the fall of 2022.

Figure 1.1. RiskMAP Study Status Map



Source: https://mosema.maps.arcgis.com/apps/webappviewer/index.html?id=d574183ab5be4f23846c19b50196d223

Integration of Other Data, Reports, Studies, and Plans

Additional input was solicited from other agencies and organizations that were not able to attend planning committees. Data was collected and reviewed from multiple sources, which are referenced throughout the document. These sources include, but are not limited to, the US Census, Andrew and Buchanan Counties HMPs (adjacent counties), Flood Insurance Studies (FIS), Flood Insurance Rate Maps (FIRMS), State Department of Natural Resources (DNR) dam information, National Inventory of Dams (NID), dam inspection reports, local comprehensive plans and land use plans, US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics.

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

At the first MPC meeting, held on December 9, 2021, hazards from the 2018 plan were briefly identified and profiled. The MPC agreed that historically, tornadoes and severe weather pose the greatest risk to the county. At the second MPC meeting, held on February 24, 2022, the hazards were discussed in more detail. A survey was also distributed to get the public's

feedback on which hazards were of most concern. A list of previous disaster declarations was available to jurisdictions to assist in their individual risk assessments, but this list was not reviewed at an MPC meeting. The data collection questionnaire information was used by the individual jurisdictions in evaluating their risk assessment and by Mo-Kan staff in generating the data for risk assessments in Chapter 3. The MPC did not review each jurisdiction's data collection questionnaire, but collectively reviewed and discussed the draft document at the fourth meeting, held June 30, 2022, which included questionnaire information. The 2018 Clinton County HMP and the 2018 State Plan provided a basis for the 2023 Clinton County HMP. Andrew County's HMP was also referred to, as it is a nearby county that also recently went through a hazard mitigation plan update.

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

Jurisdictions identified their respective assets on their Data Collection Questionnaire form, as well as during work sessions. These assets were compared against various GIS layers and HAZUS to access their vulnerability to disasters. The city clerks, mayors and/or city council members of their respective jurisdictions collaborated to complete the data collection questionnaires. Clinton County and the cities Cameron and Plattsburg have full-time staff, but other communities have only one or no full-time staff. Providing information on the data collection questionnaires often fell to one person. The superintendents and/or principals completed the data collection questionnaires for their school districts. Most of the data on the school questionnaire forms was readily available, in a different format, for school emergency plans. The data retrieved from the questionnaires can be found in Chapter 3. This data includes information on regulatory, personnel, fiscal and technical capabilities, and existing mitigation initiatives. Inventory estimates for each jurisdiction's building stock in the county were derived by using HAZUS MH 4.2. The methodology for estimating losses varies by hazard. Loss *estimates are included for various hazard profiles in the Risk Assessment chapter.*

Step 6: Set Goals
(Handbook Task 6)

During the third MPC meeting, held April 21, 2022, participants reviewed the plan's previous goals, and they decided to continue with the same goals and objectives in this plan. DeKalb County's 2023 HMP goals are:

Goal 1: Protect the Lives, Property and Livelihoods of All Citizens.
- Objective 1.1: Protect the lives and property of Clinton County residents.
- Objective 1.2: Provide sufficient warning of impending disasters.
- Objective 1.3: Identify the citizens most vulnerable to disasters and plan accordingly.

Goal 2: Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices.
- Objective 2.1: Decrease the impact of natural hazards.
- Objective 2.2: Decrease the cost of the next disaster.
- Objective 2.3: Increase Clinton County's economic resistance to disasters.

Goal 3: Ensure Continued Operation of Government and Emergency Functions in a Disaster.
- Objective 3.1: Increase disaster mitigation management capability in local governments.
- Objective 3.2: Strengthen critical infrastructure.

Goal 4: Ensure Access to Information About Hazard Preparation and Recovery.
• Objective 4.1: Increase knowledge among citizens about disaster safety

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

At the third MPC meeting, held on April 21, 2022, the mitigation strategy from the previous plan was reviewed and a new strategy was discussed. Representatives from the jurisdictions also reviewed the previous actions and reported on progress made on previously proposed actions. Each jurisdiction was provided with information on how to complete the forms and the actions to be evaluated. Criteria for evaluation of the past actions was discussed during the meeting but due to the sheer number of actions needing to be evaluated, jurisdiction representatives evaluated actions outside of the scheduled MPC meetings.

Participants were to consider the potential cost of each action in relation to the anticipated future cost savings. Members were encouraged to continue forwarding only those actions that substantively addressed long-term risks identified in the risk assessment. Copies of the FEMA publication Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013) were made available for jurisdictions to reference.

Jurisdictions independently prioritized their actions using the methodology from the 2018 plan, in which jurisdictions self-determined which actions were high, medium, and low priorities. Consideration included the action's potential to save lives and protect property, cost, and local capacity to implement/pursue. The STAPLEE methodology was not used but available to jurisdictions if they wanted to use it. It was discussed that new/modified actions must follow the SMART criteria of being Specific, Measurable, Action-oriented, Relevant and Time-bound. The goals and actions were consistent with the hazards identified in the plan and reflected the local priorities and vulnerability to hazards.

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

At the third and fourth MPC meetings, held April 21, 2022, and June 30, 2022, new actions were discussed. The individual jurisdictions submitted their new actions after discussion with their respective city council or school board. 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)

Jurisdictions were provided a digital link to the plan to make available to the public. The public and the jurisdictions were asked for feedback. The plan went before the Clinton County Commissioners and the other jurisdictions for public comment in November 2022 for adoption by February 2023. Adoption resolutions can be found in Appendix D.

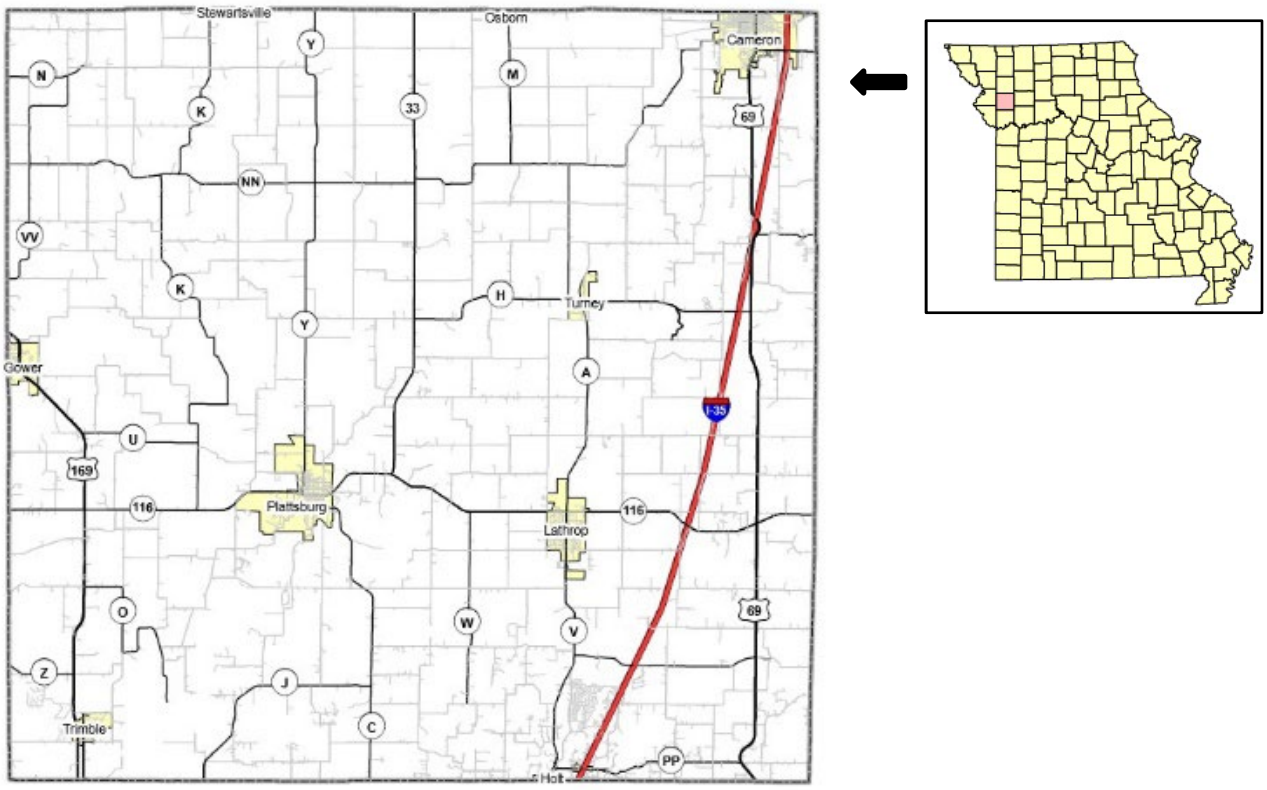
Step 10: Implement, Evaluate, and Revise the Plan
(Handbook Tasks 7 & 9)

At each MPC meeting, plan maintenance was briefly discussed, and participants were reminded that the plan is a living document and periodic review of it will keep it current and relevant. At the fourth MPC meeting, held on June 30, 2022, the discussion was more in depth, including strategies for plan implementation, monitoring and plan review dates. Clinton County, and other jurisdictions established general dates to review the plan so they can monitor and evaluate their progress on obtaining the plan's goals and completing the actions. During a review of the plan, the public will be notified and invited to participate. Details of plan maintenance and review are in Chapter 5.

2 PLANNING AREA PROFILE AND CAPABILITIES

2.1 CLINTON PLANNING AREA PROFILE

Figure 2.1. Map of County Clinton County



Clinton County is bordered by the counties of Buchanan, Caldwell, Clay, DeKalb, Platte and Ray. The county seat of Plattsburg is located near the geographic center of the county. As shown in **Figure 2.1**, the communities of Cameron, Gower, Holt, Stewartsville, and Osborn are located in two counties. The communities participating in the Clinton County Hazard Mitigation Plan are Cameron, Gower, , Lathrop, Plattsburg, and Trimble.

According to the U.S. Bureau of the Census April 1, 2020, Annual Population Estimates, the population of Clinton County is 21,184. This is a 2.1 percent increase in population compared with the 2010 population of 20,743 and shows an 11.6 percent increase trend in population compared to the 18,979 in population reported in the 2000 U.S. Census. Comparatively, both the State of Missouri's and United States' populations have increased over the period between 2000 and 2020 at 2.8 percent and 7.4 percent respectively. Clinton County's median household income (MHI) was $62,213 in 2020, compared with $41,629 in 2000, indicating an 49.9 percent increase over the 20-year period, which is well above Missouri's 14.7-percent increase and the United States' 35.2-percent increase in MHI over the same timeframe. Median home values (MHV) also increased from 2000 to 2020 at the county, state, and federal level, with DeKalb's MHV increasing 75.9 percent from $91,433 in 2000 to $160,800 in 2020; Missouri's MHV increasing 82 percent; and the United States' MHV increasing 92 percent, respectively (Source: http://www factfinder.census.gov).

2.1.1 Geography, Geology and Topography

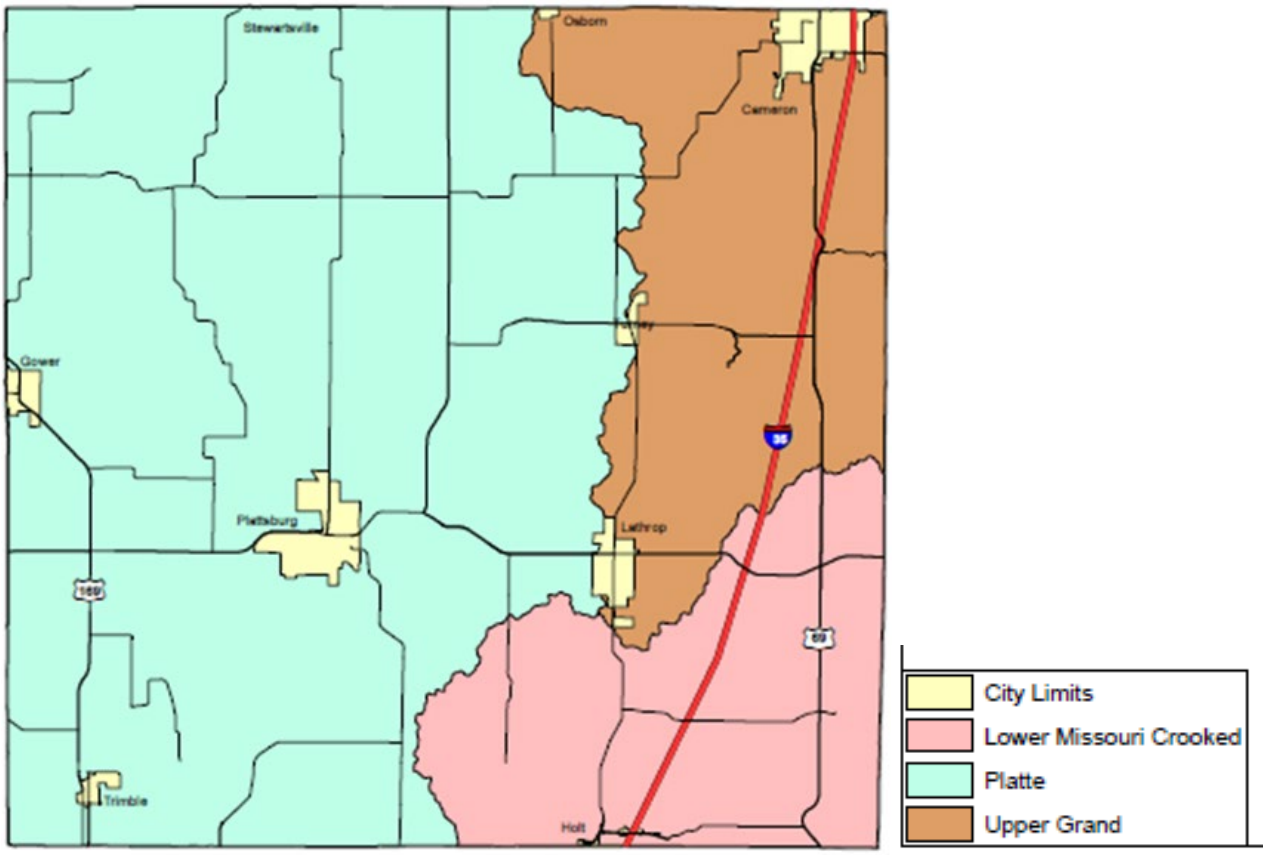
In accordance with the United States Census Bureau the county is about 423 square miles; and about 419 square miles is land, and 4 square miles is water. The county is predominately rural with centrally located Plattsburg serving as the county seat. Cameron, located in both Clinton and DeKalb county is the largest population center, with 9,788 residents. Agriculture is the primary land use.

The topography form of Clinton County is moderately dissected plains and includes Pennsylvanian-Age Bedrock and thin limestone. Since the area is susceptible to heavy rainfall and clay is found in its topography, storm water runoff can create erosion problems.

Clinton County does not have any major rivers. The streams are the Little Platte, Castile Creek and Shoal Creek. Smithville Lake was constructed by the U.S. Army Corps of Engineers in 1979. The dam is located to the south of Clinton County in Clay County, but the body of the lake extends well into Clinton County. Altogether, Smithville Lake covers 7,190 acres and has a storage area of 102,200-acre feet. The lake drains 213 acres. The topography and soil content of Clinton County are not conducive to the formation of large wetlands. However, numerous small wetlands exist in varying degrees of quality.

There are three eight-digit hydrological unit (HUC) watersheds in Clinton County. The Platte Watershed includes the communities of Stewartsville, Gower, Turney, Plattsburg and Lathrop. The Upper Grand Watershed includes the communities of Cameron, Lathrop; Holt is located in the Lower Missouri Crooked Watershed. **Figure 2.2** shows the three watersheds in county (Source: MoDNR).

Figure 2.2 Clinton County Huc-8 Watersheds



Source: Missouri Department of Natural Resources

2.1.2 Climate

The climate of northwest Missouri is continental in nature with cold winters, hot summers and is subject to extreme changes in temperature, humidity, cloudiness and wind speeds. The mean average temperature is 52.3° show that July is the warmest month and has an average daily high of 88.9°. January is the coldest month with the average daily low temperature of 19.7°. The average rain fall is 45 inches per year and average snow fall is 12 inches per year (Source: https://www.ncdc.noaa.gov/temp-and-precip/ and http://www.bestplaces.net/climate/county/missouri/Clinton).

2.1.3 Population/Demographics

Table 2.1 provides the populations for each city, village, and the unincorporated county for 2020 and 2010 Decennial Census population estimates, as provided by the United States Census Bureau, with the number and percentage change.

The county population will not be completely accurate since portions of some of the incorporated areas overlap into the adjacent counties, such as the case with the cities of Cameron and Gower. Cameron, is the largest incorporated area and the majority of its population reside in Clinton County.

Table 2.1. Clinton County Population 2000-2016 by Community

Jurisdiction	Total Population 2010	Total Population 2020	2010-2020 # Change	2010-2020 % Change
City of Cameron*	9,933	8,513	-1,420	-14.3%
City of Gower*	1,526	1,533	7	0.46%
City Lathrop	2,086	2,271	185	8.87%
City of Plattsburg	2,319	2,222	-97	-4.18%
City of Trimble	646	573	-73	-11.3%
City of Holt	447	471	24	5.37%
Village of Turney	148	114	-34	-23%
Unincorporated area	3,638	5,487	1,849	50.82%
Total County	20,743	21,184	441	2.13%%

Source: U.S. Bureau of the Census, Decennial Census, annual population Decennial Census Survey 2020; *population includes the portions of these cities in adjacent counties

According to the 2010-2020 US Census Bureau ACS 5-year estimates, Clinton County's 65 years and older population is slightly higher at 17.7 percent than state (16.9 percent) and U.S. (16 percent) percentages for this same age group. Comparatively, the county's population of those under five years of age is 5.3 percent, which is lower than the state (6.1 percent) and U.S. (6 percent) totals for this age group. In summary, the county has a higher population of older residents and a lower population of younger residents when compared to state and national levels.

The vulnerability analyses in the next chapter of this plan will include Social Vulnerability Index (SoVI ®) information from the Hazards and Vulnerability Research Institute at the University of South Carolina. The University developed an index to evaluate and rank the ability to respond to, cope with, recover from, and adapt to disasters. The index synthesizes 30 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. Clinton County has a SoVI® score of -0.560000002 and in the national percentile of 40.9 percent.

Figure 2.3 shows how Clinton County compares to the state and nation in social vulnerability to environmental hazards. A higher percentage indicates a higher vulnerability. Scores in the top 20 percent of the United States are more vulnerable counties (red) and scores in the bottom 20 percent of the United States indicate the least vulnerable counties (blue). Clinton County scores in the medium range for vulnerability (Source: http://webra.cas.sc.edu/hvri/products/sovi.aspx)

Figure 2.3 Social Vulnerability Index

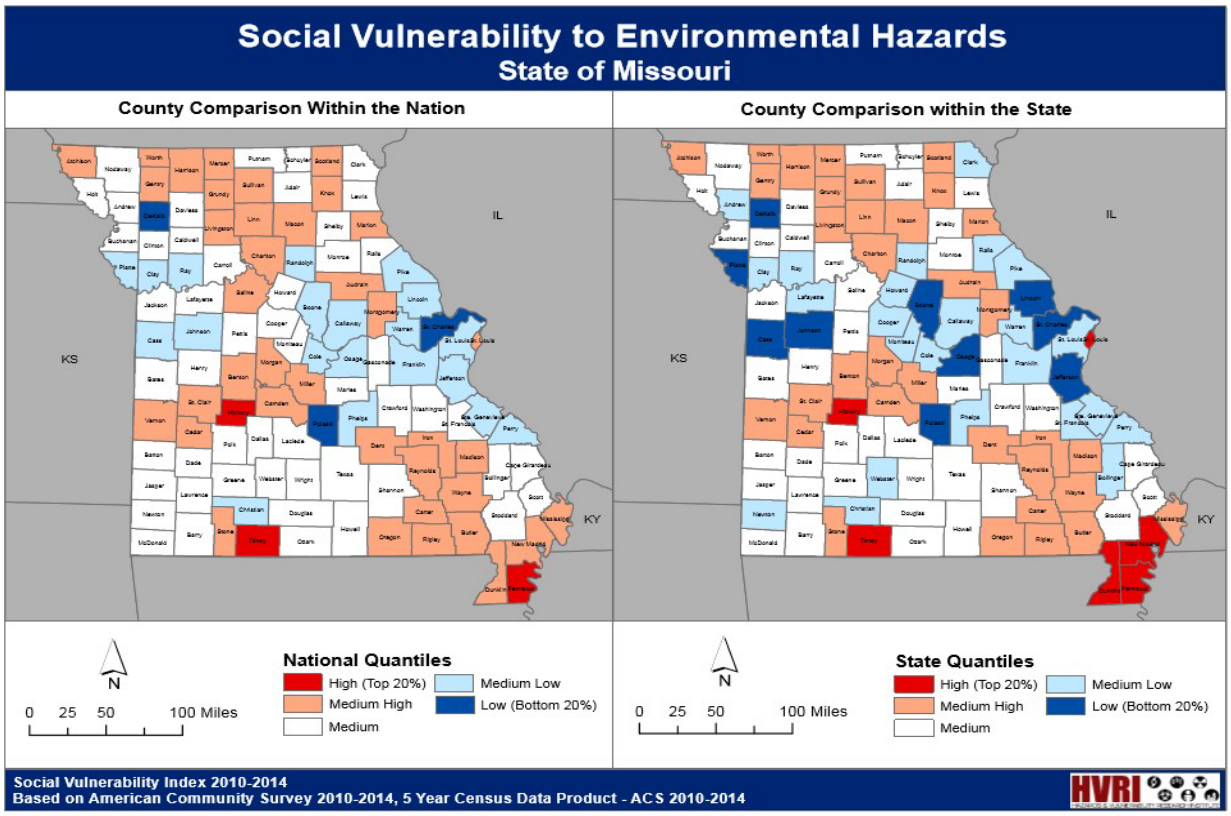


Table 2.2 provides additional demographic and economic indicators for the county.

Table 2.2. Unemployment, Poverty, Education, and Language Percentage Demographics, Clinton County, Missouri

Jurisdiction	Labor Force Participation Rate (%)	Unemployment Rate (%)	Percent of Families Below the Poverty Level	Percentage of Population (High School graduate)	Percentage of Population (Bachelor's degree or higher)	Percentage of population (spoken language other than English)
Clinton County	60.0%	3.5%	9.2%	92.8%	22.0%	1.9%
City of Cameron	33.5%	2.4%	5.5%	85.3%	12.7%	1.8%
City of Gower	61.5%	1.7%	8.4%	95.7%	21.3%	1.0%
City of Holt	64.7%	0%	5.9%	85.7%	12.2%	3.6%%
City of Lathrop	67.8%	1.8%	11.4%	90.9%	18.0%	2.8%
City of Plattsburg	60.6%	4.7%	10.6%	92.2%	23.4%	3.5%
City of Trimble	59.9%	1.8%%	6.6%	92.8%	9.2%	1.2%
Village of Turney	66.3%	2.7%	5.0%	88.7%	6.8%	1.0%

Source: U.S. Census, 2020 American Community Survey, 5-year Estimates

2.1.4 History

The first settler of what is called Clinton County today was John Livingston, who settled in the area in 1830. Originally Clinton County was a part of Clay County, which served as the home of the world-famous outlaw Jesse James. Until the Platte Purchase, the area was considered a border county and was thought of as the "Gateway to the West." Clinton County was not established until the year 1833, when it was named after the seventh Governor of New York, Dewitt Clinton. Plattsburg was established as the county seat. Clinton County was primarily made up of Southern settlers, but had representation of both sides during the Civil War. This situation caused the county to be divided, and casualties were common throughout the county.

After trending downward for the first half of the twentieth century, Clinton County has enjoyed a population upswing since 1960. Clinton County is one of a few northwest Missouri counties demonstrating consistent growth, albeit not major. The growth is due to a number of factors, but the most obvious reason is one of geography. The Kansas City metropolitan area, located adjacent to Clinton County to the southwest, is witnessing suburban sprawl. Crossed by Interstate 35, Clinton County is a natural site for increased suburbanization, as citizens of the Kansas City area leave the city for more rural setting.

2.1.5 Occupations

Table 2.3 displays occupation statistics for the incorporated cities and the county as a whole.

Table 2.3. Occupation Statistics, Clinton County, Missouri

Jurisdiction	Management, Business, Science, and Arts Occupations	Service Occupations	Sales and Office Occupations	Natural Resources, Construction, and Maintenance Occupations	Production, Transportation, and Material Moving Occupations
Clinton County	31.9%	13.1%	20.6%	14.4%	19.9%
City of Cameron	33.8%	17.6%	18.3%	14%	16.3%
City of Gower	34.6%	12.4%	23%	11.5%	18.5%
City of Holt	19.3%	18.8%	25%	7%	30%
City of Lathrop	34%	20.5%	11.6%	12.9%	21%
City of Plattsburg	27.6%	11.4%	26.5%	21.6%	12.8%
City of Trimble	25.5%	9.2%	31%	16.2%	18%
Village of Turney	25.2%	26%	10.3%	11.2%	27%

Source: U.S. Census, 2020 American Community Survey, 5-year Estimates

2.1.6 Agriculture

According to the USDA 2017 Census on Agriculture, Clinton County has 684 farms with a total acreage of 222,361 acres, compared with the 758 farms totaling 191,602 acres in reported in 2012. The neighboring counties farm acreage is as follows for 2017: Andrew County- 706 farms totaling 204,944 acres; DeKalb and Buchanan County- 797 farms totaling 184,062 acres; and DeKalb County- 708 farms totaling 201,641 acres. All those counties mentioned showed a decline in number of farms except Buchanan County, which saw a 10 percent increase from 2012 to 2017. The total market value of agricultural products sold in Clinton was $81,835,000 with $64,506,000 (79 percent) coming from crops like grain, oilseeds, dry beans, and dry peas, and $17,329,000 (21 percent) from livestock, poultry and other products with cattle and calves being the biggest producers, followed by sheep, goats, wool, mohair and milk. Other notable numbers from the 2017 Agriculture Census showed soybeans (66,760 acres), corn for grain (45,671 acres), forage (16,472 acres), and wheat (389) as the top crops in the county. Cattle and calves led in the livestock inventory with 22,115 head, followed by layers (1,869), sheep & lambs (1,671), horses and ponies (695) and goats (382). Of the 1,139 producers in the county, 28.8 percent were new and beginning farmers with 97.8 percent being white and 60.7 percent male. The 2020 American Community Survey (ACS) 5-Year Estimates showed that 136 people were employed in farming, fishing and forestry operations, which is 1.4 percent of the Clinton County workforce.

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

Clinton County has not received any recent hazard mitigation assistant grants, other than the statewide grant for funds to update the hazard mitigation plan. Clinton County and the City of Lathrop are in the process of applying for HMA grants for storm sirens.

2.2 JURISDICTIONAL PROFILES AND MITIGATION CAPABILITIES

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

2.2.1 Unincorporated Clinton County

Clinton County is governed with a three-person board of commissioners. County officeholders are listed below.

- Board of Commissioners – Patrick Clark, Richard Riddell, and Jay Bettis
- County Clerk – David Woody
- County Assessor – Cindy Carter
- County Recorder – Susan Davis
- County Sheriff – Larry Fish
- County Treasurer – Rita Terwilleger
- Emergency Management – Blair Shock
- Health Department – Blair Shock
- Coroner – Lee Hanks
- Road and Bridge – John Noble
- County Zoning Administrator – Tricia Knight

Mitigation Initiatives/Capabilities

The Emergency Management Director (EMD) is a part-time position filled by the director of the Clinton County Health Department. The EMD conducts emergency preparedness outreach and social media emergency messaging. There are monthly All Hazards Committee meetings in which all jurisdictions, school districts, special districts and first responders have the opportunity to participate in. There are 911 ACCD meetings that include the counties of Andrew, Caldwell, Clinton, and DeKalb. **Table 2.4** lists the county's mitigation capabilities.

Table 2.4. Unincorporated Clinton County Mitigation Capabilities

Capabilities	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Operations Plan (EOP)	Yes, "All-Hazards Plan" since 1988, revisit annually. Updated 1/31/2022
Local Recovery Plan	Yes, part of "All-Hazards Plan"
County Recovery Plan	No
Local Mitigation Plan	No
County Mitigation Plan	Yes
Economic Development Plan	No
Transportation Plan	No

Land-use Plan	Yes
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	Yes, part of the "All-Hazards Plan"
Policies/Ordinance	
Zoning Ordinance	Yes
Building Code	No, not allowed for 3rd class counties
Floodplain Ordinance	Yes, no construction in floodplains
Subdivision Ordinance	Yes
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes
Storm Water Ordinance	Yes
Drainage Ordinance	No
Site Plan Review Requirements	On-site wastewater
Historic Preservation Ordinance	No
Landscape Ordinance	No
Debris Management Plan	No
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes, wastewater
National Flood Insurance Program (NFIP) Participant	Yes
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	Yes
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	Varies per fire district and distance from station
Capabilities	
Economic Development Program	Yes
Land Use Program	Yes
Public Education/Awareness	Yes
Property Acquisition	Yes
Planning/Zoning Boards	Yes
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes, between Emergency Management & Law Enforcement
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	Yes
Critical Facilities Inventory	Yes
Vulnerable Population Inventory	Yes
Land Use Map	Yes
Staff/Department	
Building Code Official	No
Building Inspector	No

Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Director	Yes, part time
NFIP Floodplain Administrator	Yes, Zoning Administrator, full time
Bomb and/or Arson Squad	No
Emergency Response Team	Yes
Hazardous Materials Expert	Yes
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	Yes
Economic Development Department	No
Housing Department	No
Planning Consultant	No
Regional Planning Agencies	Yes
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	Yes
Salvation Army	Yes
Veterans Groups	Yes
Environmental Organization	Yes
Homeowner Associations	Yes
Neighborhood Associations	Yes
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.	Yes
Local Funding Availability	
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	Yes

Source: Data Collection Questionnaire, July 28, 2022

2.2.2 City of Cameron

Cameron has a population of 8,513 and is governed by a mayor and five-member city council. The community currently has a paid police department and volunteer fire department. There are five outdoor warning sirens that are activated by the city's police dispatch center. There is 911 and text cast notification. Table 2.5 lists Cameron's mitigation capabilities.

Table 2.5. City of Cameron Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	Yes, 2015
Builder's Plan	No
Capital Improvement Plan	Yes
Local Emergency Plan	Yes
County Emergency Plan	Yes
Local Recovery Plan	Yes
County Recovery Plan	No
Local Mitigation Plan	Yes
County Mitigation Plan	Yes
Economic Development Plan	Yes, part of comprehensive plan
Transportation Plan	Yes
Land-use Plan	Yes
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	Yes
Critical Facilities Plan (Mitigation/Response/Recovery)	Yes
Policies/Ordinance	
Zoning Ordinance	Yes
Building Code	Yes (2015 ICC)
Floodplain Ordinance	Yes (04/19/2011)
Subdivision Ordinance	Yes
Tree Trimming Ordinance	Yes
Nuisance Ordinance	Yes
Storm Water Ordinance	Yes
Drainage Ordinance	Yes
Seismic Construction Ordinance	Yes
Capability	
Site Plan Review Requirements	Yes
Historic Preservation Ordinance	No
Landscape Ordinance	Yes
Debris Management Plan	No
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes
National Flood Insurance Program (NFIP) Participant	Yes
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	Yes
National Weather Service (NWS) Storm Ready	Yes
Building Code Effectiveness Grading (BCEGs)	Yes (5)
ISO Fire Rating	5
Economic Development Program	Yes
Land Use Program	Yes
Public Education/Awareness	Yes, fire safety training for the community and Police Dept. conducts safety awareness for the community
Property Acquisition	Yes

Capability	Status Including Date of Document or Policy
Planning/Zoning Boards	Yes
Stream Maintenance Program	Yes
Tree Trimming Program	Yes
Engineering Studies for Streams (Local/County/Regional)	Yes
Mutual Aid Agreements	Police and Fire Mutual Aid Agreements with other jurisdictions
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	Yes
Hazard Analysis/Risk Assessment (County)	Yes
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	Yes, City tracks and monitors all critical city-owned facilities within city limits
Vulnerable Population Inventory	No
Land Use Map	Yes
Staff/Department	
Building Code Official	Yes, Full-Time
Building Inspector	Yes
Mapping Specialist (GIS)	Yes, Full-Time
Engineer	No
Development Planner	Yes, Full-Time
Public Works Official	Yes, Full-Time
Emergency Management Coordinator	Yes, Full-Time
NFIP Floodplain Administrator	Yes, Full-Time
Emergency Response Team	Yes, Based out of St. Joseph
Hazardous Materials Expert	Yes
Local Emergency Planning Committee	No
County Emergency Management Commission	Yes
Sanitation Department	Yes, Full-Time
Transportation Department	Yes, Full-Time Street Department
Economic Development Department	Yes, Full Time
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	Yes (Shelter House). Cameron United Methodist Church and CERT
Salvation Army	No
Veterans Groups	Yes
Environmental Organization	Yes
Homeowner Associations	Yes, various subdivisions
Neighborhood Associations	Yes, various subdivisions
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.	Yes
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, February 12, 2022

2.2.3 Village of Grayson

There is no census data available for the community. The community does not have any mitigation capabilities and relies on the county for services.

2.2.4 City of Gower

Gower has a population of 1,533 and is governed by a mayor and city council. There is city policeman and a fire department, who are responsible for activating the two outdoor warning sirens. There is a convalescent home in the community. The churches are active in assisting vulnerable citizens. **Table 2.6** lists Gower's mitigation capabilities.

Table 2.6. City of Gower Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	Yes (2018)
County Emergency Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	Yes (2018)
County Mitigation Plan	Yes
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
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	Yes (2005)
Building Code	Yes (BOCA)
Floodplain Ordinance	Yes
Subdivision Ordinance	Yes
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes
Storm Water Ordinance	No
Drainage Ordinance	No
Seismic Construction Ordinance	No
Capability	
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Debris Management Plan	No
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	Yes
National Flood Insurance Program (NFIP) Participant	Yes
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No

Capability	Status Including Date of Document or Policy
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	4
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	Yes
Property Acquisition	No
Planning/Zoning Boards	Yes
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
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)	No
Engineer	NO
Development Planner	No
Public Works Official	Yes, Full-Time
Emergency Management Coordinator	Yes
NFIP Floodplain Administrator	Yes
Emergency Response Team	Yes
Hazardous Materials Expert	No
Local Emergency Planning Committee	No
County Emergency Management Commission	Yes
Sanitation Department	Yes, outsourced
Transportation Department	No
Economic Development Department	Yes, Part-Time
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	No
Salvation Army	No
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	Yes
Neighborhood Associations	Yes
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.	Yes
Local Funding Availability	
Ability to apply for Community Development Block Grants	No
Ability to fund projects through Capital Improvements funding	No
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	No
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes

Capability	Status Including Date of Document or Policy
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, December 22, 2021

2.2.5 Village of Holt

Holt has a population of 471 and is governed by alderman. The community has a fire department. The Village of Holt is not participating in Clinton County's plan but included since their mitigation capabilities will have an impact on the surrounding communities and county. **Table 2.7** lists Holt's mitigation capabilities as of the last plan update in 2018.

Table 2.7. Village of Holt Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	Yes
County Mitigation Plan	Yes
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 (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	Yes
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	No
Storm Water Ordinance	No
Drainage Ordinance	No
Capability	
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Debris Management Plan	No
Program	
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
National Flood Insurance Program (NFIP) Participant	Yes
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No

ISO Fire Rating	Unsure
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	Yes
Vulnerable Population Inventory	No
Land Use Map	Yes
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Coordinator	No
NFIP Floodplain Administrator	Yes
Bomb and/or Arson Squad	No
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	No
Economic Development Department	No
Housing Department	No
Planning Consultant	No
Regional Planning Agencies	Yes
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	Yes
Salvation Army	No
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.	No
Local Funding Availability	
Ability to apply for Community Development Block Grants	No
Ability to fund projects through Capital Improvements funding	Unsure
Authority to levy taxes for a specific purpose	Unsure
Fees for water, sewer, gas, or electric services	Unsure
Impact fees for new development	No
Ability to incur debt through general obligation bonds	Unsure
Ability to incur debt through special tax bonds	Unsure
Ability to incur debt through private activities	Unsure
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, 2018

2.2.6 City of Lathrop

Lathrop has a population of 2,271 and is governed by a mayor and board of alderman. The fire district covers Lathrop and Turney. There are three outdoor warning sirens. The community added the third siren in 2018 and has submitted an HMGP application for a fourth siren near the elementary school. There is a designated public tornado center is located in the basement of the First Cristian Church at the corner of Plattsburg and Center Streets, although it does not meet FEMA standards**.** The Goppert Community Center can also function as a emergency shelter, if required. There are emergency generators for the community center, police station, lift station at 116 at Decker Construction, lift station at the wastewater plant, and for the lift station at 116 and I-35. **Table 2.8** lists Lathrop's mitigation capabilities.

Table 2.8. City of Lathrop Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	Yes (2006)
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	Yes
County Emergency Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	Yes
County Mitigation Plan	Yes
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
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	Yes, Ord. 525, June 4, 1965
Building Code	Yes, 2012 Edition of International Building Codes
Floodplain Ordinance	Yes, Ord. 526, 7/18/1985
Subdivision Ordinance	Yes, June 2, 1965
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes, Ord. 887, June 11, 1995
Storm Water Ordinance	No
Drainage Ordinance	No
Seismic Construction Ordinance	No
Capability	
Site Plan Review Requirements	Yes
Historic Preservation Ordinance	No
Landscape Ordinance	No
Debris Management Plan	No
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes
National Flood Insurance Program (NFIP) Participant	Yes
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No

Capability	Status Including Date of Document or Policy
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	RATING; 4 in city limits and 6 outside of city limits
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	Yes
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes. Mutual Aid Agreement with County Investigative squad, and Fire Dept. has Mutual Aid Agreement with neighboring communities.
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	Yes
Hazard Analysis/Risk Assessment (County)	Yes
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	Yes
Vulnerable Population Inventory	No
Land Use Map	Yes
Staff/Department	
Building Code Official	Yes, Part-Time
Building Inspector	Yes, Part-Time
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	Yes, Full-Time
Emergency Management Coordinator	No
NFIP Floodplain Administrator	Yes
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	No
County Emergency Management Commission	Yes
Sanitation Department	Private Contract
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	Yes, American Legion
Environmental Organization	No
Homeowner Associations	Yes, 1 active
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.	Rotary, Garden Club, Antique Car Club
Local Funding Availability	
Ability to apply for Community Development Block Grants	No
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	CID for new annexation
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	No

Capability	Status Including Date of Document or Policy
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, June 20, 2022

2.2.7 City of Plattsburg

Plattsburg has a population of 2,222 and serves as the county seat. There are three outdoor warning sirens which are active by the Clinton County Sheriff's office dispatch or the Plattsburg Police Department. The community does not have designated public shelters. There are 17 full-time and eight part-time staff. **Table 2.9** lists Plattsburg's mitigation capabilities.

Table 2.9. City of Plattsburg Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	Yes (2015)
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	Yes
County Emergency Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	Yes
County Mitigation Plan	Yes
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	Yes (2015)
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	Yes
Building Code	Yes, IBC 2021
Floodplain Ordinance	Yes
Subdivision Ordinance	Yes
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes
Storm Water Ordinance	No
Drainage Ordinance	No
Seismic Construction Ordinance	No
Capability	
Site Plan Review Requirements	Yes
Historic Preservation Ordinance	No
Landscape Ordinance	No
Debris Management Plan	No
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes
National Flood Insurance Program (NFIP) Participant	Yes
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	Yes
ISO Fire Rating	6
Economic Development Program	No

Capability	Status Including Date of Document or Policy
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	Yes
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	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	Yes
Vulnerable Population Inventory	No
Land Use Map	Yes
Staff/Department	
Building Code Official	Yes, Part-Time
Building Inspector	Yes, Part-Time
Mapping Specialist (GIS)	Yes, Part-Time
Engineer	Yes, Part-Time
Development Planner	No
Public Works Official	Yes, Full-Time
Emergency Management Coordinator	Yes, secondary job function of a full-time employee
NFIP Floodplain Administrator	No
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	No
County Emergency Management Commission	Yes
Sanitation Department	No
Transportation Department	Yes, function of Public Works Dept.
Economic Development Department	No
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	No
Salvation Army	No
Veterans Groups	VFW & American Legion
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.	Rotary
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	Yes

Source: Data Collection Questionnaire, July 27, 2022

2.2.8 City of Trimble

Trimble has a population of 573 and is governed by a mayor and four council members. Trimble has one newly constructed outdoor warning siren that was first tested in November 2022. There are no publicly designated shelters in the community. There is a fire department. **Table 2.10** lists their mitigation capabilities.

Table 2.10. City of Trimble Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	Yes
County Mitigation Plan	Yes
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
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	Yes
Building Code	Yes (ICC 2007)
Floodplain Ordinance	Yes
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes
Storm Water Ordinance	No
Drainage Ordinance	No
Seismic Construction Ordinance	No
Capability	
Site Plan Review Requirements	Yes
Historic Preservation Ordinance	No
Landscape Ordinance	No
Debris Management Plan	No
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes
National Flood Insurance Program (NFIP) Participant	Yes
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	7
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	Yes

Capability	Status Including Date of Document or Policy
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports & Maps	
Hazard Analysis/Risk Assessment (Local)	Yes
Hazard Analysis/Risk Assessment (County)	Yes
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	Yes
Staff/Department	
Building Code Official	Yes, Part-Time
Building Inspector	Yes, Part-Time
Mapping Specialist (GIS)	No
Engineer	Yes, Part-Time
Development Planner	No
Public Works Official	Yes, Full-Time
Emergency Management Coordinator	No
NFIP Floodplain Administrator	No
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	No
County Emergency Management Commission	Yes
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
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.	No
Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	No
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	Yes

Source: Data Collection Questionnaire, June 27, 2022

2.2.9 Village of Turney

Turney has a population of 114 and has a board of five councilmen. There are no tornado sirens in the community and the depot basement is used as a public shelter. However, does not FEMA's

standards. There are two part-time city employees, a clerk and street maintenance worker. The jurisdiction has not completed their participation requirements at this time. **Table 2.11** lists Turney's mitigation capabilities as recorded in the 2018 Clinton County HMP Update.

Table 2.11. Village of Turney Mitigation Capabilities

Capability	**Status Including Date of Document or Policy**
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Plan	No
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	Yes
County Mitigation Plan	Yes
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
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	**Status Including Date of Document or Policy**
Zoning Ordinance	Yes
Building Code	No
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes
Storm Water Ordinance	No
Drainage Ordinance	No
Capability	**Status Including Date of Document or Policy**
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Debris Management Plan	No
Program	**Status Including Date of Document or Policy**
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
National Flood Insurance Program (NFIP) Participant	No
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	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
Studies/Reports/Maps	**Status Including Date of Document or Policy**
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	**Status Including Date of Document or Policy**
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Coordinator	No
NFIP Floodplain Administrator	No
Bomb and/or Arson Squad	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
Planning Consultant	No
Regional Planning Agencies	Yes
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	No
Salvation Army	No
Capability	
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.	No
Local Funding Availability	**Status Including Date of Document or Policy**
Ability to apply for Community Development Block Grants	Unknown
Ability to fund projects through Capital Improvements funding	No
Authority to levy taxes for a specific purpose	No
Fees for water, sewer, gas, or electric services	No
Impact fees for new development	No
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	No
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, 2018

Table 2.12 is a summary table of mitigation capabilities in Clinton County.

Table 2.23. Mitigation Capabilities Summary Table

Capabilities	Clinton County	City of Cameron	City of Gower	City of Holt	City of Lathrop	City of Plattsburg	City of Trimble	Village of Turney
Planning Capabilities								
Comprehensive Plan	No	Yes	No	No	Yes	Yes	No	No
Builder's Plan	No	No	No	No	No	No	No	No
Capital Improvement Plan	No	Yes	No	No	No	No	No	No
Local Emergency Plan	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Emergency Plan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Local Recovery Plan	No	Yes	No	No	No	No	No	No
County Recovery Plan	No	No	No	No	No	No	No	No
Local Mitigation Plan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Mitigation Plan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Debris Management Plan	No	Yes	No	No	No	No	No	No
Economic Development Plan	No	Yes	No	No	No	No	No	No
Transportation Plan	No	No	No	No	No	No	No	No
Land-use Plan	Yes	Yes	No	No	No	Yes	No	No
Flood Mitigation Assistance (FMA) Plan	Yes	Yes	No	No	No	No	No	No
Watershed Plan	No	No	No	No	No	No	No	No
Firewise or other fire mitigation plan	No	No	No	No	No	No	No	No
Critical Facilities Plan (Mitigation/Response/ Recovery)	Yes	Yes	Yes	No	No	No	No	No
Policy/Ordinance								
Zoning Ordinance	Yes	Yes	Yes	No	Yes	Yes	No	Yes
Building Code	No	Yes	No	No	Yes	Yes	No	No
Floodplain Ordinance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Subdivision Ordinance	Yes	Yes	Yes	No	Yes	Yes	No	No
Tree Trimming Ordinance	No	No	No	No	No	No	No	No
Nuisance Ordinance	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Storm Water Ordinance	No	Yes	No	No	No	No	No	No
Drainage Ordinance	No	No	No	No	No	No	No	No
Site Plan Review Requirements	Yes, for wastewater	Yes	No	No	Yes	Yes	Yes	No

Capabilities	Clinton County	City of Cameron	City of Gower	City of Holt	City of Lathrop	City of Plattsburg	City of Trimble	Village of Turney
Historic Preservation Ordinance	No	No	No	No	No	No	No	No
Landscape Ordinance	No	Yes	No	No	No	No	No	No
Program								
Zoning/Land Use Restrictions	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Codes Building Site/Design	Yes	Yes	Yes	No	Yes	Yes	Yes	No
National Flood Insurance Program (NFIP) Participant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
NFIP Community Rating System (CRS) Participating Community	No	No	No	No	No	No	No	No
Hazard Awareness Program	Yes	Yes	No	No	No	No	No	No
National Weather Service (NWS) Storm Ready	In progress	Yes	No	No	No	No	No	No
Building Code Effectiveness Grading (BCEGs)	No	Yes	No	No	No	No	No	No
ISO Fire Rating	Multiple	Yes	4	Unsure	5 and 7	6	No	No
Economic Development Program	Yes	Yes	No	No	No	No	No	No
Land Use Program	Yes	Yes	No	No	No	No	No	No
Public Education/Awareness	Yes	Yes	No	No	No	No	No	No
Property Acquisition	Yes	Yes	No	No	No	No	No	No
Planning/Zoning Boards	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Stream Maintenance Program	No	No	No	No	No	No	No	No
Tree Trimming Program	No	Yes	No	No	No	No	No	No
Engineering Studies for Streams (Local/County/Regional)	No	Yes	No	No	No	No	No	No
Mutual Aid Agreements	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Studies/Reports/ Maps								

Capabilities	Clinton County	City of Cameron	City of Gower	City of Holt	City of Lathrop	City of Plattsburg	City of Trimble	Village of Turney
Hazard Analysis/Risk Assessment (Local)	No	No	No	No	No	No	No	No
Hazard Analysis/Risk Assessment (County)	Yes	No	No	No	In progress	No	No	No
Flood Insurance Maps	Yes	No	No	No	No	No	No	No
FEMA Flood Insurance Study (Detailed)	Yes	No	No	No	No	No	No	No
Evacuation Route Map	Yes	No	No	No	No	No	No	No
Critical Facilities Inventory	Yes	Yes	No	No	Yes	Yes	No	No
Vulnerable Population Inventory	No	No	No	No	No	No	No	No
Land Use Map	No	Yes	No	No	Yes	Yes	Yes	No
Staff/Department								
Building Code Official	No	Yes	No	No	Yes	Yes	Yes	No
Building Inspector	No	Yes	No	No	Yes	Yes	Yes	No
Mapping Specialist (GIS)	No	Yes	No	No	No	Yes	No	No
Engineer	No	Yes	No	No	No	No	No	No
Development Planner	No	Yes	No	No	No	No	No	No
Public Works Official	No	Yes	Yes	No	Yes	Yes	Yes	No
Emergency Management Coordinator	Yes	Yes	No	No	County	No	No	No
NFIP Floodplain Administrator	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Bomb and/or Arson Squad	No	Yes	No	No	No	No	No	No
Emergency Response Team	Yes	Yes	Yes	No	No	No	No	No
Hazardous Materials Expert	Yes	Yes	No	No	No	No	No	No
Local Emergency Planning Committee	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Emergency Management Commission	No	No	No	No	No	No	No	No
Sanitation Department	No	Yes	No	No	No	No	No	No
Transportation Department	Yes	Yes	No	No	No	No	No	No

Capabilities	Clinton County	City of Cameron	City of Gower	City of Holt	City of Lathrop	City of Plattsburg	City of Trimble	Village of Turney
Economic Development Department	No	No	No	No	No	No	No	No
Housing Department	No	No	No	No	No	No	No	No
Planning Consultant	No	No	No	No	No	No	No	No
Regional Planning Agencies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Historic Preservation	No	No	No	No	No	No	No	No
Non-Governmental Organizations (NGOs)								
American Red Cross	Yes	Yes	No	No	Yes	No	No	No
Salvation Army	Yes	No	No	No	No	No	No	No
Veterans Groups	Yes	Yes	Yes	No	Yes	Yes	No	No
Environmental Organization	Yes	No	No	No	No	No	No	No
Homeowner Associations	Yes	Yes	Yes	No	Yes	No	No	No
Neighborhood Associations	Yes	Yes	Yes	No	No	No	No	No
Chamber of Commerce	Yes	Yes	Yes	No	Yes	Yes	No	No
Community Organizations (Lions, Kiwanis, etc.	Yes	Yes	Yes	No	Yes	Yes	No	No
Financial Resources								
Apply for Community Development Block Grants	Yes	Yes	No	Unknown	No	Yes	Yes	Unknown
Fund projects through Capital Improvements funding	Yes	Yes	No	No	Yes	Yes	Yes	No
Authority to levy taxes for specific purposes	Yes	Yes	Yes	No	Yes	Yes	No	No
Fees for water, sewer, gas, or electric services	No	Yes	Yes	No	Yes	Yes	Yes	No
Impact fees for new development	No	Yes	Yes	No	No	No	Yes	No
Incur debt through general obligation bonds	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Incur debt through special tax bonds	Yes	Yes	Yes	No	No	Yes	Yes	No
Incur debt through private activities	No	No	No	No	No	No	No	No

Capabilities	Clinton County	City of Cameron	City of Gower	City of Holt	City of Lathrop	City of Plattsburg	City of Trimble	Village of Turney
Withhold spending in hazard prone areas	Yes	No	No	No	No	Yes	Yes	No

Source: Data Collection Questionnaire, 2022 (2018 for Holt and Turney)

2.2.10 Special Districts

Special districts, such as the fire districts, participated with their respective jurisdictions and will not be listed separately in this plan.

2.2.11 Public School District Profiles and Mitigation Capabilities

As shown in the map below, the school districts of Cameron R-I, Clinton R-III, and Lathrop R-II is primarily located in Clinton County. East Buchanan is participating in the Buchanan County Hazard Mitigation Plan Update for 2022. **Table 2.13 - 2.16** show the enrollment of the school districts.

Figure 2.4 Map of School Districts

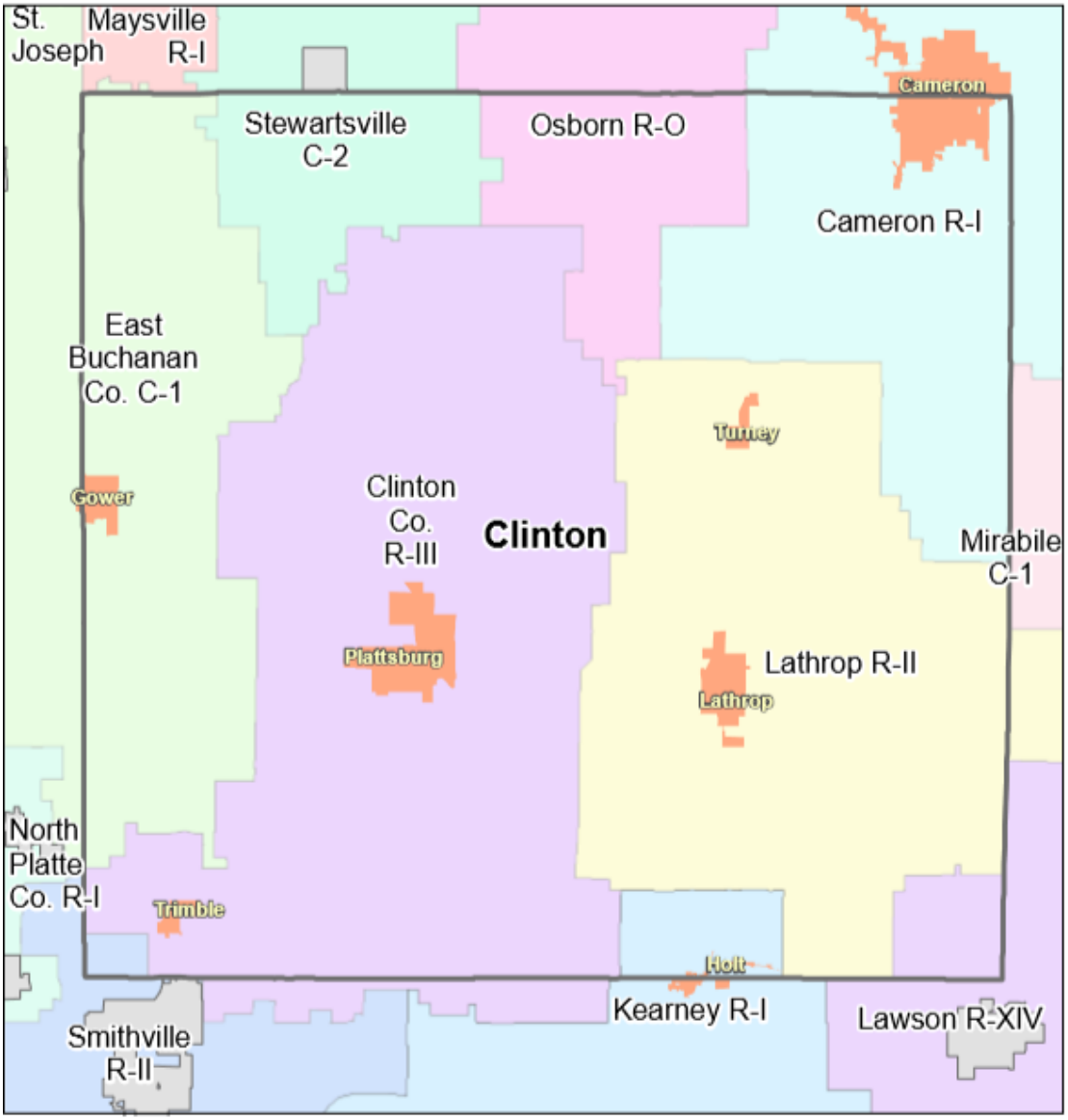


Table 2.24. Cameron R-I School District Buildings and Enrollment Data, 2022

District Name	Building Name	Building Enrolment
Cameron R-I	Cameron High	523
Cameron R-I	Cameron Veterans Middle	338
Cameron R-I	Parkview Elementary	414

Table 2.25. Clinton R-III Buildings and Enrollment Data, 2022

District Name	Building Name	Building Enrolment
Clinton R-III	Plattsburg High	189
Clinton R-III	Clinton Co. R-III Middle	140
Clinton R-III	Ellis Elementary	302

Table 2.26. Lathrop R-II School District Buildings and Enrollment Data, 2022

District Name	Building Name	Building Enrolment
Lathrop R-II	Lathrop High	320
Lathrop R-II	Lathrop Middle	205
Lathrop R-II	Lathrop Elementary	362

(Source: "Building Enrollment 2021-22 Preliminary" < https://apps.dese.mo.gov/MCDS/home.aspx?categoryid=1&view=2>)

Table 2.27. Summary of Mitigation Capabilities-School Districts

Capability	Cameron R-I School District	Clinton Co. R-III School District	Lathrop R-II S School District
Planning Elements			
Master Plan/ Date	No	Yes (2020)	Yes (May 2022)
Capital Improvement Plan/Date	Yes, in the process of adding new HS offices, classrooms, performing arts center, Ag, FACS, and science labs (August 2021)	Yes (2020)	Yes (June 2021)
School Emergency Plan / Date	Yes, We meet biannually with the local law enforcement for planning and training (May 2022)	Yes (2020)	Yes
Weapons Policy/Date	Yes	Yes (2020)	Yes
Personnel Resources			
Full-Time Building Official (Principal)	Yes	3 Building Principals	Yes
Emergency Manager	Yes	No	No
Grant Writer	No	No	No
Public Information Officer	No	No	No
Financial Resources			
Capital Improvements Project Funding	Yes	Yes	Yes
Local Funds	Yes	Yes	Yes
General Obligation Bonds	Yes	Yes	Yes
Special Tax Bonds	No	No	Yes
Private Activities/Donations	No	Yes	Yes
State And Federal Funds/Grants	Yes	Yes	Yes

Capability	Cameron R-I School District	Clinton Co. R-III School District	Lathrop R-II School District
Fire Evacuation Training	Yes	Yes	Yes
Tornado Sheltering Exercises	Yes	Yes	Yes
Public Address/Emergency Alert System	Yes	Yes	Yes
NOAA Weather Radios	Yes	Yes	Yes
Lock-Down Security Training	Yes	Yes	Yes
Mitigation Programs	No	No	No
Tornado Shelter/Safe room	No	No	No
Campus Police	Yes	No	No

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.

Although this plan is an update from 2018, there has been minimal change of risk in the planning area.

This chapter is divided into four main parts:

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

3.1 HAZARD IDENTIFICATION

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

The plan profiles all natural hazards that can affect Clinton County. The natural hazards that can affect the county have been identified in the 2018 Clinton County Hazard Mitigation Plan and the 2018 Missouri State Plan. Natural hazards are naturally occurring climatological, hydrological or geologic events that have a negative effect on people and the built environment. Technological hazards refer to hazards that stem from technological or industrial conditions that can include hazardous materials events, national security hazards, power failure, telecommunications failure, etc. Only natural hazards are included.

3.1.1 Review of Existing Mitigation Plans

The Mitigation Planning Committee (MPC) reviewed hazards identified in the original plan to determine if any conditions had changed. The Missouri Hazard Mitigation Plan was considered in determining local hazards. Clinton County was determined not to be at risk for some natural hazards, due to location, climate or soil structure. These hazards which are not included in the hazard mitigation plan are tsunamis, volcanoes, avalanches, hurricanes, coastal storms, coastal erosion, expansive soils and landslides. Hazards which are included in the mitigation plan, in alphabetical order, are: dam failure, drought, earthquakes, flooding, levee failure, heat waves, land subsidence, severe winter weather, thunderstorms which includes wind and hail storms, tornados and fires.

Several MPC members expressed interest in including public health outbreaks and communication failure in the plan. However, these hazards were not included in the plan due to time constraints. The MPC agreed to revisit the possibility during the next update and to collect information which would be helpful for the hazard profiles and risk assessment.

3.1.2 Review Disaster Declaration History

Federal 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.

Table 3.1 lists the federal FEMA disaster declarations that have occurred in Clinton County from 1965 to present.

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

Disaster Number	Description	Declaration Date Incident Period	Individual Assistance (IA) Public Assistance (PA)
DR-203-MO	Severe Storms & Flooding	July 27, 1965 July 27, 1965	
DR-372-MO	Heavy Rains, Tornadoes & Flooding	April 19, 1973 April 19, 1973	
DR-407-MO	Severe Storms & Flooding	November 1, 1973 November 1, 1973	
DR-439-MO	Severe Storms & Flooding	June 10, 1974 June 10, 1974	
EM-3017-MO	Drought	September 24, 1976 September 24, 1976	
DR-713-MO	Severe Storms & Flooding	June 21, 1984 June 6, 1984-June 16, 1984	
DR-995-MO	Severe Storms & Flooding	July 9, 1993 June 10, 1993-October 25, 1993	
DR-1403-MO	Severe Winter Ice Storm	February 6, 2002 January 29, 2002-February 13, 2002	PA
DR-1463-MO	Severe Storms, Tornadoes, & Flooding	May 6, 2003 May 4, 2003-May 30, 2003	IA, PA
DR-1524-MO	Severe Storms, Tornadoes, & Flooding	June 11, 2004 May 18, 2004-May 31, 2004	IA
EM-3232-MO	Hurricane Katrina Evacuation	September 10, 2005 August 29, 2005-October 1, 2005	PA
DR-1708-MO	Severe Storms & Flooding	June 11, 2007 May 5, 2007-May 18, 2007	IA, PA
DR-1736-MO	Severe Winter Storms	December 27, 2007 December 6, 2007-December 15, 2007	PA
EM-3281-MO	Severe Winter Storms	December 12, 2007 December 8, 2007-December 15, 2007	
EM-3303-MO	Severe Winter Storm	January 30, 2009 January 26, 2009-January 28, 2009	
DR-1934-MO	Severe Storms, Flooding, & Tornadoes	August 17, 2010 June 12, 2010-July 31, 2010	PA
EM-3317-MO	Severe Winter Storm	February 3, 2011 January 31, 2011-February 5, 2011	
DR-1961-MO	Severe Winter Storm & Snowstorm	March 23, 2011 January 31, 2011-February 5, 2001	PA
DR-4238-MO	Severe Storms, Tornadoes, Straight-Line Winds, & Flooding	August 7, 2015 May 15, 2015-July 27, 2015	PA
EM-3482-MO	COVID-19	March 13, 2020 January 20, 2020-present	
DR-4490-MO	COVID-19 Pandemic	March 26, 2020 January 20, 2020-present	IA, PA
DR-4552-MO	Severe Storms, Tornadoes, Straight-Line Winds, & Flooding	July 9, 2020 May 3, 2020-May 4, 2020	PA

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

3.1.3 Research Additional Sources

Sources of data on locations and past impacts of hazards in the planning area include:

- Missouri Hazard Mitigation Plans (2010, 2013, and 2018)
- Previously approved planning area Hazard Mitigation Plan (date)
- Federal Emergency Management Agency (FEMA)
- Missouri Department of Natural Resources (MDNR)
- National Drought Mitigation Center Drought Reporter
- US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics
- National Agricultural Statistics Service (Agriculture production/losses)
- Data Collection Questionnaires completed by each jurisdiction
- State of Missouri GIS data
- Environmental Protection Agency
- Flood Insurance Administration
- Hazards US (HAZUS)
- Missouri Department of Transportation
- Missouri Division of Fire Marshal Safety
- Missouri Public Service Commission
- National Fire Incident Reporting System (NFIRS)
- National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCEI);
- Pipeline and Hazardous Materials Safety Administration
- County and local Comprehensive Plans to the extent available
- County Emergency Management
- County Flood Insurance Rate Map, FEMA
- Flood Insurance Study, FEMA
- SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin
- U.S. Army Corps of Engineers
- U.S. Department of Transportation
- United States Geological Survey (USGS)
- Various articles and publications available on the internet

The only centralized source of data for many of the weather-related hazards is the National Oceanic and Atmospheric Administration's (NOAA) National Center 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. 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.

Due to changes in the data collection and processing procedures over time, there are unique periods of record available depending on the event type in the NWS database. The following timelines show the different time spans for each period of unique data collection and processing procedures.

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

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

3.1.4 Hazards Identified

The hazards that significantly impact the planning area are listed below and were chosen for further analysis in alphabetical order. Not all hazards impact every jurisdiction. For example, Osborn is not located in close proximity to a dam but Holt is in the inundation zone of two high hazard dams. The table below provides a summary of the jurisdictions impacted by each hazard. The symbol “x” indicates the jurisdiction is impacted by the hazard, and a "-" indicates the hazard is not applicable to that jurisdiction.

Table 3.2. Hazards Identified for Each Jurisdiction

Jurisdiction	Dam Failure	Drought	Earthquake	Extreme Temperatures	Flooding (River and Flash)	Land Subsidence/Sinkholes	Levee Failure	Severe Winter Weather	Thunderstorm/Lightning/Hail/ High Wind	Tornado	Wildfire
Clinton County	x	x	x	x	x	-	-	x	x	x	x
City of Cameron	x	x	x	x	x	-	-	x	x	x	x
City of Gower	-	x	x	x	x	-	-	x	x	x	x
City of Lathrop	x	x	x	x	x	-	-	x	x	x	x
City of Holt	x	x	x	x	x	-	-	x	x	x	x
City of Plattsburg	x	x	x	x	x	-	-	x	x	x	x
City of Trimble	-	x	x	x	x	-	-	x	x	x	x
Village of Turney	-	x	x	x	x	-	-	x	x	x	x
Clinton County R-III School District	x	x	x	x	x	-	-	x	x	x	x
Cameron R-1 School District	x	x	x	x	x	-	-	x	x	x	x
Lathrop R-II School District	x	x	x	x	x	-	-	x	x	x	x

3.1.5 Multi-Jurisdictional Risk Assessment

The risk assessment evaluates each participating jurisdiction's vulnerability to each hazard that can affect the planning area. Many of the hazards identified in the risk assessment have the same probability of occurrence throughout the planning area. The hazards that vary across the planning area in terms of risk include dam failure, flash flood, structural or wildland fire, riverine flood and flash flood. These differences are detailed in each hazard profile under geographic location and vulnerability.

The county does not have a record of sinkhole or levee failures so these natural hazards are only briefly covered.

Clinton County is fairly uniform in terms of climate, topography, and building construction characteristics. Cameron is the largest community within the planning area which has more assets at a greater density. Therefore, it has greater vulnerability to weather-related hazards. Conversely, rural areas have agricultural assets (crops/livestock) that are vulnerable to hail damages. These differences will be discussed in greater detail in the vulnerability sections of each hazard.

3.2 ASSETS AT RISK

This section assesses the planning area population, structures, critical facilities and infrastructure, and other important assets that may be at risk to hazards. The inventory of assets for each jurisdiction were derived from parcel data from the Clinton County Assessor, the Clinton County structures dataset downloaded from Missouri Spatial Data Information Service (MSDIS), local jurisdiction data collection questionnaires, and HAZUS MH 4.2.

3.2.1 Total Exposure of Population and Structures

Unincorporated County and Incorporated Cities

In the following three tables, population data is based on 2010 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 following link: <https://drive.google.com/drive/folders/0Bzg99s866kWocFB5Y3hCRlRuWWM?resourcekey=0-iMJnpji7_9E6VZcCnElHQw>. 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 in **Table 3.3**. 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	2020 Annual Population Estimate	Building Count	Building Exposure ($)	Contents Exposure ($)	Total Exposure ($)
City of Cameron	8,513	2,040	$326,614,000	$175,539,000	$502,153,000
City of Gower	1,533	609	$105,900,000	$51,375,000	$157,275,000
City of Lathrop	2,271	886	$143,128,000	$79,502,000	$222,630,000
City of Plattsburg	2,222	1,081	$169,876,000	$95,462,000	$265,338,000
City of Trimble	573	273	$39,184,000	$20,198,000	$59,382,000
Village of Turney	114	112	$16,462,000	$11,741,000	$28,203,000
Unincorporated County	5,487	8,770	$647,115,000	$338,613,000	$985,728,000
Totals	21,184	13,771	$907,064,000	$772,430,000	$2,220,709,000

Source: U.S. Bureau of the Census, Annual population estimates/ 5-Year American Community Survey 2019; Building Count and Building Exposure, Missouri GIS Database from SEMA Mitigation Management; Contents Exposure derived by applying multiplier to Building Exposure based on Hazus MH 2.1 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	Residential	Commercial	Industrial	Agricultural	Government and Education	Total
City of Cameron	$289,676,000	$29,642,000	$492,000	$125,000	$6,678,000	$326,614,000
City of Gower	$84,982,000	$8,563,000	$0	$24,000	$12,330,000	$105,900,000
City of Lathrop	$125,153,000	$11,034,000	$3,607,000	$28,000	$3,308,000	$143,128,000
City of Plattsburg	$141,797,000	$14,821,000	$6,067,000	$192,000	$6,999,000	$169,876,000
City of Trimble	$37,770,000	$1,153,000	$0	$101,000	$161,000	$39,184,000
Village of Turney	$12,323,000	$1,153,000	$2,951,000	$35,000	$0	$16,462,000
Unincorporated County	$592,156,000	$27,007,000	$8,854,000	$16,851,000	$2,247,000	$647,115,000
Totals	$1,283,857,000	$93,373,000	$21,971,000	$17,356,000	$31,723,000	$1,448,279,000

Source: Missouri GIS Database, SEMA Mitigation Management Section

Table 3.5. Building Counts by Usage Type

Jurisdiction	Residential Counts	Commercial Counts	Industrial Counts	Agricultural Counts	Government/ Education	Total
City of Cameron	1,810	180	3	36	11	2,029
City of Gower	531	52	0	7	19	609
City of Lathrop	782	67	22	8	7	886
City of Plattsburg	886	90	37	55	13	1,081
City of Trimble	236	7	0	29	1	273
Village of Turney	77	7	18	10	0	112
Unincorporated County	3,700	164	54	4,838	14	8,770
Totals	8,022	567	134	4,983	65	13,760

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	Enrollment	Building Count	Building Exposure ($)	Contents Exposure ($)	Total Exposure ($)
Cameron R-I	1,710	4	$39,160,718	$6,269,348	$45,430,066
Clinton Co. R-III	644	3	$32,438,138	$4,489,993	$36,928,131
Lathrop R-II	911	3	$12,000,000		> $12,000,000

Source: https://dese.mo.gov/school-data; The Building Exposure, Contents Exposure, and Total Exposure amounts come from the completed Data Collection Questionnaires from Public School Districts. In general, the school districts obtain this information from their insurance coverage amounts.

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 from local, state, and federal sources.

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

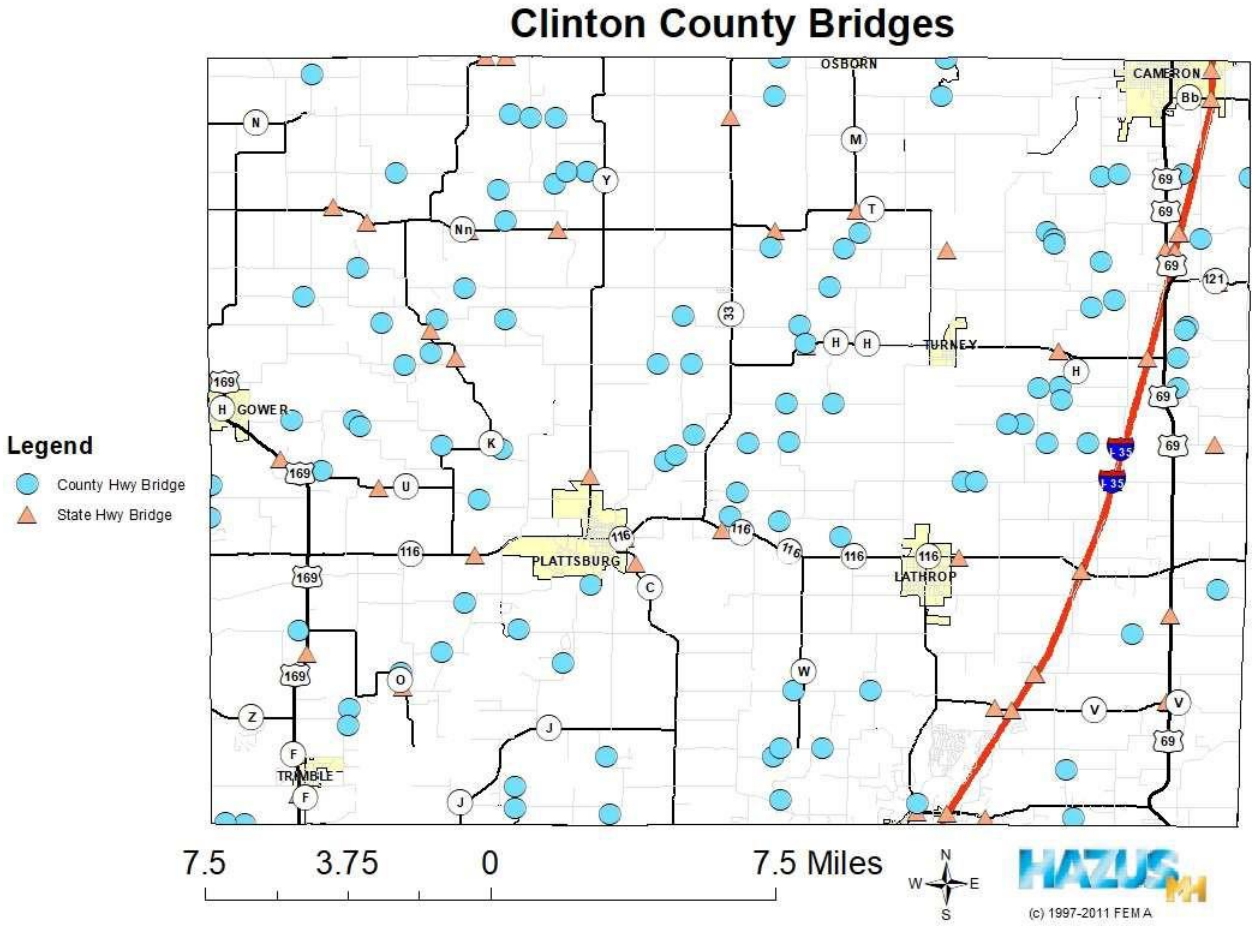
Jurisdiction	Airport Facility	Bus Facility	Childcare Facility	Communications Tower	Electric Power Facility	Emergency Operations	Fire Service	Government	Housing	Shelters	Highway Bridge	Hospital/Health Care	Military	Natural Gas Facility	Nursing Homes	Police Station	Potable Water Facility	Rail	Sanitary Pump Stations	School Facilities	Stormwater Pump Stations	Tier II Chemical Facility	Wastewater Facility	TOTAL
City of Cameron	1	1	1	1	0	0	1	1	7	0	2	2	0	0	3	1	0	0	0	5	0	0	0	26
City of Gower	0	0	2	0	0	0	1	1	0	0	1	0	0	1	1	1	0	0	0	2	0	0	0	10
City of Lathrop	0	0	0	0	0	0	1	2	1	0	1	0	0	0	0	1	1	0	5	3	0	0	1	16
City of Holt	0	0	0	0	0	0	1	1	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	6
City of Plattsburg	0	0	3	0	0	1	1	3	2	0	4	0	0	0	2	2	1	0	3	3	0	0	1	26
City of Trimble	0	0	0	0	0	0	1	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	1	6
Village of Turney	0	0	0	0	0	0	1	1	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	2
Unincorporated County	2	0	2	12	5	0	0	3	0	0	139	0	0	2	0	0	0	0	0	0	0	5	2	172
Totals	3	1	8	13	5	1	7	14	11	0	151	2	0	3	6	7	2	0	8	13	0	5	5	265

Source: Missouri 2018 State Hazard Mitigation Plan and Hazard Mitigation Viewer; Data Collection Questionnaires; Hazus MH 4.2, resources.hud.gov/#, etc.

Bridges: Figure 3.1 shows the locations of bridges in the planning area included in the National Bridge Inventory data set. According to info from the Federal Highway Administration, http://www.fhwa.dot.gov/bridge/nbi/no10/county.cfm, there are 152 bridges in the county, with 53 rated in good condition, 79 rated in fair condition and 20 rated as poor condition.

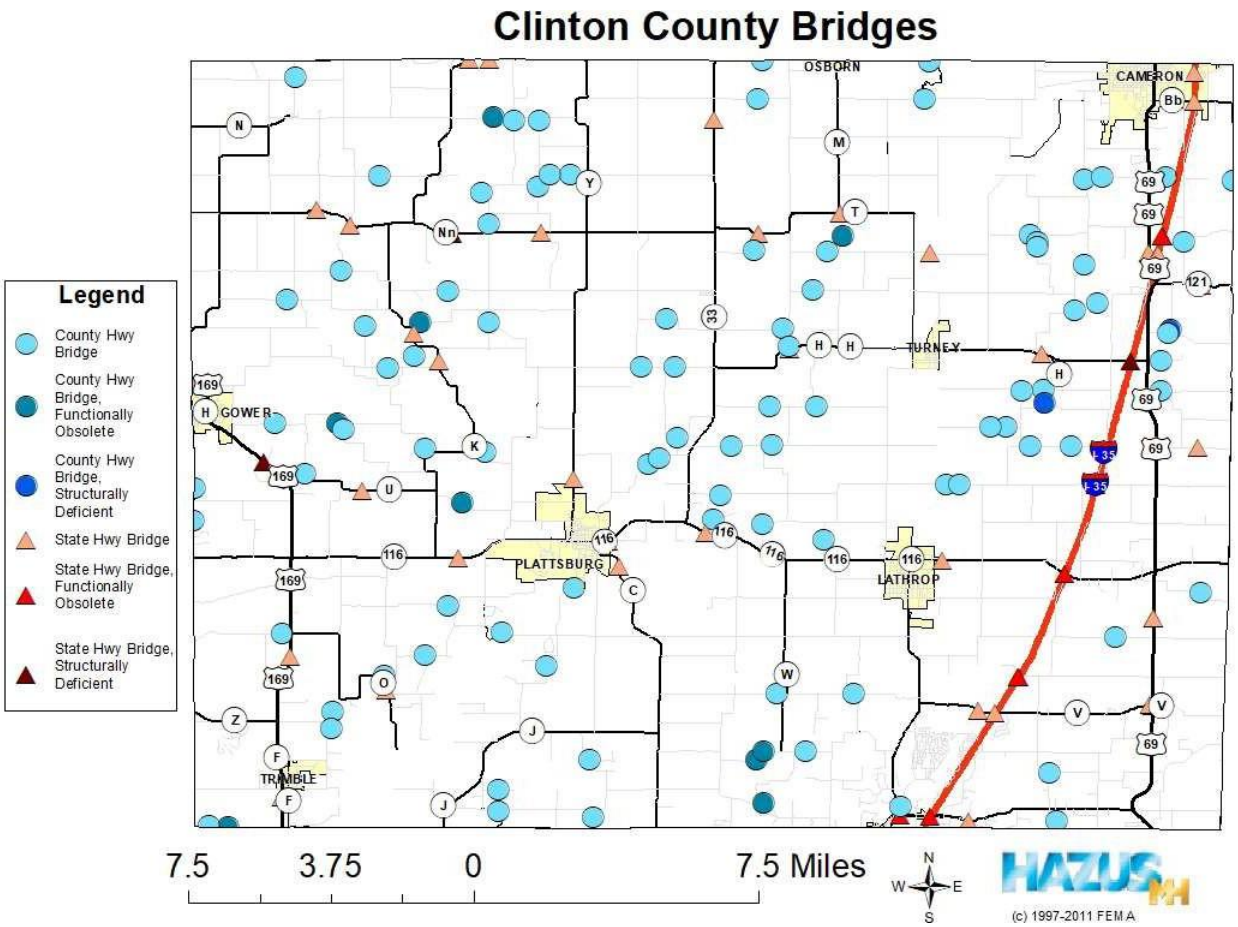
The term "scour critical" refers to one of the database elements in the National Bridge Inventory. This element is quantified using a "scour index", which is a number indicating the vulnerability of a bridge to scour during a flood. Bridges with a scour index between 1 and 3 are considered "scour critical," or a bridge with a foundation determined to be unstable for the observed or evaluated scour condition. There are no scour critical bridges identified in Clinton County, according to Hazus MH 4.2.

Figure 3.1. Clinton County Bridges



Source: Hazus MH 4.2

Figure 3.2. Clinton County Structurally Deficient Bridges



Source: Hazus MH 4.2

3.2.3 Other Assets

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

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

Specific natural, historic, cultural, and economic assets in the planning area are included below.

<u>Threatened and Endangered Species:</u> **Table 3.8** shows Federally Threatened, Endangered,

Proposed and Candidate Species in the county.

Table 3.8. Threatened and Endangered Species in Clinton County

Common Name	Scientific Name	Status
Gray Bat	*Myotis grisescens*	Endangered
Indiana Bat	*Myotis sodalis*	Endangered
Northern Long-eared Bat	*Myotis septentrionalis*	Threatened
Monarch Butterfly	*Danaus plexippus*	Candidate

Source: U.S. Fish and Wildlife Service, http://www.fws.gov/midwest/Endangered/lists/missouri-cty.html

Natural Resources: The Missouri Department of Conservation (MDC) provides a database of lands the MDC owns, leases, or manages for public use. **Table 3.9** to provide the names and locations of parks and conservation areas (CA) in the planning area.

Table 3.9. Parks in Clinton County

Park / Conservation Area	Address	City
McGee Family Conservation Area	Route C South	Plattsburg, MO
Hartell (Ronald and Maude) Conservation Area	280 Street	Turney, MO
Lathrop Bridge Access	Highway 116 E two miles	Plattsburg, MO
USACE (Judge Birch Access)	Route C South	Plattsburg, MO

Source: https://mdc.mo.gov/discover-nature/places

Park	Address	City
Watkins Mill State Park	26600 Park Road North	Lawson, MO 64062
Wallace State Park	10621 NE Hwy. 121	Cameron, MO 64429
Trice-Dedman Memorial Woods	Highway 116 E three miles	Lathrop, MO 64465

Source: Google Maps; https://www.nature.org/en-us/get-involved/how-to-help/places-we-protect/trice-dedman-memorial-woods/;

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 lists properties that are on the National Register of Historic Places.

Table 3.10. Clinton County Properties on the National Register of Historic Places

Property	Address	City	Date Listed
Stoutimore (David L. and Sallie Ann) House	501 S. Birch Ave.	Plattsburg	7/23/2013

Source: Missouri Department of Natural Resources – Missouri National Register Listings by County, https://mostateparks.com/page/84566/clinton-county-national-register-listings

Economic Resources: **Table 3.11** shows major non-government employers in the planning area.

Table 3.11. Major Non-Government Employers in Clinton County, 2021

Employer Name	Main Locations	Product or Service	Employees
Correctional Center	Cameron	Prison	507
Cameron Regional Medical Center	Cameron	Healthcare	400
Cameron Veterans Home	Cameron	Healthcare	267
Case New Holland	Cameron	Manufacturing	118
Wal-Mart SuperCenter	Cameron	Retail	300
Cameron Mutual Insurance	Cameron	Insurance	103
Cameron Schools	Cameron	Education	228

Source: Data Collection Questionnaires; local Economic Development Commissions

Agriculture: Agriculture continues to be an important part of the county's economy. According to the 2017 Census of Agriculture, https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Census_by_State/Missouri/, crop and livestock sales are in excess of $81,835,00. There are 1,139 people employed as farmers or farm hands in Clinton County. There are 684 farms in the county and 222,361 acres of farmland.

3.3 LAND USE AND DEVELOPMENT

3.3.1 Development Since Previous Plan Update

The overall population in Clinton County has increased slightly in the last decade. The largest population increased appears to be in City of Lathrop, while the largest population decline is in the City of Cameron area. There does not appear to be a clear connection between urban vs. rural growth/decline as the largest community and the county seat saw population decline, but so did smaller villages, all while the third and sixth largest communities saw growth. **Table 3.12** shows the population growth statistics for all communities in Clinton County as well as the county as a whole

Table 3.12. Clinton County Population Growth, 2010-2020

Jurisdiction	Total Population 2010	Total Population 2020	2010-2020 # Change	2010-2020 % Change
City of Cameron	9,933	8,513	-1,420	-14.3%
City of Gower	1,526	1,533	+7	+0.45%
City Lathrop	2,086	2,271	+185	+8.87%
City of Holt	447	471	+24	+5.37%
City of Plattsburg	2,319	2,222	-97	-4.18%
City of Trimble	646	573	-73	-11.3%
Village of Turney	148	114	-34	-23%
Total (Including unincorporated)	20,743	21,184	+441	+2.13%

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

Population growth or decline is generally accompanied by increases or decreases in the number of housing units, and this does appear to correlate in the case of Clinton County. **Table 3.13** shows the change in numbers of housing units in the planning area from 2010 to 2020.

Table 3.13. Change in Housing Units, 2010-2020

Jurisdiction	Housing Units 2010	Housing Units 2020	2010-2020 # Change	2010-2020 % Change
City of Cameron	2,951	2,925	-26	-0.9%
City of Gower	598	589	-9	-1.5%
City Lathrop	890	965	+75	+8.43%
City of Holt	193	196	+3	+1.55%
City of Plattsburg	1,080	1,070	-10	-0.9%
City of Trimble	283	272	-11	-3.89%
Village of Turney	73	64	-9	-12.33%
Total (Including unincorporated)	8,876	8,934	+58	+2.13%

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

The changes in development for each participating jurisdiction since the previous plan update is discussed below. Within each hazard section under the heading “Previous and Future Development” these changes in development that have impacted the community’s vulnerability to specific hazards, will

be discussed.

Clinton County
Clinton County is seeing significant residential construction in rural subdivisions in and across the southern portion of the County, but as no construction is permitted in flood plans, there have been no significant changes that would alter the county's risk to the natural hazards that were identified in 2018 plan. The County is apply for HMGP funding for eight storm sirens in rural portions of the county to improve sever storm warning preparedness.

City of Cameron
Cameron has experienced a 14.3 percent population decrease since 2010. Commercial and residential growth has occurred at the east side of town, near the I-35 and Highway 36 interchange, prompting the local government to look into acquiring more outdoor warning sirens to provide coverage to the area. There are plans for a 380-acre business park on the southeast side of town.

One significant change that would have attributed to the population decline in the Cameron area is the closing of the Crossroads Correctional Center state prison in the community. The the facility, which once housed up to 1,440 inmates who were included in local population counts, closed in 2019. (Source: https://www.newspressnow.com/news/local_news/government/downward-trend-report-points-to-population-loss/article_cfd9ec8a-cf9a-11eb-a4f4-8fb776e2404c.html)

Overall, the county's risk to natural hazard remains the same as in the 2018 plan.

City of Gower
Gower has experienced a 0.45 percent population increase since 2010. The community's risk to natural hazards remains the same as in the 2018 plan.

Village of Grayson
No Census data prior to 2010 could be identified, but 2020 Decennial estimates put the population of Grayson at 61. The community's risk to natural hazards remains the same as in the 2018 plan.

City of Holt
Holt has experienced a 5.37 percent population increase since 2000. The community's risk to natural hazards remains the same as in the 2018 plan but it's possible that building exposure has increased due to the community's location in a flood plain and near dam inundation zones.

City of Lathrop
Lathrop's has experienced an 8.87 percent population increase since 2010. The community's risk to natural hazards remains the same as in the 2018 plan.

City of Plattsburg
Plattsburg has experienced a 4.18 percent population decrease since 2010. The community's risk to natural hazards remains the same as in the 2018 plan.

City of Trimble
Trimble has experienced an 11.3 percent population decrease since 2010. The community's risk to natural hazards remains the same as in the 2018 plan.

Village of Turney
Turney has experienced a 23 percent population decrease since 2010. The community's risk to natural hazards remains the same as in the 2018 plan.

3.3.2 Future Land Use and Development

The remaining discussion in this section provides future growth and development information, where

available, relative to each participating jurisdiction.

City of Cameron
The community has a comprehensive plan and land use plan. Future development is expected in Cameron's southeast area with the 380-acre business park and east with another truck stop expansion underway near at the intersection of Highway BB and Bob F. Griffin Road near Cameron Regional Medical Center. This growth will leave some areas with an increased number of people outside of the range of tornado sirens.

Cameron has also initiated a new demolition program called "Dilapidated to New" in which the City encourages owners to remove structures that are substandard, hazardous, or dangerous. Each year, the city appropriates funds to partner with residential property owners to remove these structures. (Source: < https://icma.org/2021-community-sustainability-award-under-10000-population>) While the program is fairly new, it can be noted that in comparing Cameron's housing characteristics from 2000 to 2019, the amount of homes built prior to 1970 decreased from 53 percent (1,355 units) to 39 percent (1,136 units) of total housing units in the community.

Within the last five years, no housing has been erected in the 100-year flood plain. Other residential development for Cameron, Missouri is located in Weston Estates that is own by a local developer. Weston Estates is in phase two of the development which includes the addition of 26 single family homes.

Village of Grayson
The community does not have a comprehensive plan or land use plan. No significant future development is anticipated.

City of Gower
The community does not have a comprehensive plan but has a land use plan. No significant future development is anticipated.

City of Holt
The community does not have a comprehensive plan or land use plan. No significant future development is anticipated.

City Lathrop
The community has a comprehensive plan but not a land use plan. The community has annexed three miles of property to Interstate 35 where a sewer extension is being built out to. The community expects future growth there. Work continues and nears completion on a second phase of water upgrades that will include a new tower and the wastewater treatment and collection system. In 2018 the community added an additional storm siren, bringing them to three sirens. The City has submitted an HMGP application to SEMA for a fourth siren that would be located near the elementary school.

City of Plattsburg
The community has a comprehensive plan and land use plan. Plattsburg has seen development in a very large subdivision in the southwest portion of the town, but it is nearing capacity. No significant future development is anticipated.

City of Trimble
The community does not have a comprehensive plan or land use plan. The City reported that the Hwy 169 corridor is a growth area for the community. No significant future development is anticipated.

Village of Turney
The community does not have a comprehensive plan or land use plan. No significant future

development is anticipated.

School District's Future Development

Cameron R-I School District

Since 2010, the District has built a new middle school that is constructed close to FEMA standards. The district is in the process of building a new performing arts center, science labs, FACs, Ag facilities, and high school offices.

Clinton County R-III School District

In 2020, the District built a secure link between the middle and high schools. No significant future development is anticipated.

Lathrop R-II School District

The District has constructed new sports facilities for baseball, softball, and football. No significant future development is anticipated.

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, severity/magnitude/extent, previous events, future probability, a discussion of risk variations between jurisdictions, and how anticipated development could impact risk. At the end of each hazard profile will be a vulnerability assessment, followed by a summary problem statement.

Hazard Profiles

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the…location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

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

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

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

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

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

Probability of Future Occurrence: The frequency of recorded past events is used to estimate the likelihood of future occurrences. Probability was determined by dividing the number of recorded events by the number of years and multiplying by 100. This gives the percent chance of the event happening in any given year. For events occurring more than once annually, the probability will be reported 100% in any given year, with a statement of the average number of events annually.

The probability of future occurrence should also consider changing future conditions, including the effects of long-term changes in weather patterns and climate on the identified hazards. This is discussed when applicable.

Vulnerability Assessments

Requirement §201.6(c)(2)(ii): The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

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

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

Requirement §201.6(c)(2)(ii)(C): The plan should describe vulnerability in terms of providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

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

Following the hazard profile for each hazard will be the vulnerability assessment. The vulnerability assessment further defines and quantifies populations, buildings, critical facilities, and other community assets at risk to damages from natural hazards. The vulnerability assessments will be based on the best available county-level data, which is in the Missouri Hazard Mitigation Plan (2013), referred to as the 2013 State Plan. The county-level assessments in the 2013 State Plan were based on the following sources:

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

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

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

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

Vulnerability Overview

Potential Losses to Existing Development: This sections includes the types and numbers, of buildings, critical facilities, etc.

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

Each hazard analysis will conclude with a brief summary of the problems created by the hazard in the planning area, and possible ways to resolve those problems. Jurisdiction-specific information will be included in those cases where the risk varies across the planning area.

3.4.1 Flooding (Riverine and Flash)

Hazard Profile

Hazard Description

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

Flooding caused by levee and dam failure is discussed in **Section 3.4.2** and **Section 3.4.3** respectively. It will not be addressed in this section.

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

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

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

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

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

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

Geographic Location

Riverine flooding is most likely to occur in SFHAs. Maps in **Figures 3.3 to 3.9** show SFHAs for Clinton County and jurisdictions that have a 100-year floodplain within their city limits. The 100-year floodplain boundaries are based on Hazus MH 4.2, which closely, but not completely, follows the preliminary Flood Insurance Rate Maps (FIRMSs). According to these maps, no schools or critical facilities are located in SFHAs. A number of critical and essential facilities are identified on the community flood maps.

Figure 3.3. Clinton County 100-year Floodplain

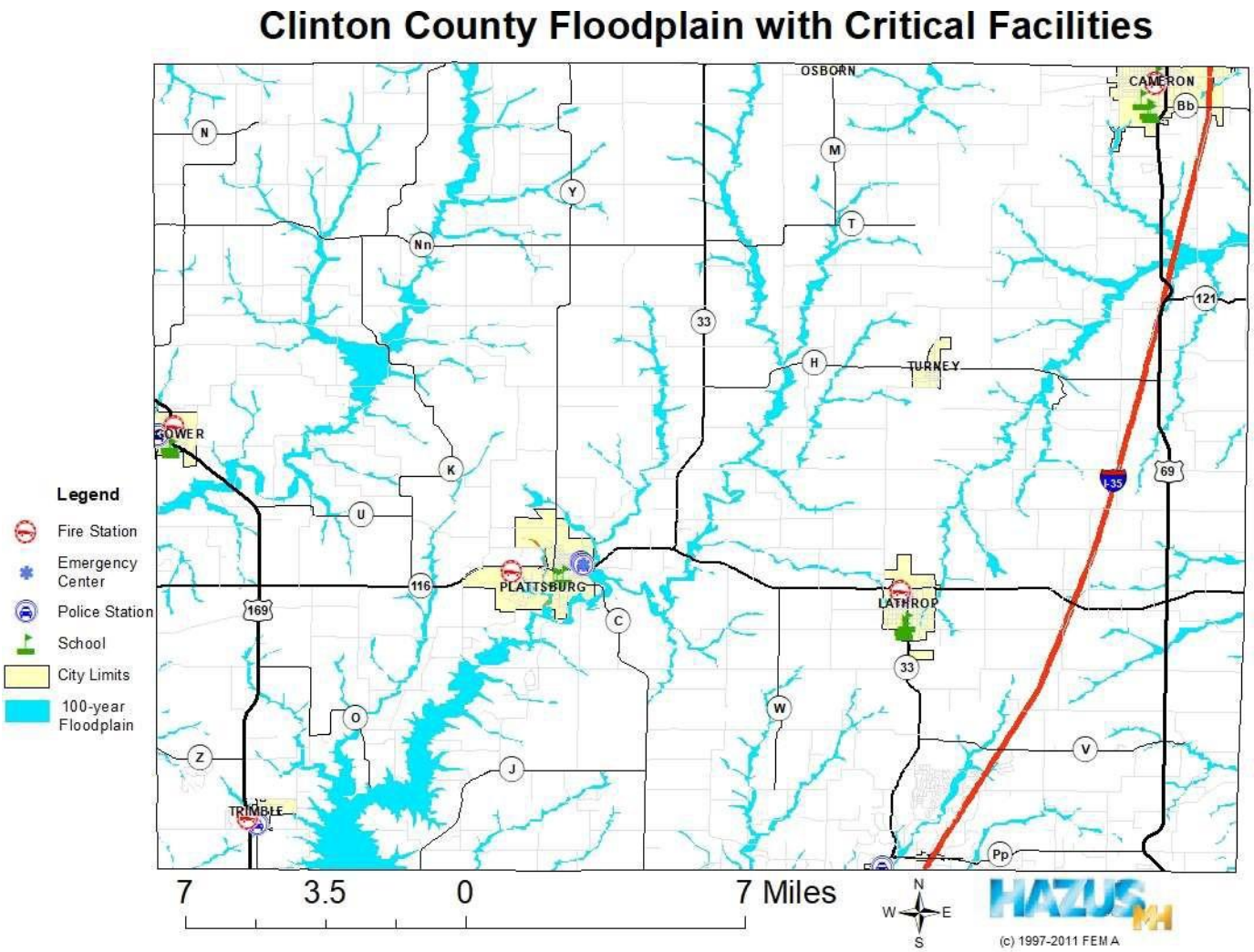


Figure 3.4. Cameron 100-year Floodplain

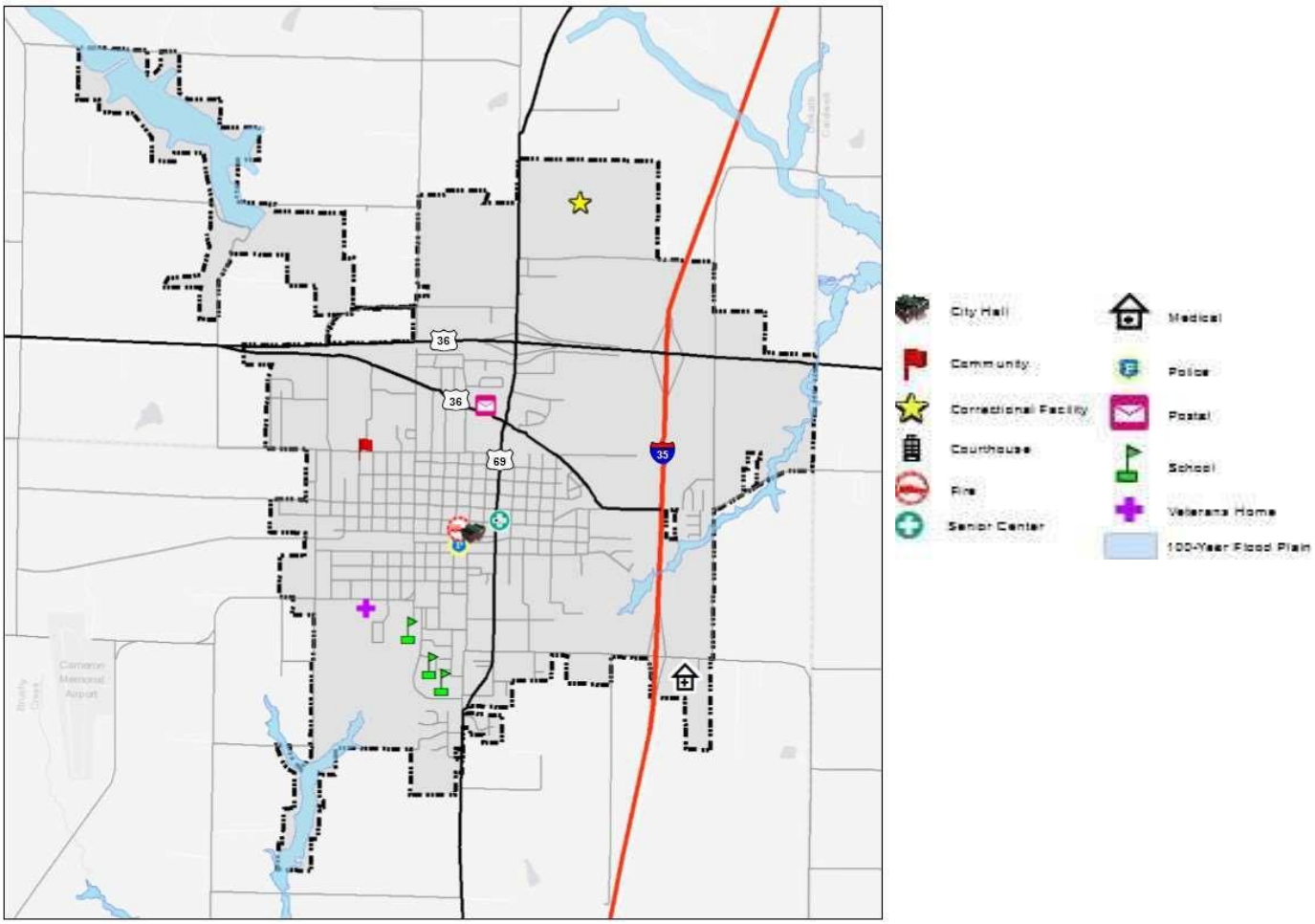


Figure 3.5. Gower 100-year Floodplain

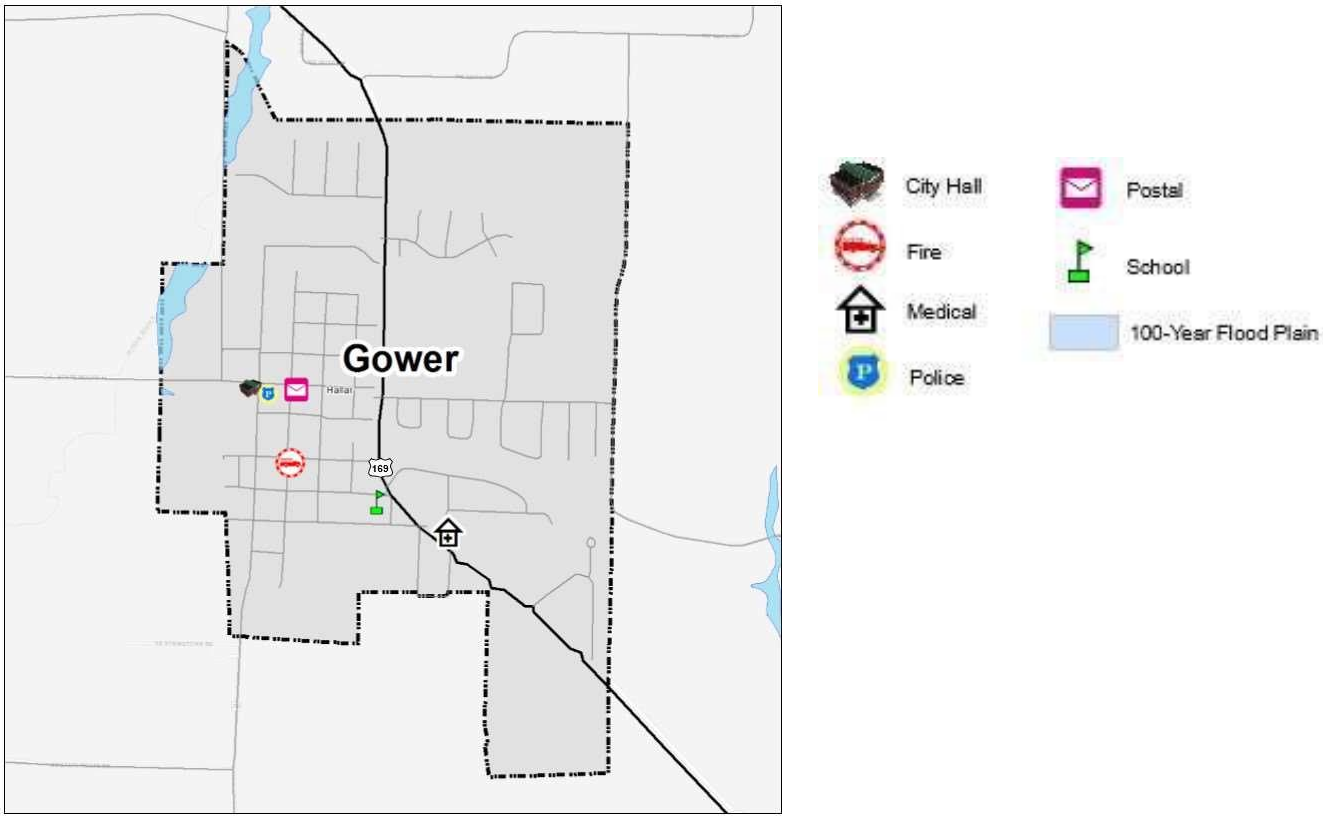


Figure 3.6. Holt 100-year Floodplain

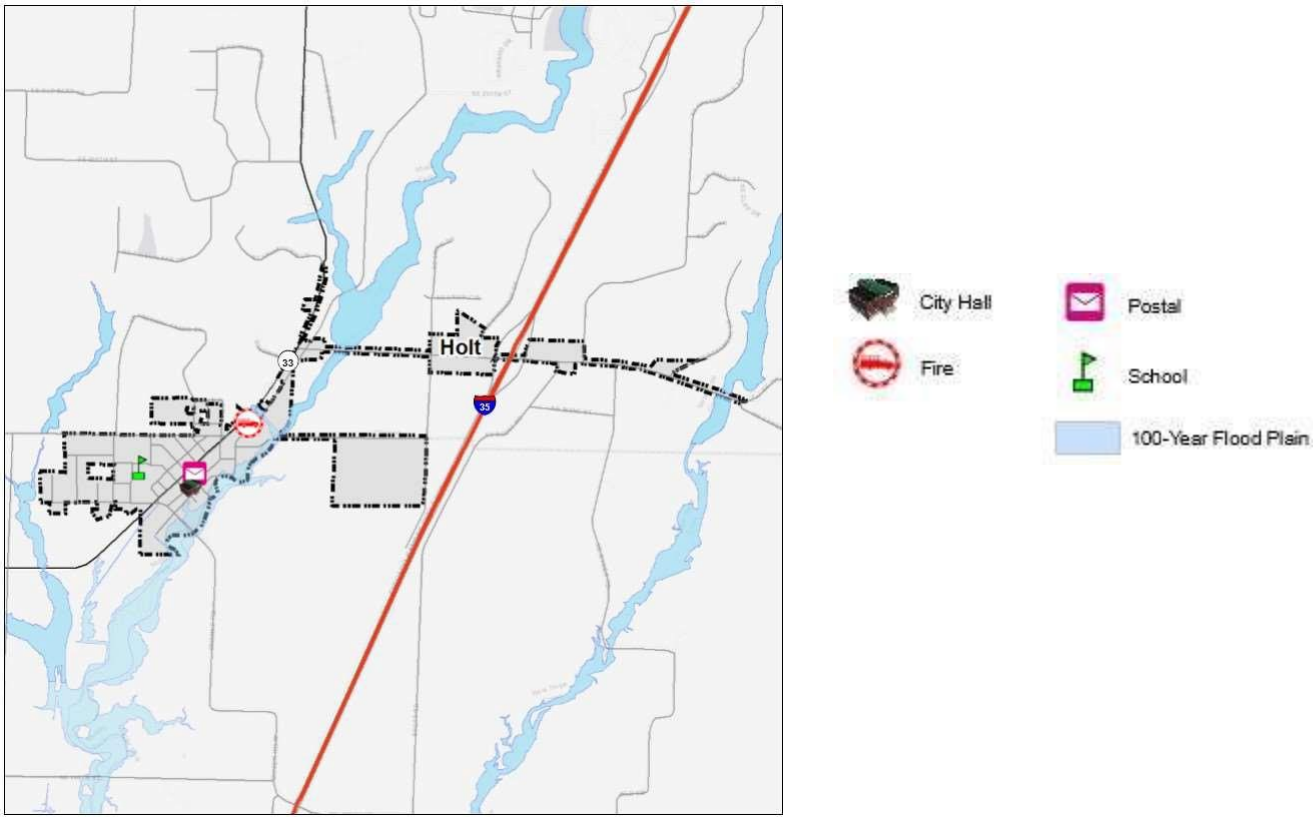


Figure 3.7. Lathrop 100-year Floodplain

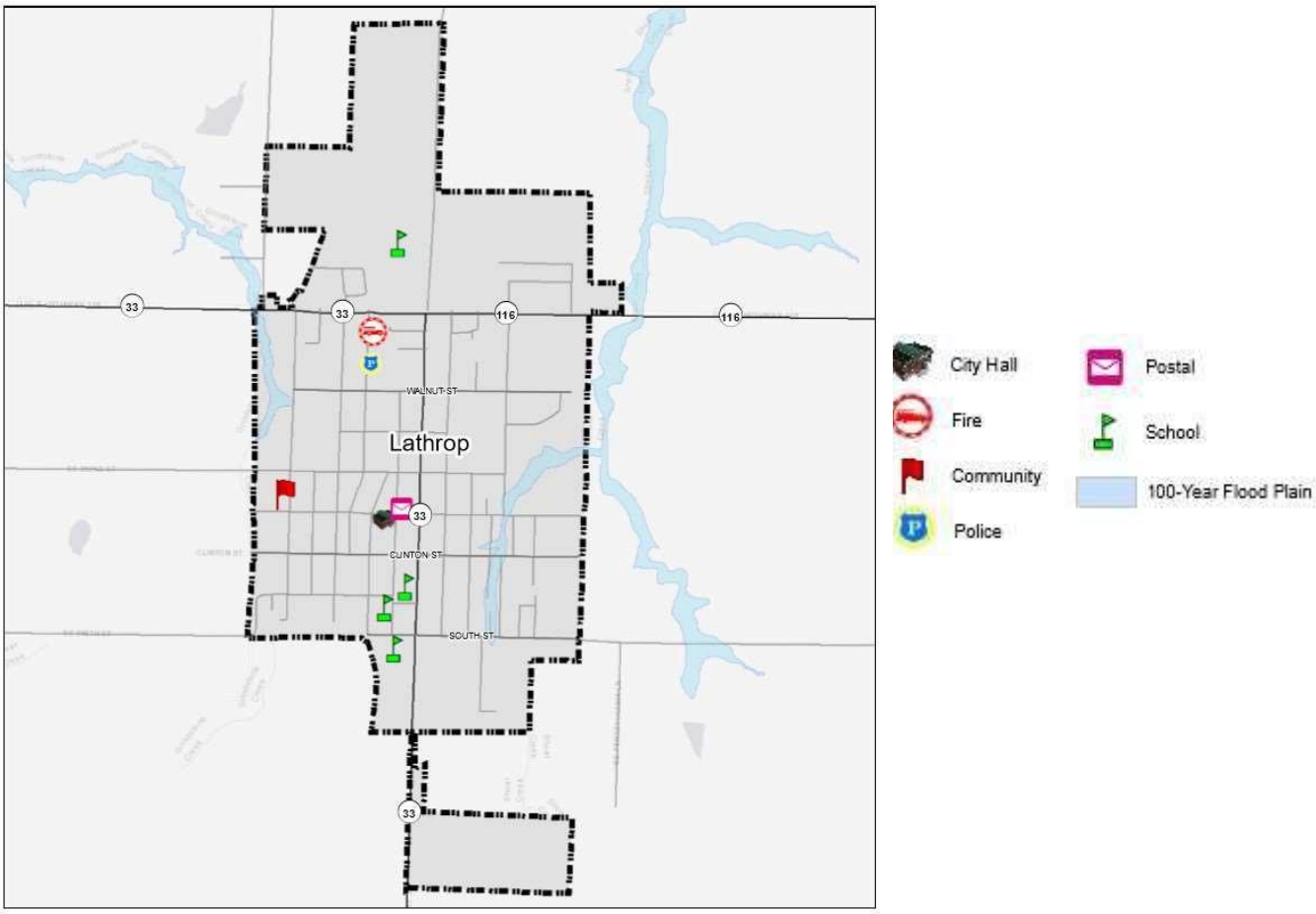


Figure 3.8. Plattsburg 100-year Floodplain

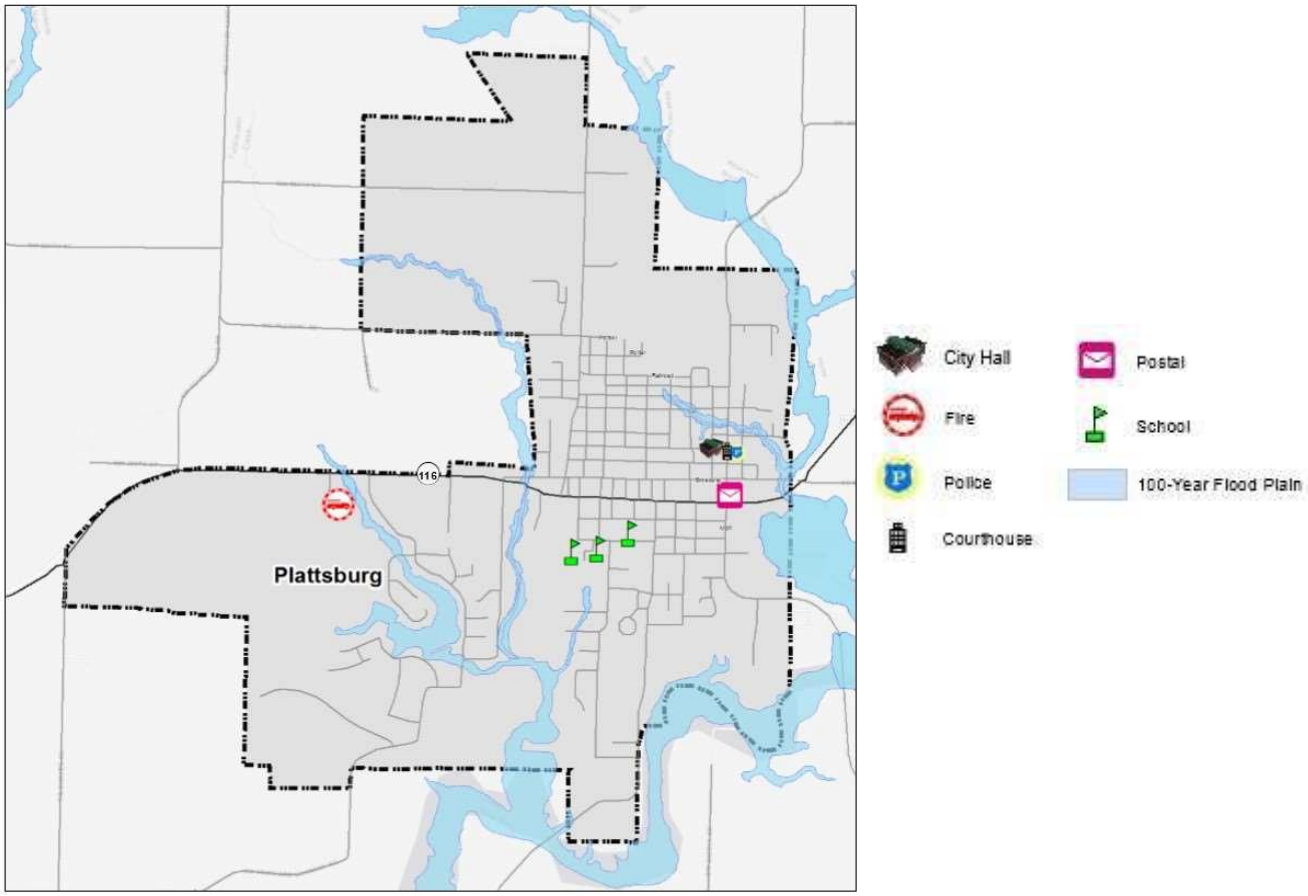
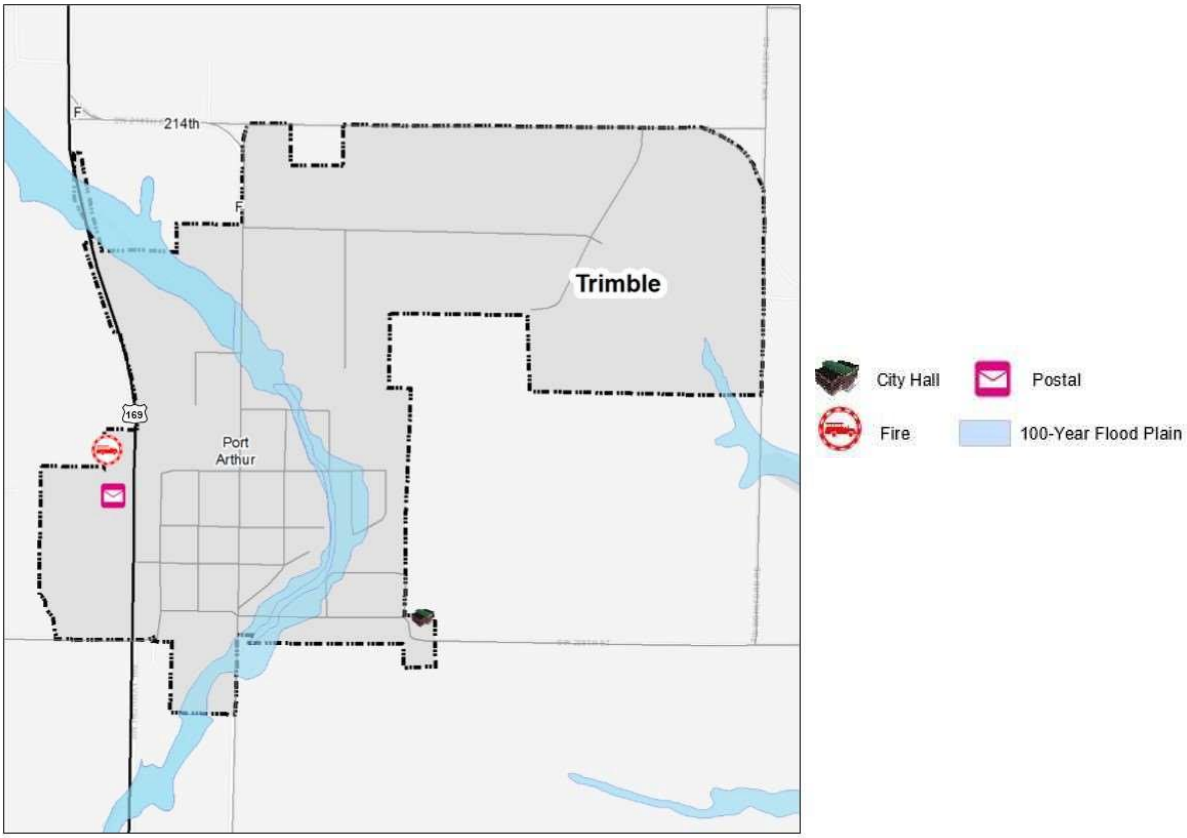


Figure 3.9. Trimble 100-year Floodplain



There is no 100-year floodplain in Turney city limits and information for Grayson was not available.

Flash flooding events pose the most pervasive hazard of the two flood types in the county due to permeability of soils, slopes, increasing urban development and extensive network of streams and rivers. Sustained rainfall or downpours at the rate of one inch per hour have caused street flooding in incorporated areas and made a significant number of low water crossings impassible. In the instances of low water crossings, flash flooding occurs in the floodplain while low-lying areas in all jurisdictions are susceptible to flash floods outside the 100-year floodplain. They also occur in areas without adequate drainage to carry away the amount of water that falls during intense rainfall events. A review of the NCEI storm event database determined revealed 13 reported flood events in the planning area from January 2001 to September 2021. These are listed in **Table 3.14**.

Table 3.14. Clinton County NCEI Flood Events by Location, 2001-2021

Location	# of Events
Clinton County Unincorporated	4 flash flood events
Cameron - 5/7/2007	1 flood event
Gower- 8/16/2009, 6/26/2021	1 flash flood, 1 flood event
Plattsburg- 5/29/2004, 6/21/2015, 7/6/2015, 6/25/21	4 flash flood events
Perrin – 9/18/2004, 5/4/2015	1 flash flood, 1 flood event
Turney- 8/16/2009, 6/26/2015	2 flash flood events
Total	**15**

Source: National Centers for Environmental Information, 1/13/22

Strength/Magnitude/Extent

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

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

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

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

National Flood Insurance Program (NFIP) Participation

Table 3.15 lists NFIP participation in the planning area. **Table 3.16** lists the number of policies in force, amount of insurance in force, number of closed losses, and total payments for each jurisdiction.

Table 3.15. NFIP Participation in Clinton County

Community ID #	Community Name	NFIP Participant (Y/N/Sanctioned)	Current Effective Map Date	Regular-Emergency Program Entry Date
290799	Clinton County	Y	04/04/11	06/18/87
290104	City of Cameron	Y	04/04/11 (M)	08/24/84
290105	City of Gower	Y	04/04/11 (M)	07/18/85
290093A	City of Holt	Y	08/03/15	04/17/80
290704	City of Lathrop	Y	04/04/11 (M)	07/18/85
290106	City of Plattsburg	Y	04/04/11	02/02/83
290510	City of Trimble	Y	04/04/11	04/01/82

Source: NFIP Community Status Book, Date 1-13-22; BureauNet, http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-status-book; M= No elevation determined – all Zone A, C, and X: NSFHA = No Special Flood Hazard Area; E=Emergency Program

Table 3.16. NFIP Policy and Claim Statistics as of February 7, 2022

Community Name	Policies in Force	Insurance in Force	Closed Losses	Total Payments
Clinton County	3	$581,500	-	-
City of Gower	-	-	1	$9,928.00
City of Lathrop	6	$826,900	3	$26,706.28
City of Plattsburg	1	$1,253,000	1	$1,992.84
City of Trimble	1	$1,121,000	1	$6,841.92

Source: NFIP Community Status Book, [insert date]; BureauNet, http://bsa.nfipstat.fema.gov/reports/reports.html; *Closed Losses are those flood insurance claims that resulted in payment. Loss statistics are as of 2-7-22.

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, there are no repetitive loss properties in the planning area.

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 are no validated Severe Repetitive Loss properties in the county.

Previous Occurrences

Past Presidential Flooding Disaster Declarations in Clinton County and their impact are listed in **Table 3.17**.

Table 3.17. Presidential Disaster Declarations for Flood, 1975-2021

Date	Declaration #	Disaster
July 9, 1993	DR 995	Flooding, severe storm (IA)(PA)
May 6, 2003	DR 1463	Severe storms, tornado and flooding (IA)
June 11, 2004	DR 1524	Severe Storms, Tornadoes, and Flooding (IA)
June 11, 2007	DR 1708	Severe storms and flooding (IA)
August 17, 2010	DR 1934	Severe storms, flooding and tornado (PA)

Tables 3.18 and 3.19 are based off NCEI information for the last 21 years for both flash and river flooding.

Table 3.18. NCEI Clinton County Flash Flood Events Summary, 2000 to 2021

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2004	2	0	0	0	0
2009	2	0	0	$1,000	0
2010	1	0	0	0	0
2015	6	0	0	0	0
Total	**11**			**$1,000**	

Source: NCEI, data accessed 1-13-2022

The 2009 event was during heavy rains resulting in water flowing over Highway A in Turney. One vehicle accident was reported with this flooding. A flood event in 2015 resulted in 1.5 foot of water briefly running over several roads in Plattsburg.

Table 3.19. NCEI Clinton County Riverine Flood Events Summary, 2000 to 2021

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2007	1	0	0	0	0
2015	1	0	0	0	0
2021	1	1	3 Indirect	$10,000	0

Source: NCEI, data accessed 1-13-2022

In 2021, a flood-related death occurred in the planning area. According to information in the NCEI Storm Events database, a cluster of storms in the afternoon and evening hours on June 24, 2021, brought considerable rainfall to northern Missouri, with some areas receiving between six to 10 inches of rain. Castille Creek near Gower was reportedly high enough to cover the road at County Line Rd. A vehicle entered flood waters and was swept off the road into a nearby field where one occupant drowned. Three other people in the vehicle were able to get out of the vehicle.

Probability of Future Occurrence

Over the past 21 years, 11 flash flood events have occurred with a total of $1,000 in reported property damages. Based on this historical data, the average is (11 flash floods/21 years) .52 flash flood events occur each year, thus there is a 52 percent chance of a flash flood to occur in a given year and the annualized damage costs are $47.

Over the past 21 years, three riverine flooding events have occurred with one death, three indirect injuries, and $10,000 in reported property damages. The average of this historical data (3 riverine floods/21 years), is .14 riverine flood events each year. Thus, there is a 14 percent chance of a riverine flood to occur in a given year and the annualized damage costs are $476.

Changing Future Conditions Considerations

According to the State Plan, if departure from normal with respect to increased precipitation intensity continues, frequency of floods in Missouri is likely to increase as well. Over the last half century, average annual precipitation in most of the Midwest has increased by 5 to 10 percent. But rainfall during the four wettest days of the year has increased about 35 percent, and the amount of water flowing in most streams during the worst flood of the year has increased by more than 20 percent. It is likely (66-100% probability) that the frequency of heavy precipitation or the proportion of total rainfall from heavy falls will increase in the 21st century across the globe. More specifically, it is “very likely” (90-100% probability) that most areas of the United States will exhibit an increase of at least 5 percent in the maximum 5-day precipitation by the late 21st century. As the number of heavy rain events increase, more flooding and pooling water can be expected.

Flooding occasionally threatens navigation and riverfront communities, and greater river flows could increase these threats. In April and May 2011, a combination of heavy rainfall and melting snow caused a flood that closed the Mississippi River to navigation, threatened Caruthersville, and prompted evacuation of Cairo, Illinois, due to concerns that its flood protection levees might fail. The expected increases in rainfall frequency and intensity are 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 even in non-

floodplain areas. Such changes in climate patterns can lead to the development of compounding events that interact to create extreme conditions. Flooding caused by high groundwater levels typically recedes more slowly than riverine flooding, slowing the response and recovery process. Groundwater-fed rivers and streams are also likely to experience heightened flooding when groundwater levels are high. Jurisdictions updating or installing stormwater management systems should consider potentially larger future discharge amounts when sizing culverts and drainage ways; storage capacity can also be increased by building retention basins to hold excess stormwater.

Communities already prone to flooding should be prepared for a potential increase in facility closures and/or damages, as well as an increase in public demand for flood response and assistance. Natural features that experience repeated flooding may manifest changes in the form of stream bank instability and changing shoreline, floodplain, and wetland boundaries. Communities may also wish to plan for the potential loss of cropland and damage to both private property and public infrastructure such as bridges. The environmental impacts of flooding include erosion, surface and groundwater contamination, and reduced water quality. The threat of more frequent flood events may thus be a concern particularly for communities who depend on lakes, rivers, or trout streams for tourism. Rural 3.30 communities may experience increases in well contamination and road washouts, while urban areas may be particularly vulnerable to flash flooding as heavy rain events quickly overwhelm the ability of a more impermeable environment to absorb excess stormwater. Source: 2018 MO State Hazard Mitigation Plan, 3.1-3.2

Vulnerability

Vulnerability Overview

Since 1975, Clinton County has been included in five Presidential Disaster Declarations for flooding. Flash flooding occurs more frequently than riverine flooding, but in 2021 a riverine flood contributed to the death of a Clinton County resident, evidence that flooding presents a danger to life and property, often resulting in injuries, and in some cases, fatalities.

Floodwaters themselves can interact with hazardous materials. Hazardous materials stored in large containers could break loose or puncture as a result of flood activity. Examples are bulk propane tanks. When this happens, evacuation of citizens is necessary.

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

Periods of heavy rain falling at the rate of one inch per hour floods low water crossings throughout the county making many roads impassable. Street flooding over roadways has been reported in all communities in the county. This creates a severe threat to motorists who attempt to drive through flood waters over the roadway.

When roads and bridges are inundated by water, damage can occur as the water scours materials around bridge abutments and gravel roads. **Section 3.2.2** in this plan contains information on scour critical bridges in the planning area.

Floodwaters can also cause erosion undermining road beds. In some instances, steep slopes that are saturated with water may cause mud or rock slides onto roadways. These damages can cause costly repairs for state, county, and city road and bridge maintenance departments. When sewer back-up occurs, this can result in costly clean-up for home and business owners as well as present a health hazard.

Areas in low lying areas outside of the floodplain are frequently flooded. Increases in development

add to surface runoff and can exacerbate flash flooding in areas that previously have not experienced flooding.

The 2018 State Plan's section on State Vulnerability Overview and State Estimates of Potential Losses is the best and most recent data available. Clinton County does have relatively recent DFIRM data, which can help determine where flooding may potentially occur. The number of structures at risk was determined using Hazus analysis along with a structure inventory dataset developed by the University of Missouri GIS Department (MSDIS). **Table 3.20** below identifies the total potential direct building loss and income loss for Clinton County.

Table 3.20. Potential Direct Building Loss and Income Loss for Clinton County

Clinton County	Potential Flood Building/Income Loss
Countywide Building Exposure	$2,282,850,000
Structural Damage	$8,520,000
Loss Ratio	0.37%
Contents Loss	$5,418,000
Inventory Loss	$49,000
Total Direct Loss	$13,987,000
Total Income Loss	$5,000
Total Direct and Income Loss	$13,992,000
# MSDIS Residential Structures Exposed	31
# Hazus Buildings Risk	20
# Substantially Damaged	0
# Displaced People	524
# Shelter Needs	76

Source: 2018 MO State Mitigation Plan, pg. 3.110

Potential Losses to Existing Development

Flood loss estimates by structure for Clinton County were identified in the 2018 State Plan and are presented in **Table 3.21**. There are no school or special districts, or critical facilities directly located in Special Flood Hazard Areas (SFHA) in Clinton County.

Table 3.21. Potential Losses for Building Type in Clinton County

Type of Structure	# of Structures	Total # of Losses
Residential	31	$7,304,425
Agriculture	16	$2,841,633
Commercial	69	$33,279,022
Education	--	--
Government	--	--
Industry	--	--
Total Loss- HAZUS Layer		$43,425,080
Total # of People Affected	77	

Source: 2018 MO State Mitigation Plan, pg. 3.113

Table 3.22 provides the total exposure count for structures in each jurisdiction. Losses were estimated by applying a 5 percent damage factor to total exposure.

Table 3.22. Total Exposure of Structures and Contents by Building Type

Jurisdiction	Residential	Commercial	Agriculture	Other	Estimated Exposure	Estimated Loss
Unincorp. Clinton Co.	4,443	133	6,813	189	$985,728,000	$49,286,400
Cameron	1,810	180	36	14	$502,153,000	$25,107,000.65
Gower	531	52	7	19	$157,275,000	$7,863,000.75
Holt	23	26	1	1	$14,409,000	$720,450
Lathrop	782	67	8	29	$222,631,000	$11,131,550
Plattsburg	886	90	55	50	$265,338,000	$13,266,900
Trimble	236	7	29	1	$59,382,000	$2,969,100
Turney	77	7	10	18	$28,203,000	$1,410,150

Source: MSDIS Clinton (https://drive.google.com/drive/folders/0Bzg99s866kWocFB5Y3hCRlRuWWM)

Impact of Previous and Future Development

Future development could impact flash and riverine flooding in the planning area. Development in low-lying areas near rivers and streams or where interior drainage systems are not adequate to provide drainage during heavy rainfall events can increase the risk of flood. Future development would also increase impervious surfaces causing additional water run-off and drainage problems during heavy rainfall events.

Hazard Summary by Jurisdiction

Many areas are in the county are potentially at risk to flood hazards and exposure of assets in SFHAs varies among jurisdictions. It should be noted that all communities in Clinton County can be impacted by the flooding of major roads and low water crossings. There are no school facilities in SFHAs and no previous damages were reported on the Data Collection Questionnaire for schools.

Problem Statement

Clinton County has been listed in five out of 20 Presidential Disaster Declarations for flood-related disasters in the state since 1975. The county and six communities in the county participate in the NFIP. Their participation in the NFIP enables residents to purchase flood insurance. Street flooding in incorporated areas can be addressed through storm water management projects and enforce storm water management regulations. In light of the recent flood-related death in the county due to water-covered roads, county leaders are looking into ways to prevent people from driving on flooded roadways, such as erecting flood gates on roads prone to flooding.

3.4.2 Levee Failure

Hazard Profile

Hazard Description

Levees are earth embankments constructed along rivers and coastlines to protect adjacent lands from flooding. Floodwalls are concrete structures, often components of levee systems, designed for urban areas where there is insufficient room for earthen levees. When levees and floodwalls and their appurtenant structures are stressed beyond their capabilities to withstand floods, levee failure can result in injuries and loss of life, as well as damages to property, the environment, and the economy.

Levees can be small agricultural levees that protect farmland from high-frequency flooding. Levees can also be larger, designed to protect people and property in larger urban areas from less frequent flooding events such as the 100-year and 500-year flood levels. For purposes of this discussion, levee failure will refer to both overtopping and breach as defined in FEMA's Publication "So You Live Behind a Levee" (http://mrcc.isws.illinois.edu/1913Flood/awareness/materials/SoYouLiveBehindLevee.pdf).

Following are the FEMA publication descriptions of different kinds of levee failure.

> **Overtopping: When a Flood Is Too Big**
>
> Overtopping occurs when floodwaters exceed the height of a levee and flow over its crown. As the water passes over the top, it may erode the levee, worsening the flooding and potentially causing an opening, or breach, in the levee.
>
> **Breaching: When a Levee Gives Way**
>
> A levee breach occurs when part of a levee gives way, creating an opening through which floodwaters may pass. A breach may occur gradually or suddenly. The most dangerous breaches happen quickly during periods of high water. The resulting torrent can quickly swamp a large area behind the failed levee with little or no warning.

Earthen levees can be damaged in several ways. For instance, strong river currents and waves can erode the surface. Debris and ice carried by floodwaters—and even large objects such as boats or barges—can collide with and gouge the levee. Trees growing on a levee can blow over, leaving a hole where the root wad and soil used to be. Burrowing animals can create holes that enable water to pass through a levee. If severe enough, any of these situations can lead to a zone of weakness that could cause a levee breach. In seismically active areas, earthquakes and ground shaking can cause a loss of soil strength, weakening a levee and possibly resulting in failure. Seismic activity can also cause levees to slide or slump, both of which can lead to failure.

Geographic Location

Missouri is a state with many levees. Currently, there is no single comprehensive inventory of levee systems in the state. Levees have been constructed across the state by public entities and private entities with varying levels of protection, inspection oversight, and maintenance. The lack of a comprehensive levee inventory is not unique to Missouri.

There are two concurrent nation-wide levee inventory development efforts, one led by the United State Army Corps of Engineers (USACE) and one led by Federal Emergency Management Agency (FEMA). The National Levee Database (NLD), developed by USACE, captures all USACE related levee projects, regardless of design levels of protection. The Midterm Levee Inventory (MLI), developed by FEMA, captures all levee data (USACE and non-USACE) but primarily focuses on levees that provide 1% annual-chance flood protection on FEMA Flood Insurance Rate Maps (FIRMs).

The National Flood Insurance Program (NFIP) defines a levee system in Title 44, Chapter 1, Section 59.1 of the Code of Federal Regulations (44 CFR 59.1) as a flood risk reduction system that consists of a levee, or levees and associated structures like closure and drainage devices that are constructed and operated with sound engineering practices to protect a specified area. It is a manmade structure, generally earthen that is designed and constructed with sound engineering practices to contain, control, or divert the flow of water to provide temporary protection from flooding. FEMA states on its Levee Resource Library website that it does not build, own, or certify levees. The USACE is responsible for building and maintaining levee's in its inventory and for the inspection of its inventory. There may be states, communities and private levee owners that are responsible for maintaining and operating levees according to specific guidelines. The State of Missouri does not currently have a Levee Safety Program and does not currently own or operate any levees.

FEMA's role, and thus SEMA's role as the Cooperating Technical Partner (CTP) for the State is to "identify, analyze, and map the flood hazards associated with levees, and depict accreditation on Flood Insurance Rate Maps (FIRMs) for those levee systems for which the appropriate certification documentation has been submitted. For levees depicted on a FIRM showing protection for the base flood elevation, FEMA categorizes levees into one of 2 categories: 1) Accredited and 2) Non-Accredited. Accredited levees are ones in which the levee owner has provided data to FEMA demonstrating that the levee system is in compliance with Section 65.10. If a community is in the process of a mapping update and the levee accreditation process is underway, a special note can be placed on the FIRMs called a Provisionally Accredited Levee or PAL note which is a temporary designation denoting that the levee owners are undergoing the accreditation process and are expecting to reach accreditation within two years. If accreditation has not been reached during that timeframe, a mapping project to remove the note and depict the risk without the levee is initiated. (Source: 2018 State Plan).

It is likely that agricultural levees and other non-regulated levees within the planning area exist that are not inventoried or inspected. These levees that are not designed to provide protection from the one percent annual chance flood would overtop or fail in the one percent annual chance flood scenario. Therefore, any associated losses would be taken into account in the loss estimates provided in the Flood Hazard Section.

None of Clinton County's population is protected from regulated levees. There are likely are low-head agricultural levees, that are not regulated. In the event of a breach, it is unlikely that widespread damage would occur.

Strength/Magnitude/Extent

Levee failure is typically an additional or secondary impact of another disaster such as flooding or earthquake. The main difference between levee failure and losses associated with riverine flooding is magnitude. Levee failure often occurs during a flood event, causing destruction in addition to what would have been caused by flooding alone. In addition, there would be an increased potential for loss of life due to the speed of onset and greater depth, extent, and velocity of flooding because of levee breach.

As previously mentioned, agricultural levees and levees that are not designed to provide flood protection from at least the 1-percent annual chance flood likely do exist in the planning area. However, none of these levees are shown on the Preliminary DFIRM, nor are they enrolled in the USACE Levee Safety Program. As a result, an inventory of these types of levees is not available for analysis. Additionally, since these types of levees do not provide protection from the 1-percent annual chance flood, losses associated with overtopping or failure are captured in the Flood Section of this plan.

The USACE regularly inspects levees within its Levee Safety Program to monitor their overall condition, identify deficiencies, verify that maintenance is taking place, determine eligibility for federal rehabilitation assistance (in accordance with P.L. 84-99), and provide information about the levees on which the public relies. Inspection information also contributes to effective risk assessments and supports levee accreditation decisions for the National Flood Insurance Program administered by the Federal Emergency Management Agency (FEMA).

The USACE now conducts two types of levee inspections. Routine Inspection is a visual inspection to verify and rate levee system operation and maintenance. It is typically conducted each year for all levees in the USACE Levee Safety Program. Periodic Inspection is a comprehensive inspection led by a professional engineer and conducted by a USACE multidisciplinary team that includes the levee sponsor. The USACE typically conducts this inspection every five years on the federally authorized levees in the USACE Levee Safety Program.

Both Routine and Periodic Inspections result in a rating for operation and maintenance. Each levee segment receives an overall segment inspection rating of Acceptable, Minimally Acceptable, or Unacceptable. **Table 3.23** below defines the three ratings.

Table 3.23. Definitions of the Three Levee System Ratings

Acceptable	All inspection items are rated as “Acceptable”.
Minimally Acceptable	One or more levee segment inspection items are rated as “Minimally Acceptable” or one or more items are rated as “Unacceptable” and an engineering determination concludes that the “Unacceptable” inspection items would not prevent the segment/system from performing as intended during the next flood event.
Unacceptable	One or more levee segment inspection items are rated as “Unacceptable” and would prevent the segment/system from performing as intended, or a serious deficiency noted in past inspections (previous “Unacceptable” items in a “Minimally Acceptable” overall rating) has not been corrected within the established timeframe, not to exceed two years.

Previous Occurrences

There is no levee system in the planning area, therefore there have been no breaches or incidents. It is unknown if there have been previous occurrences from unregulated levees.

Probability of Future Occurrence

There is no probability of future occurrence since there is no levee system.

Changing Future Conditions Considerations

While there is no levee system identified in Clinton County, it remains important to consider that the impact of changing future conditions on any levee failure will most likely be related to changes in precipitation and flood likelihood. Climate change projections suggest that precipitation may increase and occur in more extreme events, which may increase risk of flooding, putting stress on levees and increasing likelihood of levee failure. Furthermore, aging levee infrastructure and a lack of regular maintenance (including checking for seepage and removing trees, roots and other vegetation that can weaken a levee) coupled with more extreme weather events may increase the risk of future levee failure.

Vulnerability

Vulnerability Overview

The planning area is not vulnerable to a levee breach or incident from regulated levees.

Potential Losses to Existing Development

There are no buildings or property protected by a levee system so there is no potential loss to existing development.

Impact of Previous and Future Development

There is no known impact to previous and future development.

Hazard Summary by Jurisdiction

No jurisdictions in Clinton County have levee protected areas.

Problem Statement

Clinton County does not have a regulated levee system so there have been no levee breaches or incidents. However, it's likely that low-head agricultural levees exist in the planning area.

3.4.3 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.

According to the Missouri Department of Natural Resources (MDNR), as of 2020 Missouri had 5,535 recorded dams. Of those, only 62 are federally regulated dams and 699 are state regulated dams. MDNR regulates dams that are over 35 feet in height and not already federally regulated. They ensure these dams are safely constructed, operated, and maintained pursuant to Chapter 236 of Revised Statutes of Missouri. **Table 3.24** breaks down the hazard classification system the MDNR uses for both regulated and non-regulated dams.

Federally regulated dams fall under the jurisdiction of the U.S. Army Corps of Engineers (USACE) and the U.S. Department of Agriculture and Forest Service. The USACE maintains the National Inventory of Dams (NID), which includes the data and hazard classification system for dams described in **Table 3.25**.

Table 3.24. MoDNR Dam Hazard Classification Definitions

Hazard Class	Definition
Class I	The area downstream from the dam that would be impacted by inundation contains ten or more permanent dwellings or any public building. Inspection of these dams must occur every two years.
Class II	The area downstream from the dam that would be impacted by inundation contains one to nine permanent dwellings, or one or more campgrounds with permanent water, sewer, and electrical services, or one or more industrial buildings. Inspection of these dams must occur every three years.
Class III	The area downstream from the dam that would be impacted by inundation does not contain any of the structures identified in either Class I or Class II dams. Inspection of these dams must occur every five years.

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

Table 3.25. NID Dam Hazard Classification Definitions

Hazard Class	Definition
Low Hazard	Failure results in likely loss of human life.
Significant Hazard	Possible loss of human life and likely significant property or environmental destruction.
High Hazard	Failure results in only minimal property damage.

Source: National Inventory of Dams

In order to be catalogued in the NID system, “Low Hazard” dams must also be at least 25 feet in height contain at least 15 acre-feet in storage, or, be at least 6 feet in height with at least 50 acre-feet in storage.

Geographic Location

Dams Located Within the Planning Area

The MDNR database lists four state regulated dams, which are:

Regulated Class I Dams: Lake Arrowhead Dam and Spring Lake Dam

Regulated Class II Dam: Six Mile Lane Lake Dam

Regulated Class III Dam: Apac-Kansas Inc. Lake Dam

The USACE lists 25 dams in their NID for Clinton County; nine of these dams are classified as high hazard, with the failure of the dam likely resulting in loss of human life and none are classified as significant, with no expected loss of human life but economic, environmental or lifeline losses expected. These are displayed in **Table 3.26**.

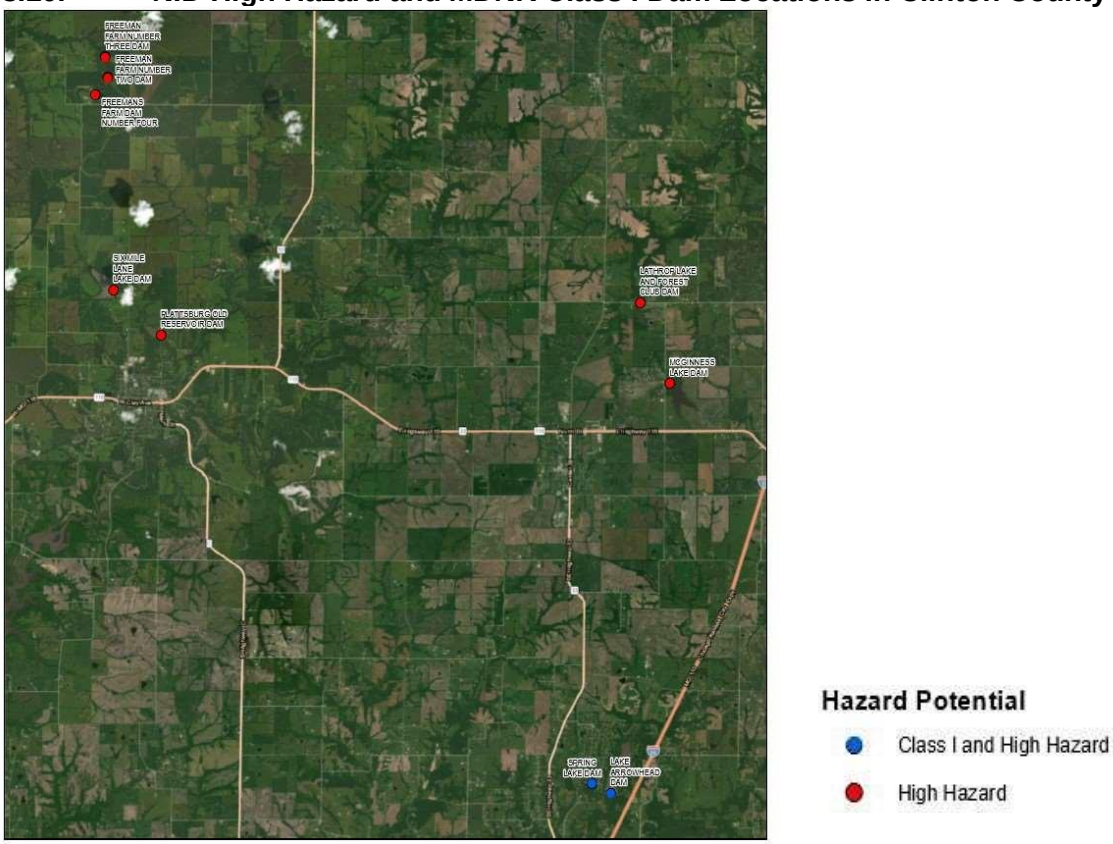
Table 3.26. High Hazard Dams in the Clinton County

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 (Miles)	Dam Owner
Lake Arrowhead	Yes	51	2754	10/25/16	Muddy Fork	Holt	2	Lake Arrowhead POA
Spring Lake	Yes	45	179	10/25/16	Muddy Fork	Holt	0	Lake Arrowhead Trustees
Freeman Farm #3	NR	32	107	NA	McGuire Branch & Castile Creek	Plattsburg	0	Eldon Freeman
Freeman Farm #2	NR	33	72	NA	McGuire Branch & Castile Creek	Plattsburg	0	Eldon Freeman
Freemans Farm #4	NR	32	130	NA	McGuire & Castile	Plattsburg	0	Eldon Freeman
Lathrop Lake and Forest Club	NR	25	100	NA	Shoal Creek	Lathrop	4	Lathrop Lake + Forest Club
Mcginness Lake	NR	29	327	NA	Shoal Creek	Lathrop	3	Logan McGuinness
Plattsburg Old Reservoir	NR	33	171	NA	Little Platte	Plattsburg	1	City of Plattsburg
Six Mile Lane Lake	Yes	37	402	05/27/16	Horse Fork	Plattsburg	1	Plattsburg Casters

Sources: Missouri Department of Natural Resources, https://dnr.mo.gov/geology/wrc/dam-safety/damsinmissouri.htm and National Inventory of Dams, http://nid.usace.army.mil/cm_apex/f?p=838:12. 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 3.10 shows the locations of both NID high hazard and MDNR Class I dams.

Figure 3.10. NID High Hazard and MDNR Class I Dam Locations in Clinton County



Source: U.S. Army Corps of Engineers, Missouri Department of Natural Resources

<u>Upstream Dams Outside the Planning Area</u>

Dams located outside if Clinton County are unlikely to impact the county in the event of failure

Strength/Magnitude/Extent

The severity/magnitude of dam failure would be similar in some cases to the impacts associated with flood events (see the flood hazard vulnerability analysis and discussion). Based on the hazard class definitions, failure of any of the High Hazard/Class I dams could result in a serious threat of loss of human life, serious damage to residential, industrial or commercial areas, public utilities, public buildings, or major transportation facilities. Catastrophic failure of any high hazard dams has the potential to result in greater destruction due to the potential speed of onset and greater depth, extent, and velocity of flooding. For this reason, dam failures could flood areas outside of mapped flood hazards. Dam failure can result not only in the loss of life, but also property damaged and loss of income if agricultural fields are flooded.

Previous Occurrences

There are no records of recent dam failure in Clinton County. However, Lake Arrowhead Dam experienced one embankment slide and two inflow floods (hydrological events) between 1993 and 1995. None of these events resulted in dam failure. Since there are zero recorded events causing damage in the planning area, a calculation of a probability percent is not possible. According to information from the 2018 State Plan, Missouri's percentage of high hazard dams in the DNR inventory puts the State at about the national average for that category.

Probability of Future Occurrence

There is no record of a dam failure within the county so it is not possible to calculate the probability of future occurrence. If development occurs in inundation zones the likelihood of loss of life increases in the event of dam failure. Additionally, the probability of dam failure increases as many of the smaller and privately owned dams continue to deteriorate without the benefit of further regulation or improvements. Regular inspection and maintenance schedules for dams greatly reduces the probability of dam failure. MDNR Class I dams must be inspected every two years, Class II every three years and Class III every five years. By adhering to this schedule the likelihood of failure will be kept to a minimum.

Changing Future Conditions Considerations

According to the 2018 State HMP, 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

Vulnerability to dam failure in Clinton County is limited to structures located in dam inundation zones. The dams are located in unincorporated parts of the county and no critical structures are located in the inundation zones. Currently, there are four state regulated dams with heights of 35 or greater. Although failure potential certainly exists for these non-regulated dams, it is very difficult to attempt to analyze vulnerability due to data limitations. There are no federally regulated dams in Clinton County.

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

Table 3.27 lists the exposure vulnerability for the ten-state regulated dams (over 35 feet in height) in DeKalb County.

Table 3.27. Vulnerability Analysis for Failure of State-regulated Dams

Jurisdiction	Estimated # of Buildings Vulnerable	Average Exposure Value Per Structure	Estimated Total Potential Building Exposure	Estimated Total Population Exposure	Estimated Building Losses
Clinton County	25	$122,538	$5,074,802	62	$2537,401

Source: 2018 State Plan

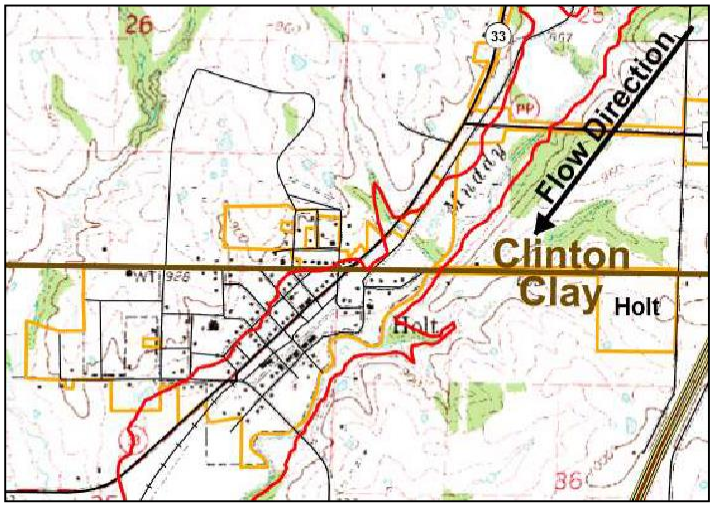
A portion of the Six Mile Lane Lake Dam inundation zone is shown in **Figure 3.11**. Approximately 20 minutes after a breach the flood would reach the Plattsburg Old City Reservoir, potentially triggering a secondary breach. The flow direction is just towards the east of Plattsburg city limits, missing nearly all development. As previously noted, depending on the speed and velocity of a breach and flooding, inundation zones might be exceeded.

Figure 3.11. Six Mile Lane Lake Dam Inundation Zone Near Plattsburg

Source: Source: MDNR Six Mile Lake Dam Report

Figure 3.12 shows the Lake Arrowhead Dam's inundation zone in Holt, which is estimated to receive flooding after an hour of a breach. A number of structures are located in the inundation zone, outlined in red, including city hall, the fire department and post office. The school is located just outside of the inundation zone. As previously noted, depending on the speed and velocity of a breach and flooding, inundation zones might be exceeded.

Figure 3.12. Lake Arrowhead Dam Inundation Zone in Holt



Source: MDNR, Lake Arrowhead Dam Report

Impact of Previous and Future Development

Future development in Clinton County could impact the amount of damages caused by a dam failure in the planning area if development occurs in the dam inundation area. Most of Clinton County is rural but the northwest area of the county, around the City of Cameron, is experiencing growth. Caution must be exercised in developing areas in and near inundation zones of High Hazard/Class I dams.

Hazard Summary by Jurisdiction

Vulnerability to dam failure varies across the planning area. The City of Holt has several structures, including critical facilities located in dam breach inundation areas, increasing their vulnerability in the case of an event. According to the 2018 State Plan an estimated 62 people and 25 buildings are vulnerable to a dam failure.

Problem Statement

Although the probability of dam failure in the county is low the potential for damage remains. Three dams have emergency action plans. Emergency action plans written for dams include procedures for notification and coordination with local law enforcement and other governmental agencies, information on the potential inundation area, plans for warning and evacuation, and procedures for making emergency repairs. Residents near a Class I or Class II hazard dams should become familiar with what action to take if there is a dam breach. Public education campaigns can help inform and prepare citizens.

3.4.4 Earthquakes

Hazard Profile

Hazard Description

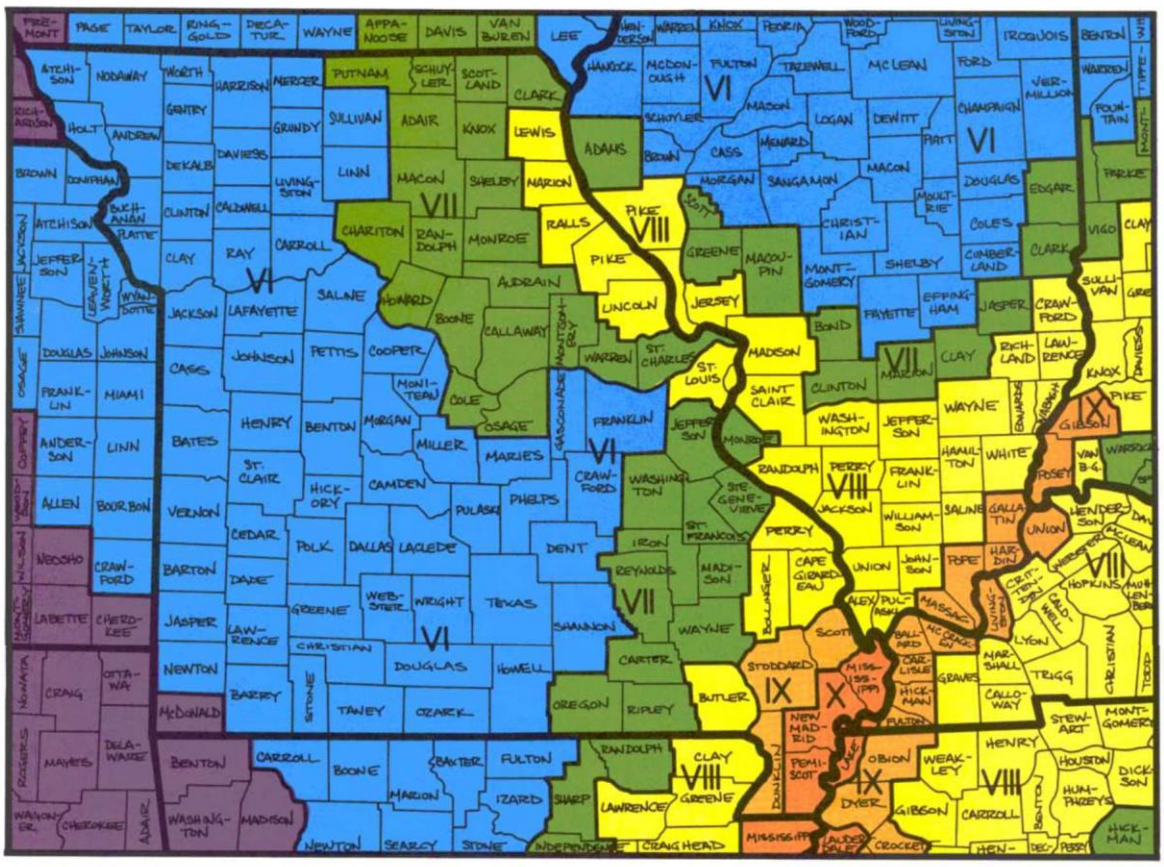
An earthquake is a sudden motion or trembling that is caused by a release of energy accumulated within or along the edge of the earth's tectonic plates. Earthquakes occur primarily along fault zones and tears in the earth's crust. Along these faults and tears in the crust, stresses can build until one 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.

The greatest hazard from earthquakes in Clinton County comes from the New Madrid Seismic Zone situated in the boot-\heel area of southeast Missouri. The potential of high magnitude earthquakes occurring along the New Madrid fault presents risk that does not vary across the planning area. The Nemaha uplift in central Kansas is also prone to seismic activity, however, the center of the Humbolt fault zone near the Nemeha Uplift is approximately 250 miles southwest of Clinton County and produces lower magnitude seismic events.

Geographic Location

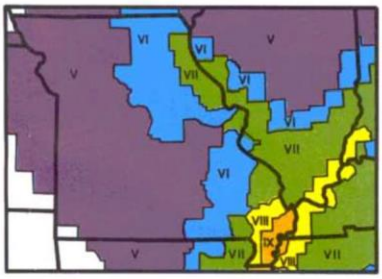
Figure 3.13 shows the highest projected Modified Mercalli intensities by county from a potential magnitude 7.6 earthquake whose epicenter could be anywhere along the length of the New Madrid Seismic Zone The secondary maps in **Figure 3.14** show the same regional intensities for 6.7 and 8.6 earthquakes, respectively.

Figure 3.13. 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.

6.7

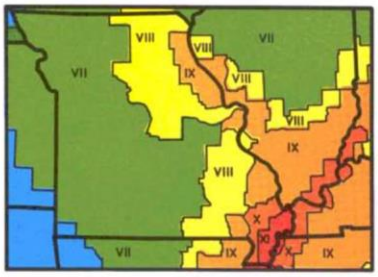


7.6

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.

8.6



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

Figure 3.14. Projected Earthquake Intensities

MODIFIED MERCALLI INTENSITY SCALE

I People do not feel any Earth movement.

II A few people might notice movement.

III Many people indoors feel movement. Hanging objects swing.

IV Most people indoors feel movement. Dishes, windows, and doors rattle. Walls and frames of structures creak. Liquids in open vessels are slightly disturbed. Parked cars rock.

V Almost everyone feels movement. Most people are awakened. Doors swing open or closed. Dishes are broken. Pictures on the wall move. Windows crack in some cases. Small objects move or are turned over. Liquids might spill out of open containers.

VI Everyone feels movement. Poorly built buildings are damaged slightly. Considerable quantities of dishes and glassware, and some windows are broken. People have trouble walking. Pictures fall off walls. Objects fall from shelves. Plaster in walls might crack. Some furniture is overturned. Small bells in churches, chapels and schools ring.

VII People have difficulty standing. Considerable damage in poorly built or badly designed buildings, adobe houses, old walls, spires and others. Damage is slight to moderate in well-built buildings. Numerous windows are broken. Weak chimneys break at roof lines. Cornices from towers and high buildings fall. Loose bricks fall from buildings. Heavy furniture is overturned and damaged. Some sand and gravel stream banks cave in.

VIII Drivers have trouble steering. Poorly built structures suffer severe damage. Ordinary substantial buildings partially collapse. Damage slight in structures especially built to withstand earthquakes. Tree branches break. Houses not bolted down might shift on their foundations. Tall structures such as towers and chimneys might twist and fall. Temporary or permanent changes in springs and wells. Sand and mud is ejected in small amounts.

IX Most buildings suffer damage. Houses that are not bolted down move off their foundations. Some underground pipes are broken. The ground cracks conspicuously. Reservoirs suffer severe damage.

X Well-built wooden structures are severely damaged and some destroyed. Most masonry and frame structures are destroyed, including their foundations. Some bridges are destroyed. Dams are seriously damaged. Large landslides occur. Water is thrown on the banks of canals, rivers, and lakes. Railroad tracks are bent slightly. Cracks are opened in cement pavements and asphalt road surfaces.

XI Few if any masonry structures remain standing. Large, well-built bridges are destroyed. Wood frame structures are severely damaged, especially near epicenters. Buried pipelines are rendered completely useless. Railroad tracks are badly bent. Water mixed with sand, and mud is ejected in large amounts.

XII Damage is total, and nearly all works of construction are damaged greatly or destroyed. Objects are thrown into the air. The ground moves in waves or ripples. Large amounts of rock may move. Lakes are dammed, waterfalls formed and rivers are deflected.

Intensity is a numerical index describing the effects of an earthquake on the surface of the Earth, on man, and on structures built by man. The intensities shown in these maps are the highest likely under the most adverse geologic conditions. There will actually be a range in intensities within any small area such as a town or county, with the highest intensity generally occurring at only a few sites. Earthquakes of all three magnitudes represented in these maps occurred during the 1811 - 1812 "New Madrid earthquakes." The isoseismal patterns shown here, however, were simulated based on actual patterns of somewhat smaller but damaging earthquakes that occurred in the New Madrid seismic zone in 1843 and 1895.

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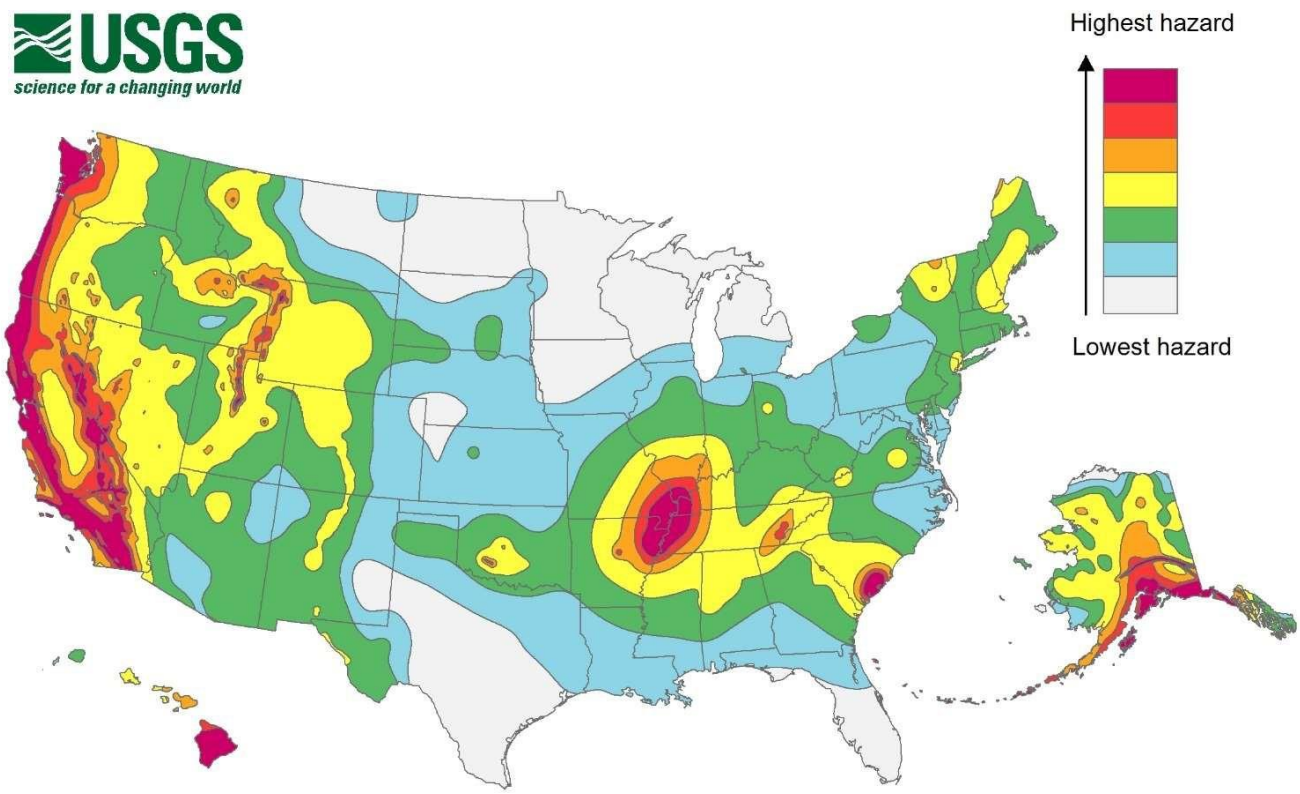
EMERGENCY MANAGEMENT AGENCY
P.O. BOX 116
JEFFERSON CITY, MO 65102
Telephone: 573-526-9100

Figure 3.15 illustrates seismicity in the United States. Clinton County is located in the blue zone, which is the second lowest hazard area, though the expansion of the radius has trended northwest in the last four years, meaning the green zone is nearing Clinton County.

Figure 3.15. United States Seismic Hazard Map



Source: United States Geological Survey at https://www.usgs.gov/media/images/2018-long-term-national-seismic-hazard-map

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 a follows:

Richter Magnitude Scale

The Richter Magnitude Scale was developed in 1935 as a device to compare the size of earthquakes. The magnitude of an earthquake is measured using a logarithm of the maximum extent of waves recorded by seismographs. Adjustments are made to reflect the variation in the distance between the various seismographs and the epicenter of the earthquakes. On the Richter Scale, magnitude is expressed in whole numbers and decimal fractions. 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

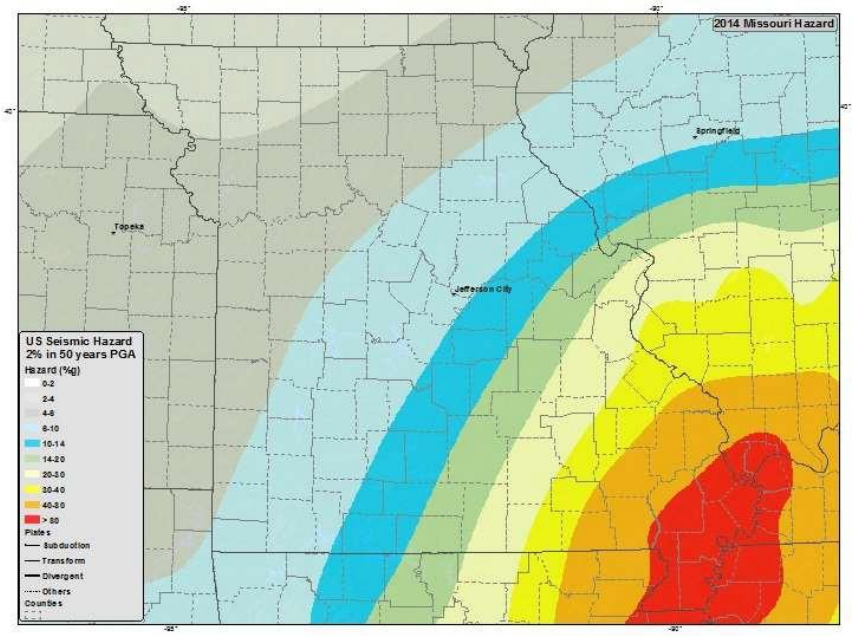
Earthquakes are rare in Clinton County. There have been no reported earthquakes since 1931.

On February 13, 2016, a neighboring county, Buchanan County, felt tremors from a 5.1 earthquake originating near Fairview, Oklahoma. No damage was reported. There is speculation that the earthquake was the result of fracking, a man-made activity. Thus, man-made activities may contribute to future earthquake activity.

Probability of Future Occurrence

The United States Geological Survey (USGS) earthquake probability map for the Clinton County area is shown in **Figure 3.16**. No known earthquakes have occurred in Clinton County and according to Homefacts.com, there is a .35 percent of a 5.0 earthquake or greater in the next 50 years. https://www.homefacts.com/earthquakes/Missouri/Clinton-County.html

Figure 3.16. 2014 Seismic Hazard Map of Missouri



https://www.usgs.gov/media/images/2014-seismic-hazard-map-missouri

Changing Future Conditions Considerations

Scientists are beginning to believe there may be a connection between changing climate conditions and earthquakes. Redistribution of weight over fault lines from changing ice caps and sea-level 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. (Source: Missouri State Hazard Mitigation Plan 2018, pg. 3202, https://sema.dps.mo.gov/docs/programs/LRMF/mitigation/MO_Hazard_Mitigation_Plan2018.pdf)

Vulnerability

Vulnerability Overview

Ground shaking is the most damaging effect from earthquakes. Ground shaking will impact all structures and critical infrastructure such as roads and electrical transmission systems. In the event of a 7.6 magnitude earthquake, damage to structures would vary depending on the quality of construction. In addition, some underground utilities may be damaged. Injuries may occur but fatalities are unlikely.

Missouri is the third largest market for earthquake insurance among the states, exceeded only by California and Washington. A study by the U.S. Geological Survey estimates the probability of a magnitude 7.5 or greater earthquake in the New Madrid zone over the next 50 years is 7-10 percent. The probability of an earthquake exceeding magnitude 6 over the same period is 25-40 percent. A joint assessment by the Mid-America Earthquake Center of the University of Illinois and the Federal Emergency Management Agency predicts the New Madrid event could constitute the highest total economic loss of any natural disaster in U.S. history. Earthquake coverage is not included on most homeowners insurance policies. It must be purchased as separate coverage, called an "endorsement" or as a stand-alone policy. This type of insurance requires that the earthquake is the direct cause of damage to the property. Natural disasters can, in many instances, trigger other events that may also damage property. One example is earthquakes causing bodies of water to produce waves, resulting in flooding.

Earthquake coverage pays for damage caused by the shaking and cracking that can damage homes and other structures. Other damage indirectly caused by earthquakes may be covered by other insurance. Fire and water damage due to burst gas and water pipes - even though it may be caused by a quake - is generally covered by the standard portion of the homeowners policy. Earthquake damage to vehicles is covered by the comprehensive portion of auto policies.

Earthquake insurance usually features two high deductibles: Rather than a dollar amount, it's a percentage of the cost of rebuilding the home and a separate deductible for the home's contents. Deductibles of 10-15 percent are common. For example, with a 15 percent deductible, the owner of a $200,000 home could expect to pay up to $30,000 in deductibles for damage to the dwelling before receiving any benefit from their earthquake insurance policy.

The material used to build the home can also determine premiums or whether your home is even insurable. For instance, premiums may be lower for wood-frame homes, which withstand tremors better than homes made of masonry such as brick and stone. Single-story homes may also have lower premiums as they tend to sustain less damage from an earthquake. Age of the home can also affect premiums. Some insurers will not offer earthquake insurance for masonry homes. https://insurance.mo.gov/earthquake/

Potential Losses to Existing Development

A scenario based on an event with a 2% probability of exceedance in 50 years, was done to model a worst-case scenario, as demonstrated in the 2013 State Plan. The methodology is based on probabilistic seismic hazard shaking grids developed by the U.S. Geological Survey (USGS) for the National Seismic Hazard Maps that are included with Hazus. The USGS maps provide estimates of peak ground acceleration and spectral acceleration at periods of 0.3 second and 1.0 second, respectively, which have a 2% probability of exceedance in the next 50 years.

The Hazus building inventory counts are based on the 2010 census data adjusted to 2014 numbers using the Dun & Bradstreet Business Population Report. Inventory values reflect 2014 valuations, based on RSMeans (a supplier of construction cost information) replacement costs. Population counts are 2010 estimates from the U.S. Census Bureau. **Table 3.28** depicts the estimated losses for the county based on this scenario from Table 3.61 of the 2018 Missouri State Hazard Mitigation Plan. https://sema.dps.mo.gov/docs/programs/LRMF/mitigation/MO_Hazard_Mitigation_Plan2018.pdf

Table 3.28. Estimated Earthquake Losses for Clinton County

Jurisdiction	Structural Damage	Non-Structural Damage	Contents Damage and Inventory Loss	Loss Ratio (%)	Income Loss	Total Economic Loss to Buildings
Clinton County	$1,721,000	$3,410,000	$830,000	0.22	$1,841,000	$7,801,000

Impact of Previous and Future Development

Future development is not expected to increase the risk other than contributing to the overall exposure of potential damage.

Hazard Summary by Jurisdiction

Since the earthquake intensity is not likely to vary greatly across the planning area, the risk will be the same throughout. As previously stated, damages could differ in communities that have older structures. **Table 3.29** list the timeframe structures were built in in the county's jurisdictions.

Table 3.29. Age of Housing Structures in Clinton County

Year Structure Built	Clinton County	Cameron	Holt	Gower	Lathrop	Plattsburg	Trimble	Turney
2014 or later	99	35	0	0	0	0	0	0
2010 to 2013	124	10	1	3	27	7	13	0
2000 to 2009	1,680	633	10	35	99	142	61	10
1980 to 1999	2,291	605	64	151	273	186	73	27
1960 to 1979	2,404	753	33	326	314	245	78	20
1940 to 1959	752	362	40	42	73	176	10	16
1939 or earlier	1,651	513	33	131	93	292	42	32
Total # of Housing Units	9,001	2,911	181	688	879	1,048	277	105

(Source: US Census Bureau ASC 5-year 2015-2019)

Problem Statement

Based on intensity damage description in **Figure 3.14**, a 7.6 magnitude earthquake along the New Madrid fault may result in slight damage to older, poorly built structures, if any. Twenty-eight percent or higher of the housing structures in Holt, Plattsburg and Turney were built prior to 1940 and may be impacted more by an earthquake. Impact to older homes can be somewhat mitigated during remodeling and renovation. Potential damages to future development can be mitigated by all jurisdictions adopting and enforcing IBC 2012 building codes.

3.4.5 Land Subsidence/Sinkholes

Hazard Profile

Hazard Description

Sinkholes are common where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that naturally can be dissolved by ground water circulating through them. As the rock dissolves, spaces and caverns develop underground and ultimately the land above the spaces collapse. In Missouri, sinkhole problems are usually a result of surface materials above openings into bedrock caves eroding and collapsing into the cave opening. These collapses are called "cover collapses" and geologic information can be applied to predict the general regions where collapse will occur. Sinkholes range in size from several square yards to hundreds of acres and may be quite shallow or hundreds of feet deep.

The sudden collapse of the land surface above them can be dramatic and range in size from broad, regional lowering of the land surface to localized collapse. However, the primary causes of most subsidence are human activities: underground mining of coal, groundwater or petroleum withdrawal, and drainage of organic soils. Fifty-eight mineral mines have operated in DeKalb County.

Sinkholes can develop as a result of subsurface void spaces created over time due to the erosion of subsurface limestone (karst).

Land subsidence occurs slowly and continuously over time, as a general rule. On occasion, it can occur abruptly, as in the sudden formation of sinkholes. Sinkhole formation can be aggravated by flooding.

According to the U.S. Geological Survey (USGS), the most damage from sinkholes tends to occur in Florida, Texas, Alabama, Missouri, Kentucky, Tennessee, and Pennsylvania. Fifty-nine percent of Missouri is underlain by thick, carbonate rock that makes Missouri vulnerable to sinkholes. Sinkholes occur in Missouri on a fairly frequent basis. Most of Missouri's sinkholes occur naturally in the State's karst regions (areas with soluble bedrock). They are a common geologic hazard in southern Missouri, but also occur in the central and northeastern parts of the state. Missouri sinkholes have varied from a few feet to hundreds of acres and from less than one to more than 100 feet deep. The largest known sinkhole in Missouri encompasses about 700 acres in western Boone County, southeast of where Interstate 70 crosses the Missouri River. Sinkholes can also vary is shape from shallow bowls and saucers to forms with vertical walls. Some hold water and form natural ponds.

Other potential causes of collapse include man-made features such as septic tanks, cisterns, pipelines, and old hand-dug wells and shallow mine workings, all of which lose their structural integrity as they age. However, unlike sinkholes, these features normally remain stable once remediated. Clinton County has had 86 mineral mines.

Geographic Location

There are no known documented sinkholes in Clinton County.

Strength/Magnitude/Extent

Sinkholes vary in size and location, and these variances will determine the impact of the hazard. A sinkhole could result in the loss of a personal vehicle, a building collapse, or damage to infrastructure such as roads, water, or sewer lines. Groundwater contamination is also possible from a sinkhole.

Because of the relationship of sinkholes to groundwater, pollutants captured or dumped in sinkholes could affect a community's groundwater system. Sinkhole collapse could be triggered by large earthquakes. Sinkholes located in floodplains can absorb floodwaters but make detailed flood hazard studies difficult to model.

The 2018 State Plan included only seven documented sinkhole "notable events". The plan stated that sinkholes are common to Missouri and the probability is high that they will occur in the future. To date, Missouri sinkholes have historically not had major impacts on development nor have they caused serious damage. Thus, the severity of future events is likely to be low.

Previous Occurrences

Although the 2018 State Plan states that sinkholes are a regular occurrence in Missouri, they are rarely events of any significance. There are no documented sinkholes occurrences in the DeKalb County.

Probability of Future Occurrence

Since there are no records of previous event dates in the planning area, the probability of a future occurrence cannot be calculated.

Changing Future Conditions Considerations

Vulnerability

Vulnerability Overview

Clinton County has not experienced any sinkhole events.

Potential Losses to Existing Development

It is difficult to estimate future losses based on historical losses since no known losses have occurred.

Impact of Previous and Future Development

Even though Missouri has a moderate probability of a sinkhole event, the soil and subsoil structure of Clinton County make significant land movement events unlikely.

Hazard Summary by Jurisdiction

Clinton County has not experienced any sinkhole events.

Problem Statement

Even though the county has not experienced any sinkhole events jurisdictions should be mindful that an event could occur.

3.4.6 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.

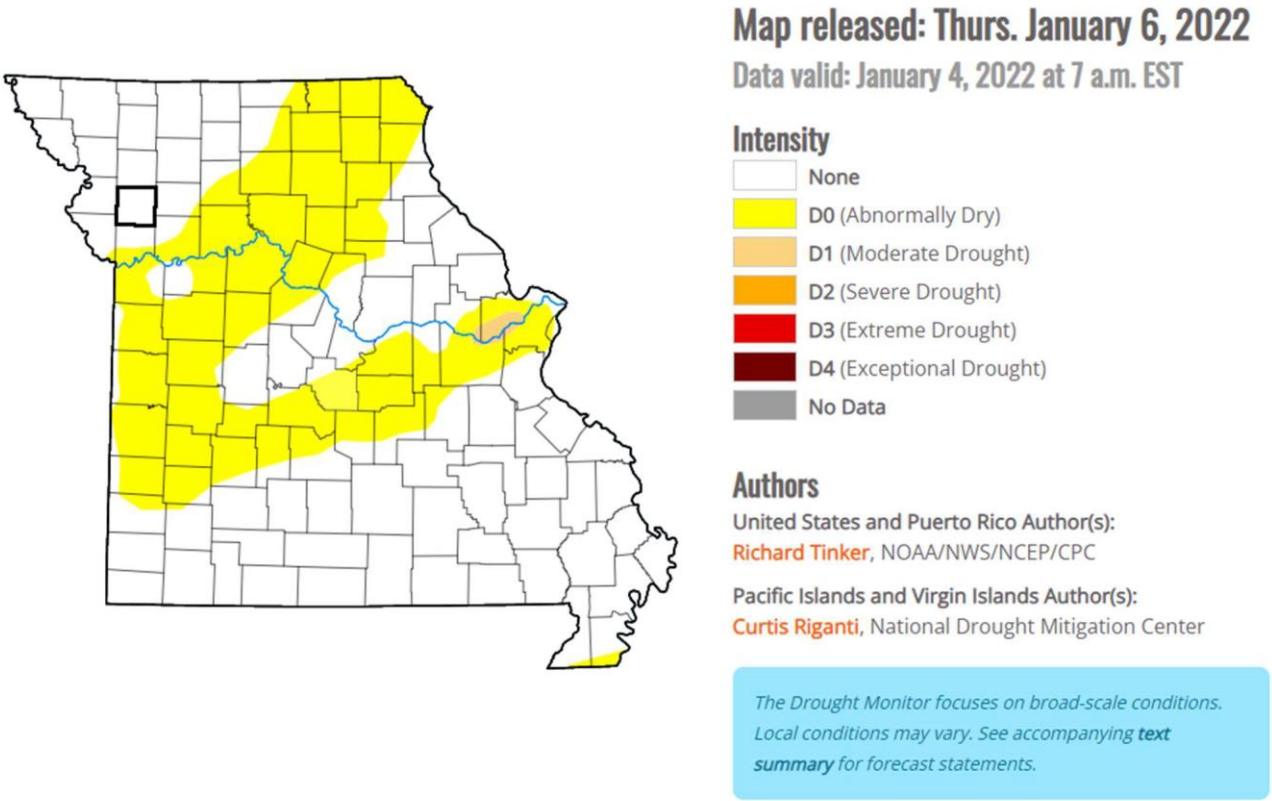
- Agricultural drought focus is on soil moisture deficiencies, differences between actual and potential evaporation, reduced ground water or reservoir levels, etc. Plant demand for water depends on prevailing weather conditions, biological characteristics of the specific plant, its stage of growth, and the physical and biological properties of the soil.

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

Geographic Location

The entire planning area is at risk to drought. Clinton County covers 423 square miles and approximately 347 square miles (82 percent) of the land was in farm use in 2017. Of the 684 farms in the county, only 6 irrigate. From 2012 to 2017, the number of farms decreased by 90 percent while the amount of land in farm use farm use increased by 116 percent. (Source: https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_2_County_Level/Missouri/st29_2_0001_0001.pdf).

Figure 3.17. U.S. Drought Monitor Map of Missouri on January 6, 2022



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 USDA’s Risk Management Agency tracks insured crop loss payments in the county as a result of drought. **Table 3.31** shows the crop loss payments in Clinton County from 2011 to 2021. Crop loss payments were the highest in 2012, with a total of $21,647,013.00.

Table 3.31. Crop Loss Payments in Clinton County from 2011-2021

Year	Crop Loss Payment
2021	$49,630.00
2020	$55,611.00
2019	$0.00
2018	$9,132,283.98
2017	$659,555.50
2016	$18,418.00
2015	$0.00
2014	$17,813.50
2013	$2,497,189.00
2012	$21,647,013.00
2011	$151,431.00

(Source: http://www.rma.usda.gov/data/cause.html)

None of the communities in Clinton County use water from a well as the only source of water, though there were once 40 now inactive wells across the county. The Little Platte River flows through the center of the county between Stewartsville and Osborn to the north, forming Smithville Lake between Plattsburg and Trimble. (Source: https://maps.waterdata.usgs.gov/mapper/index.html).

Previous Occurrences

Clinton County experienced droughts for 8 months between July 2012 and February 2013 and for 5 months in the summer of 2018 as shown below in **Table 3.32**

Table 3.32. Years of Drought in Clinton County

Year	Number of Months
2018	5 months
2013	2 months
2012	6 months

(Source:https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Drought&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=1950&endDate_mm=12&endDate_dd=30&endDate_yyyy=2021&county=CLINTON%3A49&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=29%2CMISSOURI)

Probability of Future Occurrence

A 20-year period is used from which to draw data on drought events to obtain a more accurate estimate of probability. Over the 20-year record period, Clinton County was in a drought for 13 months. There is a total of 240 months in the record period. The calculated risk percent from the number of months of drought and the total number of months in the record period equates to the annual average percentage of 5.42 percent probability of drought occurrence in the county. Although drought is not predictable, long-range outlooks and predicted impacts of climate change could indicate an increased chance of drought persistence and severity.

Changing Future Conditions Considerations

Severe drought, a natural part of Missouri's climate, is a risk to this agriculture-dependent state. Future increases in evaporation rates due to higher temperatures may increase the intensity of naturally occurring droughts. Although springtime in Missouri is likely to be wetter, summer droughts are likely to be more severe. Higher evaporation and lower summer rainfall are likely to reduce river flows. The drought of 2012 narrowed navigation channels, forced lock closures, and caused dozens of barges to run aground on the Mississippi River along the Missouri shoreline. The resulting impact on navigation cost the region more than $275 million. The drought of 2012–2013 also threatened municipal and industrial water users along the Missouri River. The number of heavy rainfall events is

predicted to increase, yet researchers currently expect little change in total rainfall amounts, indicating that the periods between heavy rainfalls will be marked by an increasing number of dry days. Higher temperatures and increased evapotranspiration increase the likelihood of 3.242 3 Risk Assessment drought. This could lead to agricultural drought and suppressed crop yields.

Vulnerability

Vulnerability Overview

Due to Clinton County's distance from the Missouri River, the National Drought Mitigation Center determines the county is highly susceptible to drought with a 9.7 percent likelihood of a severe drought. (Source: Missouri Hazard Mitigation Plan 2018 pg. 3.247 https://sema.dps.mo.gov/docs/programs/LRMF/mitigation/MO_Hazard_Mitigation_Plan2018.pdf)

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.

Impact of Previous and Future Development

Increases in acreage planted with crops would add to exposure to drought-related agricultural losses. In addition, increases in population result in increased demand for treated water, adding additional strain on water supply systems.

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.

The Natural Resources Defense Council developed a new water supply sustainability index. The risk to water sustainability is based on the following criteria:

- Projected water demand as a share of available precipitation
- Groundwater use as a share of projected available precipitation
- Susceptibility to drought
- Projected increase in freshwater withdrawals
- Projected increase in summer water deficit

The risk to water sustainability for counties meeting two of the criteria are classified as "moderate" while

those meeting three of the criteria are classified as “high,” and those meeting four or more are classified as “extreme.” Counties meeting less than two criteria are considered to have low risk to water sustainability. According to the Natural Resources Defense Council, without climate change the water sustainability index for Clinton County is low. With climate change, the water supply sustainability index increases to moderate (Source: https://www.nrdc.org/issues/climate-change).

Hazard Summary by Jurisdiction

Although the probability of drought is the same for the entire county, farming and livestock enterprises in the unincorporated parts of the county would feel the greatest impact. These impacts are mitigated somewhat by the purchase of crop insurance. The communities in Clinton County are on water systems. There are source water sites near Plattsburg and Holt. However, many rural residents rely on limited source wells, which would be impacted during water shortages. In cities, the drought conditions would be the same as those experienced in rural areas, but the magnitude would be different with only lawns and local gardens impacted. In addition, building foundations could be weakened due to shrinking and expanding soils. School and special districts would be the least impacted by drought, however, those districts in communities with single source wells may experience water shortages prior to those in larger communities.

Problem Statement

Although drought most likely will not cause structural damage, the impact is greatest on the agriculture sector and if persistent enough, could cause reductions in groundwater and water shortages in communities that provide potable water services. Potential solutions to mitigate the impact of drought would be for communities to develop an ordinance to restrict the use of public water resources for non-essential usage, such as landscaping, washing cars, filling swimming pools, etc. during extreme drought periods. Schools can also implement water conservation measures at all district facilities.

3.4.7 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, typically during summer months (June-September). 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.

Extreme heat can lead to a broad array of injury & illnesses, known as "hyperthermia," in humans and animals including sunburns, heat stress, heat exhaustion, and heat stroke, in addition to dehydration, see **Table 3.33**.

Table 3.33. Typical 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, https://www.weather.gov/ama/heatindex

Extreme heat may also cause stress to crops and livestock. 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.

Extreme heat can also lead to other environmental and social hazards including:

- Drought & Water Shortages
- Heat Trapping Pollution in Cities
- Domestic Violence & Abuse
- Civil Disturbances & Riots

Extreme cold often accompanies severe winter storms and can lead to health risks in human and animals including hypothermia and frostbite. When combined with high winds from winter storms, extreme cold becomes extreme wind chill, which is hazardous to health and safety. 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. Power outages and unmonitored use of gas fueled heating instruments in efforts to keep warm can also lead to an increased risk of structure fires and CO_2 poisoning. Extreme cold also increases the likelihood for ice jams on flat rivers or streams.

The National Institute on Aging estimates that more than 2.5 million Americans are elderly and especially vulnerable to hypothermia, with 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.

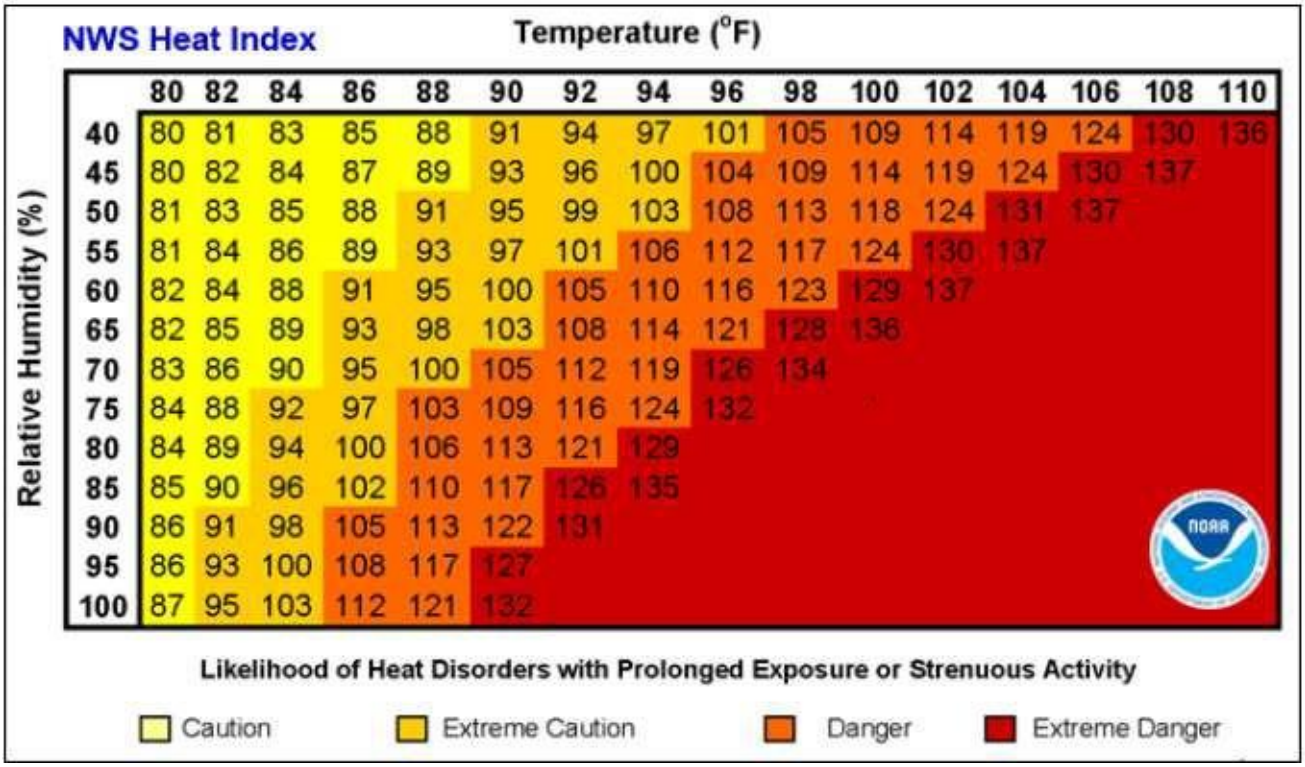
Geographic Location

Extreme temperatures are an area-wide hazard event, and while a planning area may be outside the epicenter of a winter storm event, extreme cold can still impact neighboring communities. In the case of extreme heat, temperatures, and their risk therein, will often not vary across the planning area.

Strength/Magnitude/Extent

The National Weather Service (NWS) has an alert system in place (advisories or warnings) when the Heat Index (**Figure 3.18**) is expected to have a significant impact on public safety. The expected severity of the heat determines whether advisories or warnings are issued. A common guideline for issuing excessive heat alerts is when for two or more consecutive days: (1) when the maximum daytime Heat Index is expected to equal or exceed 105 degrees Fahrenheit (°F); and the night time minimum Heat Index is 80°F or above. A heat advisory is issued when temperatures reach 105 degrees and a warning is issued at 115 degrees.

Figure 3.18. Heat Index (HI) Chart

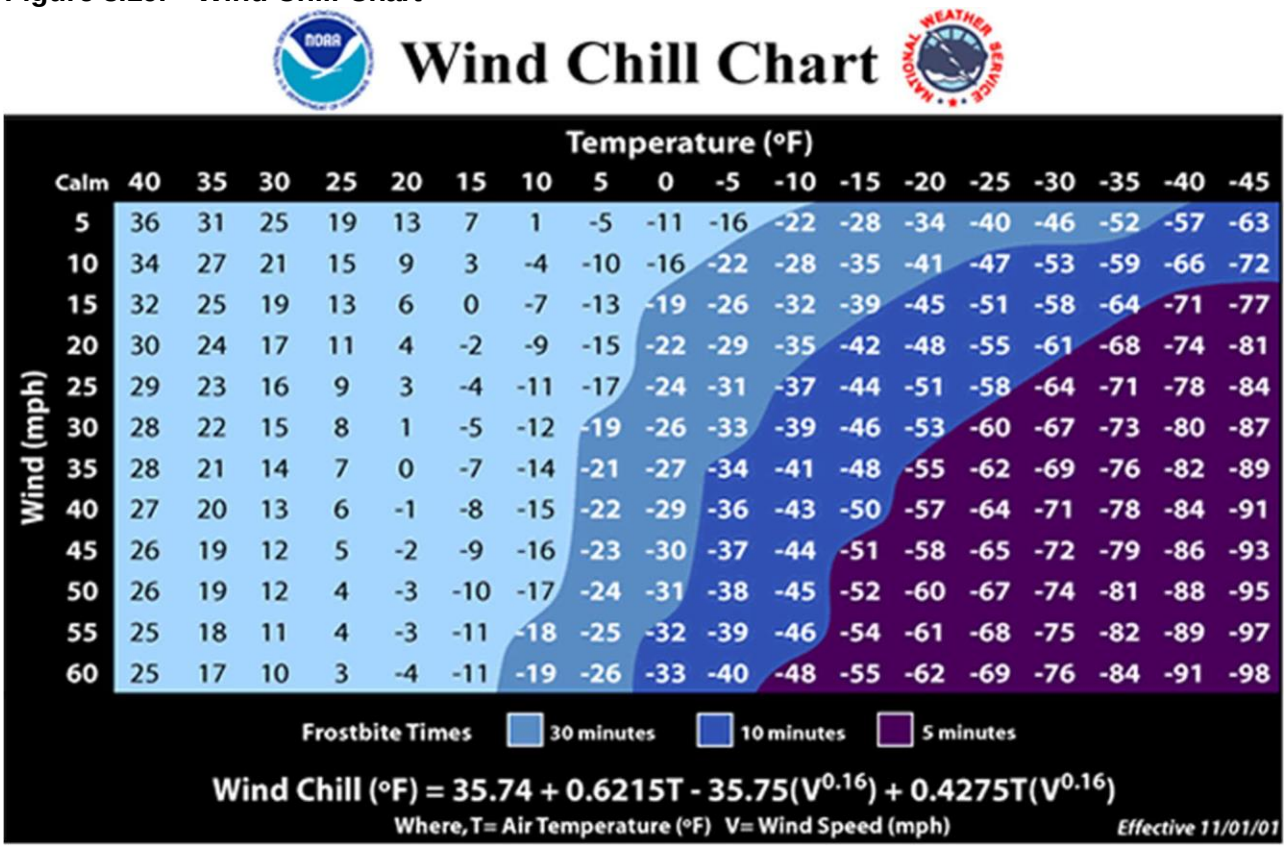


Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60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

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 (**Figure 3.19**) uses advances in science, technology, and computer modeling to provide an accurate, understandable, and useful formula for calculating the dangers from winter winds and freezing temperatures. The figure below presents wind chill temperatures which are based on the rate of heat loss from exposed skin caused by wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature and eventually the internal body temperature.

Figure 3.19. Wind Chill Chart



Wind Chill Chart

Wind (mph)	Temperature (°F)																	
Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes, 10 minutes, 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

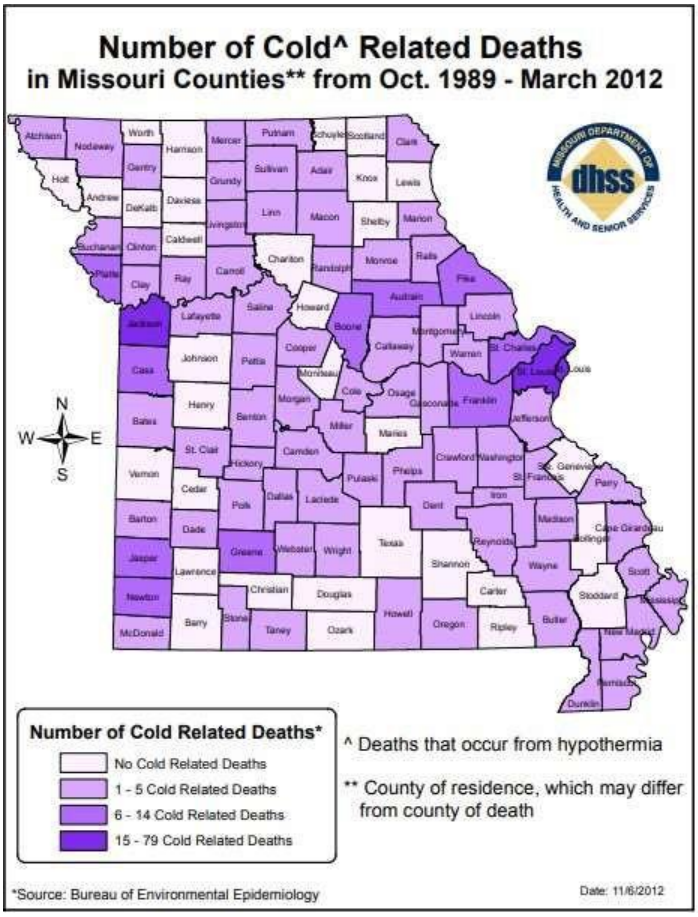
Effective 11/01/01

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

Previous Occurrences

The National Center for Environmental Information data shows 20 extreme temperature events in Clinton County from 2000 – August 2021, with 6 extreme cold/wind chill events and 14 excessive heat events. Of these events, the most recent and longest, was a cold event recorded on December 16, 2021 with wind chills overnight that brought temperatures down to a range of 20-30 degrees below zero across the region. The USDA Risk Management Agency documents that in Clinton County from 2011-2021 there were approximately 77 acres of various crops lost due to “cold winter” conditions valued at $14,174. For figures on deaths due to hypothermia cold-related deaths refer to **Figure 3.20**.

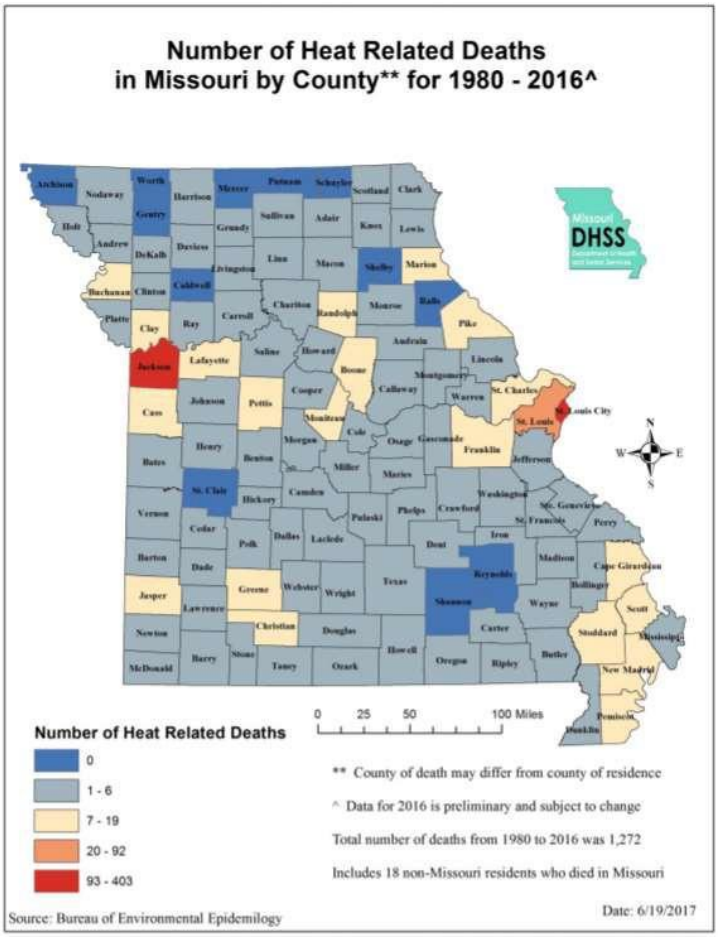
Figure 3.20. Cold Related Deaths in Missouri October 1989 – March 2012



Source: https://health.mo.gov/living/healthcondiseases/hypothermia/pdf/hypomap.pdf

The National Center for Environmental Information dates the most recent extreme heat event as occurring from July 18-25, 2012. During this event the Heat Index in the planning area ranged from 100-110 degrees. The USDA Risk Management Agency documents that from 2011-2021 there were approximately 1,893 acres of various crops lost due to “heat” conditions valued at $153,117. For figures on deaths due to hyperthermia heat-related deaths refer to **Figure 3.21**. The National Weather Service has stated that among natural hazards, no other natural disaster—not lightning, hurricanes, tornadoes, floods, or earthquakes—causes more deaths.

Figure 3.21. Heat Related Deaths in Missouri 2000 – 2016



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

Probability of Future Occurrence

The probability that an extreme cold event will occur in Clinton County in any given year is 29%. This equates to dividing 21 years by 6, the number of events during that reporting period. Using this same methodology, the probability that an extreme heat event will occur based on 14 events over 21 years is approximately 66%. Data limitation indicates that extreme heat events could be underreported in the NCDC. See **Table 3.34**.

Table 3.34. Likelihood of Occurrence (Based on Data 2000-2021)

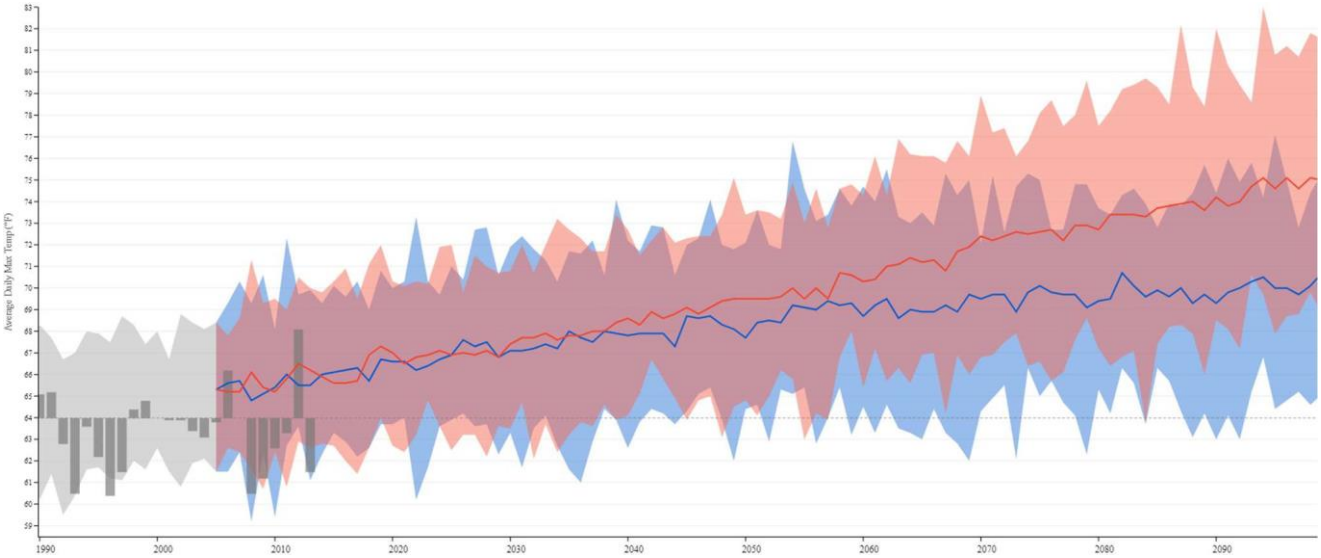
Type of Event	Total Events	Likelihood of Occurrence (Total/21 years)
Extreme Heat	**14**	**66%**
Extreme Cold	**6**	**29%**

Changing Future Conditions Considerations

The 2018 Missouri Hazard Mitigation Plan notes that as greenhouse emissions increase, the projected daily temperature is expected to increase at an exponential rate. Given this, it will be important for the planning area population to be made more aware of threats faced from hyperthermia-based overheating illnesses, such as dehydration and heat stroke and heat stress. Higher temperatures will also lead to greater strains on the electric grid as electric cooling demand grows, which could in turn lead to a preponderance of rolling blackouts.

The Climate Explorer modeling tool created by the NOAA gives a projection of what average daily max temperatures could look like if greenhouse emissions continue to rise. The blue line, representing lowered emissions, projects a steady increase in temperature, but one that does not vary much from average temperatures in decades past. The red line, representing higher emissions, keeps pace with the blue line at first but, by the 2040s, the variance between the two lines is 5 degrees warmer on average and increases in intensity with each decade. See **Figure 3.22**.

Figure 3.22. Plattsburg, MO – Project Avg Daily Max Temp (°F)



Source: https://crt-climate-explorer.nemac.org/

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. Children's bodies warm 3-5 times faster than that of adults, which is why being left in a hot car can be especially deadly for them.

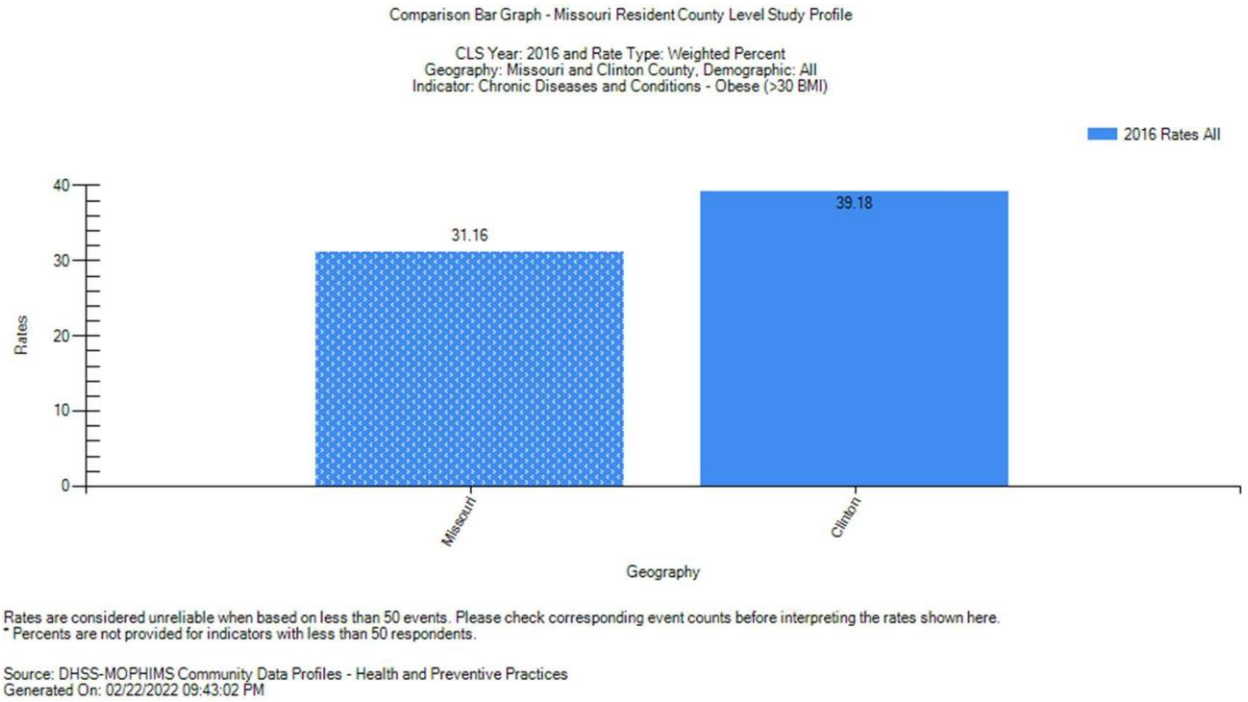
According to U.S. census data, 17.5% percent of Clinton County's overall population is aged 65 or older, which the 2018 Missouri plan rates as a low-medium risk. The groups that may be a greater risk factor for the county though are the obese and cigarette smokers. **Figure 3.23** shows that based on 2016 data from Missouri Department of Health and Senior Services, the county obesity rate (39.18%) is 8.02 percent higher than the overall state average (31.16%). **Figure 3.24** also shows that based on the same data, the county prevalence of cigarette smoking (23.49%) is 1.61 percent higher than the state average (21.88%). Cigarette smokers are particularly at risk from the adverse health

effects of extreme temperatures because they have decreased circulation capabilities, impacting their ability to regulate their internal body temperature.

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. Overall, it is important to note that when it comes to conditions involved with more severe exposure to extreme temperatures, such as frostbite, heat stroke, and dehydration, health impacts can be long-term when they result in tissue and organ damage.

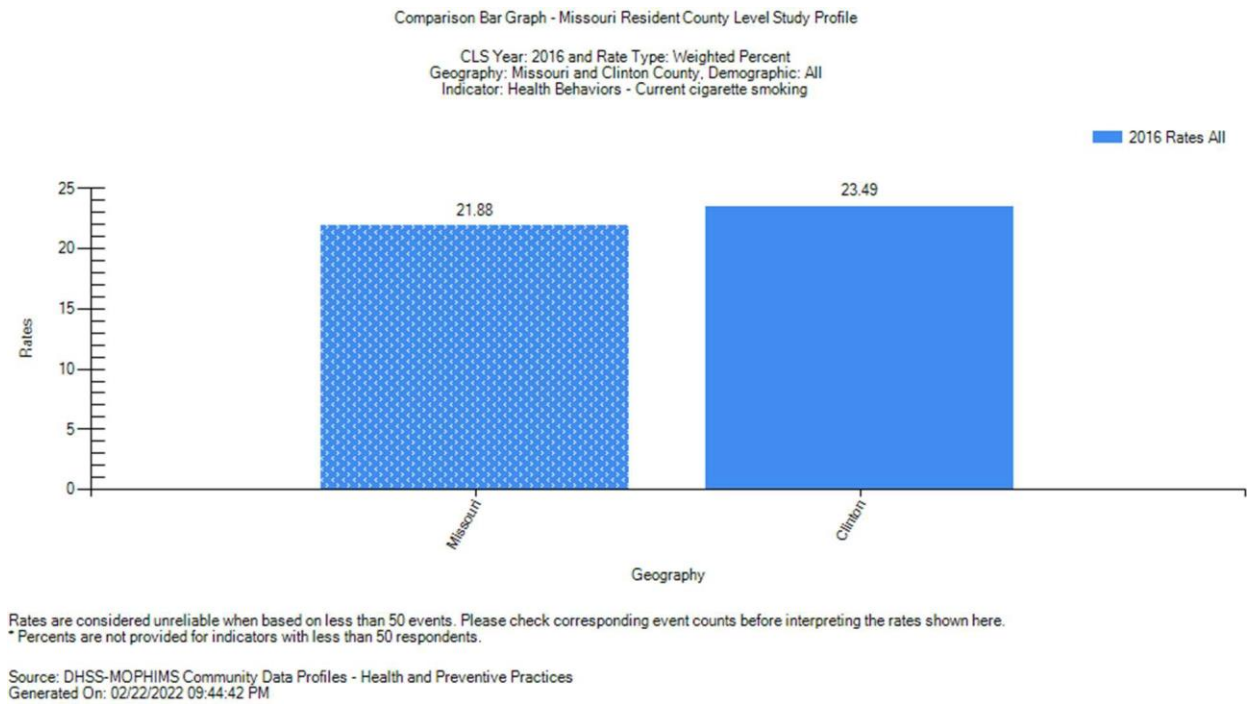
Based on the vulnerability ratings from the 2018 Missouri Hazard Mitigation Plan, Clinton is rated as having “low-medium” vulnerability for both extreme heat and extreme cold events.

Figure 3.23. MO DHSS Missouri and Clinton County Obesity Rates (2016)



Source: https://healthapps.dhss.mo.gov/MoPhims/ProfileBuilder?pc=14

Figure 3.24. MO DHSS Missouri and Clinton County Cigarette Smoking Rates (2016)



Source: https://healthapps.dhss.mo.gov/MoPhims/ProfileBuilder?pc=14

Potential Losses to Existing Development

Historical data on livestock loss is difficult to project, but data is widely available from the USDA Risk Management Agency on crop loss. For the decade of 2011-2020, crop losses for Clinton County due to extreme temperatures averaged 475.61 acres valued at $72,230.87 per year. As seen in **Table 3.35** For a more specific example of how extreme temperatures impacted crop loss, and refer to examples of extreme heat and extreme cold from 2012 and 2014 in the “Previous Occurrences” section.

It is also important to consider the longevity of electric power infrastructure, as extreme heat can lead to an in increased demand from consumers and overload of a system, while extreme cold and winter conditions can pose a threat to delivery infrastructure.

Table 3.35. Average Annual Crop Loss in Clinton Co., MO Due to Extreme Temperatures (2011-2020)

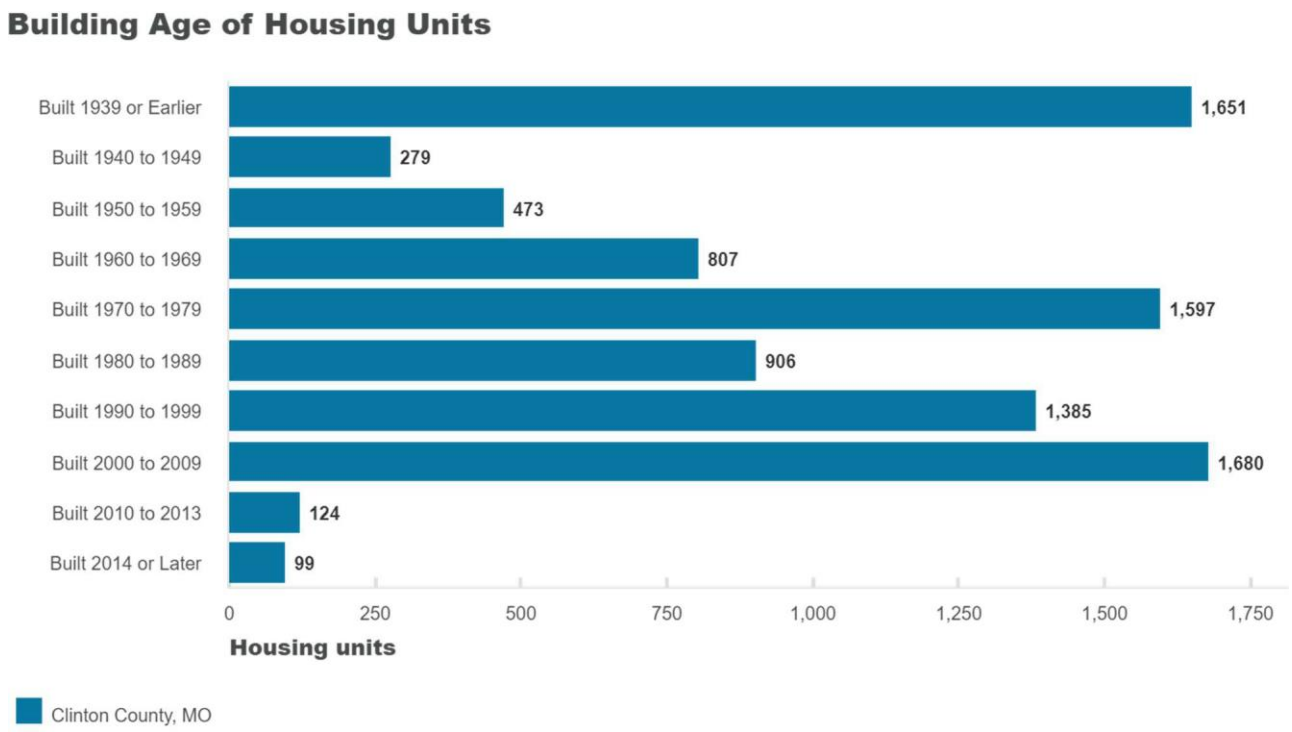
Type of Weather	Acreage Loss	Value
Extreme Cold (Cold Winter)	7	$1,288.55
Extreme Heat (Heat)	179.45	$15,251.82
Extreme Temperatures Overall	186.45	$16,540.37

Source: USDA Risk Management Association Risk of Crop Loss

Impact of Previous and Future Development

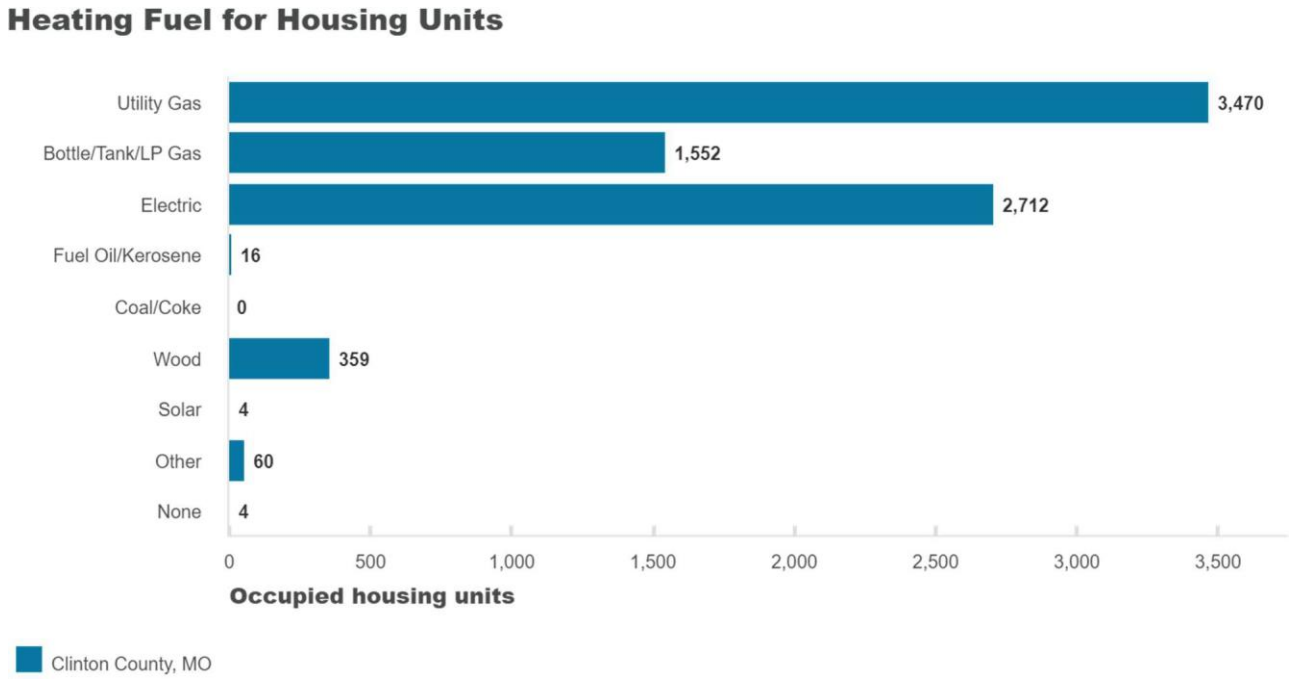
Clinton County's median age is 41 years and the population is not currently showing signs of growth, so any increased demand on heating or cooling resources will be dependent on climate and economic factors. Factors to consider for future development might be the rate of weatherization in buildings if they are up to electrical wiring code. **Figure 3.25** depicts the breakdown of the age of structures in throughout the county, showing that the majority of buildings were constructed in between 1970-1979. A significant amount of structures built in 1939 or earlier does exist, which may require significant modernization upgrades for heating and cooling. **Figure 3.26** shows that the vast majority of housing units in DeKalb County rely on electricity as their heating fuel source, which would put these units at risk in the event of an electrical outage or grid failure during a winter storm.

Figure 3.25. Age of Structures in Clinton County



Source: U.S. Census, American Community Survey 2019

Figure 3.26. Heating Fuel for Housing Units in Clinton County, MO (2019)



Source: U.S. Census, American Community Survey 2019

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 who could be vulnerable to extreme heat. **Table 3.36** 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. According to survey feedback from the Maysville and Union Star school districts all of their facilities have some air conditioning capabilities present.

Table 3.36. Clinton County Population Under Age 5 and Over Age 65, 2019 Census Data

Jurisdiction	Population Under 5 yrs	Population 65 yrs and over
*Clinton County	1,096 (5.3%)	3,583 (17.5%)
City of Cameron	332 (3.4%)	1,410 (14.6%)
City of Gower	113 (7%)	330 (20.4%)
City of Lathrop	122 (5.6%)	348 (15.9%)
City of Holt	26 (6.3%)	60 (14.5%)
City of Plattsburg	144 (6.4%)	392 (17.5%)
City of Trimble	61 (9.9%)	87 (14.1%)
Village of Turney	7 (2.7%)	9 (3.5%)

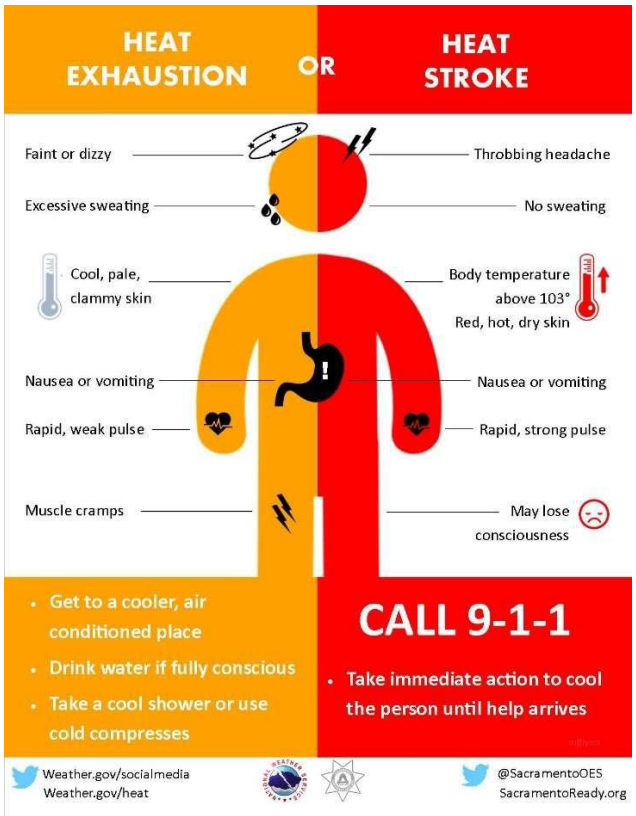
Mid-Buchanan School District School went from having 50% to 100% air-conditioned facilities in 2015, significantly decreasing the number of days that school closed early due to heat. The school districts do not have policies mandating closure during high heat events, but monitor the situation and make school closures accordingly.

Problem Statement

While Clinton County is rated as having an overall “low-medium” risk for extreme temperature events, demographic factors combined with aging electrical infrastructure could increase risks over time. The county has an aging population with above average measures for health risk factors such as obesity and cigarette smoking, all of which impact the ability to regulate body temperature under extreme conditions. The quantity of aging buildings also poses a risk for electrical hazards both in terms of community power outages from overloading or damage to electrical infrastructure, and in the potential to push individuals and families to rely more on heating sources that could introduce flame or carbon monoxide poisoning risks.

Education can play a significant role in mitigation. If individuals know that in the summer months, regardless of heat index, that they should apply sunblock and ensure they travel with water, then this could reduce the chances of short-term hyperthermia health risks or long-term risks like skin cancer. **Figure 3.27** gives an example of hyperthermia warning signs from the National Weather Service (NWS). Its is also vitally important that any educational services or materials are multi-lingual, particularly for Spanish speakers. The NWS as well as state and federal DHSS have an abundance of multi-lingual extreme temperature education resources, even for social media awareness.

Figure 3.27. NWS Hyperthermia Symptoms Guide



3.4.8 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 3.4.10**).

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.

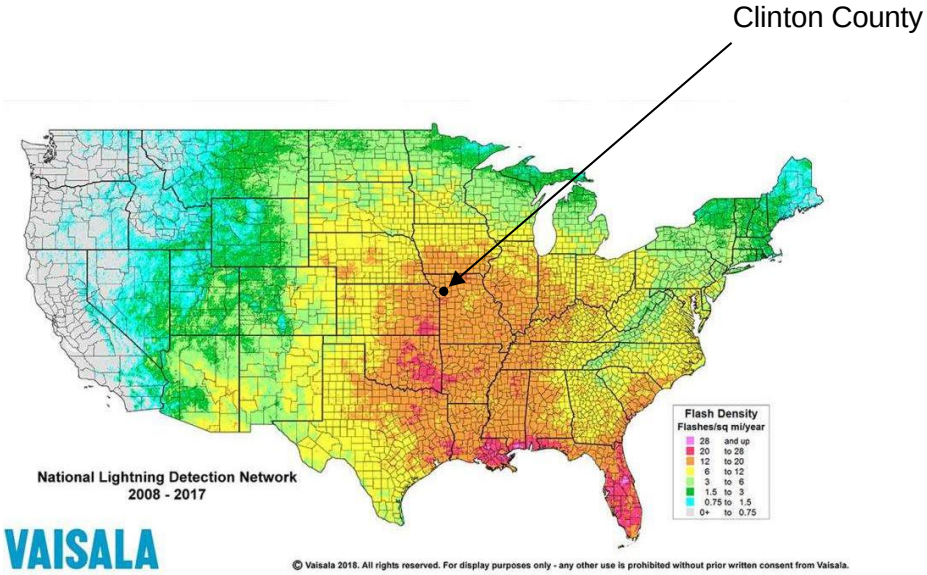
At the time when the updraft can no longer support the hailstone, it will fall down to the earth. For example, a ¼" diameter or pea sized hail requires updrafts of 24 miles per hour, while a 2 ¾" diameter or baseball sized hail requires an updraft of 81 miles per hour. According to the NOAA, the largest 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.

Figure 3.28 shows lightning frequency in the state. Clinton County, identified with a black dot, is located in the orange zone on the map, indicating a 12-20 average flash density per square kilometer each year. Much of the state is in the same zone.

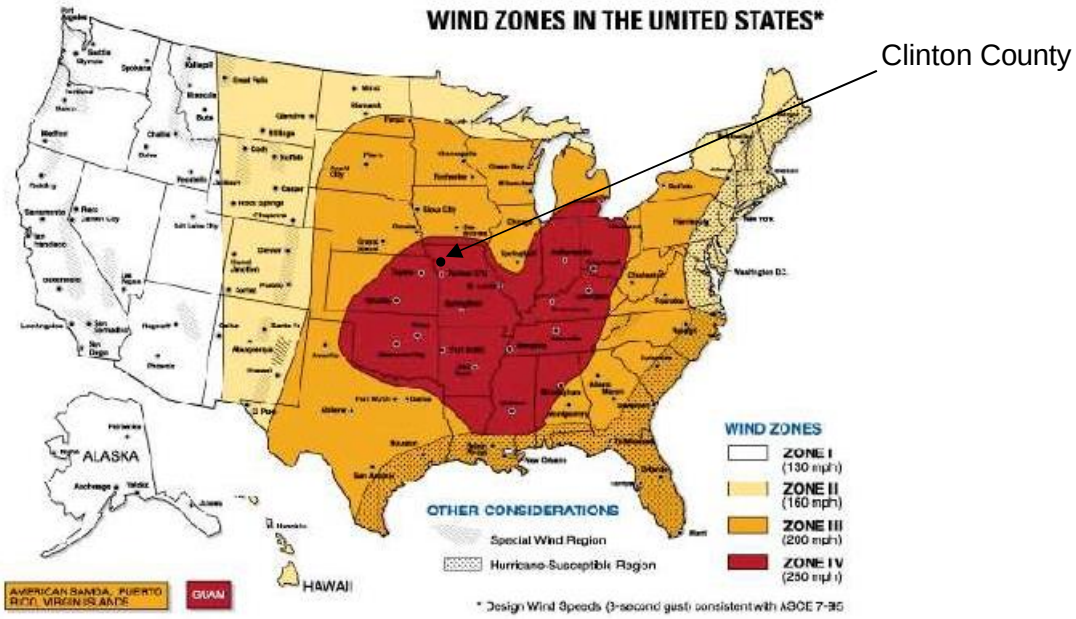
Figure 3.28. Location and Frequency of Lightning in Missouri



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

Figure 3.29 shows wind zones in the United States. Clinton County, identified with a black dot, is in the red zone (Zone IV) on the map. Winds can reach 250 miles per hour in this zone.

Figure 3.29. 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

Severe thunderstorm losses are usually attributed to the associated hazards of hail, 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 making federal assistance necessary. Hail and wind 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 destroy plants 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, occasionally fatal, to humans.

In general, assets in Clinton County vulnerable to thunderstorms with lightning, high winds, and hail include people, crops, vehicles, and structures. Although this hazard results in high annual losses, private property insurance and crop insurance usually cover most losses. When considering insurance coverage as a recovery capability, the overall financial impact on jurisdictions is reduced.

Most lightning damages occur to electronic equipment located inside buildings. Structural damage can also occur when a lightning strike causes a building fire. In addition, lightning strikes can cause crop damages if fields or forested lands are set on fire. Communications equipment and warning transmitters and receivers can also be rendered useless by lightning strikes.

Based on information provided by the Tornado and Storm Research Organization (TORRO), **Table 3.37** below describes typical damage impacts of the various sizes of hail.

Table 3.37. 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

Table 3.38 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.

Thunderstorms and lightning were not listed as the cause of loss for any insurance claims in Clinton County from 2010-2020.

Table 3.38. Crop Insurance Claims Paid in Clinton County from Thunderstorms, Hail, High Winds and Lightning, 2010-2020

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2010	Corn	Hail	$39,480.00
2010	Soybeans	Hail	$7,103.00
2011	Corn	Hail	$8,024.00
2011	Soybeans	Hail	$24,721.00
2012	Corn	Hail	$1,631.00
2012	Corn	Hail	$4,338.00
2012	Corn	Hail	$2,473.00
2012	Soybeans	Hail	$9,357.00
2014	Soybeans	Hail	$592.80
2016	Corn	Hail	$1,723.20
2017	Soybeans	Wind/Excess Wind	$63,012.50
Total			**$162,455.50**

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

The tables below include NCEI reported events and damages for the past 21 years for thunderstorms, wind, and hail. There were 52 recorded thunderstorm wind events in Clinton County for the 21-year reporting period with $59,750 in recorded property damages and two injuries. **Table 3.39** only lists thunderstorm wind/high wind events that involved recorded property damage or injuries.

Table 3.39. NCEI Thunderstorm Wind Events in Clinton County, 2000-2020

Jurisdiction	Date	Wind Speed (in knots)	Injuries	Property Damage
Lathrop	6/12/2004	61	0	$2,000
Lathrop	6/12/2004	61	0	$2,000
Cameron	6/03/2005	52	0	$1,000
Gower	10/02/2005	57	0	$2,000
Perrin	04/10/2008	52	0	$2,000
Converse	8/20/2010	70	0	$750
Lathrop	6/15/2013	52	1	-
Converse	6/02/2018	61	1	$50,000
Total:			**2**	**$59,750**

There were 34 days with recorded hail (one inch and larger) events in Clinton County, but no injuries or property damages were reported with those events. **Table 3.40** only lists hail events with hail over two inches in diameter.

Table 3.40. NCEI Hail Events in Clinton County, 2000-2020

Jurisdiction	Date	Hail size (inches)	Injuries	Property Damage
Trimble	5/29/2004	2.75	0	0
Gower	5/29/2004	2.75	0	$0
Converse	6/11/2009	2.50	0	$0
Gower	5/24/2020	2.75	0	$0
Total				**$0**

Probability of Future Occurrence

Thunderstorm Wind: There have been 49 recorded thunderstorm wind events over a 21-year period from 2000-2020. This equates to 2.3 thunderstorm wind events in any given year with a 100 percent probability of occurrence. There were seven events that resulted in $59,750 in property damages. This equates to three damaging events per year with annualized losses of $2,845.24.

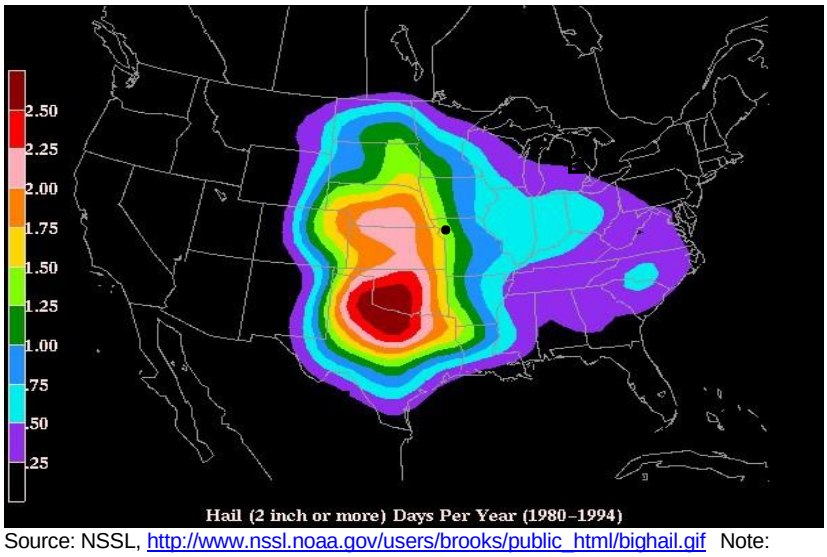
Lightning: There were no NCEI reported events for lightning. One limitation of NCEI reported lightning events is the fact that only those that result in fatality, injury, and/or property and crop damage are reported.

Hail: There has been 34 recorded hail events over a 21-year period from 2000-2020. This equates to 1.62 hail events in any given year with an eight percent probability of occurrence. There were no recorded events that resulted in property damage from hail; therefore, no resulting annualized losses.

Strong Wind: There were three NCEI reported events for strong wind, but there were no annualized losses. This is likely underreported.

Figure 3.30 is based on hailstorm data from 1980-1994. It shows the probability of hailstorm occurrence (2" diameter or larger) based on number of days per year. Clinton County, identified by a black dot, is located in the light green zone, indicating the county's probability of a hailstorm with 2" diameter or larger hail is 1.25 to .50 days per year.

Figure 3.30. 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

According to the 2018 State Hazard Mitigation Plan, NASA's Earth Observatory provides an analysis on how climate change could, theoretically, increase potential storm energy by warming the surface and putting more moisture in the air through evaporation.

The presence of warm, moist air near the surface is a key ingredient for summer storms that meteorologists have termed "convective available potential energy," or CAPE. With an increase in CAPE, there is greater potential for cumulus clouds to form. The study also counters this theory with the theory that warming in the Arctic could lead to less wind shear in the mid-latitude areas prone to

summer storms, making the storms less likely.

Predicted increases in temperature could help create atmospheric conditions that are fertile breeding grounds for severe thunderstorms and tornadoes in Missouri and Clinton County. Possible impacts include an increased risk to life and property in both the public and private sectors. Public utilities and manufactured housing developments will be especially prone to damages. Jurisdictions already affected should be prepared for more of these events and should thus prioritize mitigation actions such as construction of safe rooms for vulnerable populations, retrofitting and/or hardening existing structures, improving warning systems and public education, and reinforcing utilities and additional critical infrastructure. Source: MO Hazard Mitigation Plan, pp. 3.293-3.294

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 Clinton County vulnerable to thunderstorms with lightning, high winds, and hail include people, crops, vehicles, and built structures. Although this hazard can result 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. Source: http://www.vaisala.com/en/products/thunderstormandlightningdetectionsystems/Pages/NLDN.aspx and http://www.lightningsafety.noaa.gov/

The method used to determine vulnerability to severe thunderstorms across Missouri, including in DeKalb County, was statistical analysis of data from several sources: National Centers for Environmental Information (NCEI) storm events data (1996 to December 31, 2016), HAZUS Building Exposure Value data, housing density and mobile home data from the U.S. Census (2015 ACS), and the calculated Social Vulnerability Index for Missouri Counties from the Hazards and Vulnerability Research Institute in the Department of Geography at the University of South Carolina. 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. These rating values correspond to the following descriptive terms: 1) Low 2) Low-medium 3) Medium 4) Medium-high 5) High

According to this method, Clinton County has a medium vulnerability rating for thunderstorms, including high wind, hail, and lightning as detailed in **Tables 3.41-3.42** below.

Table 3.41. Housing Density, Building Exposure, SOVI, and Mobile Home Data by County

County	Total Building Exposure (Hazus)	Building Exposure Rating	Housing Density	Housing Density Rating	SOVI Ranking	SOVI Ranking Rating	Percent Mobile Homes	Percent Mobile Homes Rating
Clinton County	$2,282,850,000	1	21.20	1	Medium	3	5.5	2

Source: 2018 Mo State Hazard Mitigation Plan, p. 3.296

Table 3.42. Number of High Wind, Hail, and Lightning Events, Likelihood of Occurrence, and Associated Ratings

County	HIGH WIND			HAIL			LIGHTNING		
	Total # of Events	Likelihood of Occurrence	Likelihood of Occurrence Rating	Total # of Events	Likelihood of Occurrence	Likelihood of Occurrence Rating	Total # of Events	Likelihood of Occurrence	Likelihood of Rating
Clinton	71	3.381	2	109	5.190	3	0	0.000	1

Source: 2018 Mo State Hazard Mitigation Plan, p. 3.300

Potential Losses to Existing Development

The average annual loss determined from historical losses for high wind and hail are indicators of the potential losses to existing development. While a limited number of high wind events have been recorded in Clinton County, they have the potential to damage private property and commercial buildings. Based on the $59,750.00 in recorded losses from thunderstorm wind and hail damage recorded in the NCEI database from 2000-2020, potential losses for future events are annualized at $2,845.24.

Previous and Future Development

Additional development would result in the exposure of more households and businesses vulnerable to damages from severe thunderstorms/high winds/lightning/hail.

Hazard Summary by Jurisdiction

Although thunderstorms/high winds/lightning/hail events are area-wide, there may be demographics indicating higher losses in one jurisdiction as compared to another. Structures built before 1939 are considered more vulnerable to the impact of high wind and hail damage. Please see **Table 3.25** for ages of structures in jurisdictions in Clinton County.

Problem Statement

The NCEI Storm Events Database notes 95 thunderstorm wind/hail events in Clinton County almost $60,000 in reported damages.

Poorly built structures, barns, and outbuildings are more vulnerable to the impact of high winds during

thunderstorms. High winds can topple utility poles and lead to power outages. Both high winds and hail can damage roofs. Possible solutions include review of local ordinance and building codes to address high winds and/or construction techniques to include structural bracing, straps and clips, or anchor bolts.

Hail can also damage crops and dent cars and trucks. People are also at risk of injury and death during high wind events. Crop insurance mitigates the risk to farmers and the agriculture sector within the county.

The risk of injury and death in the county can be mitigated by identifying safe refuge areas in public buildings, nursing homes and other facilities that house vulnerable populations that do not have a saferoom. Retrofitting school district facilities to better withstand high winds will provide more protection for students and staff.

Additional warnings and alerts will also provide the public and schools more time to take cover during high wind events. Education and hazard awareness programs would also increase public safety in the event of severe thunderstorm events.

3.4.9 Severe Winter Weather

Hazard Profile

Hazard Description

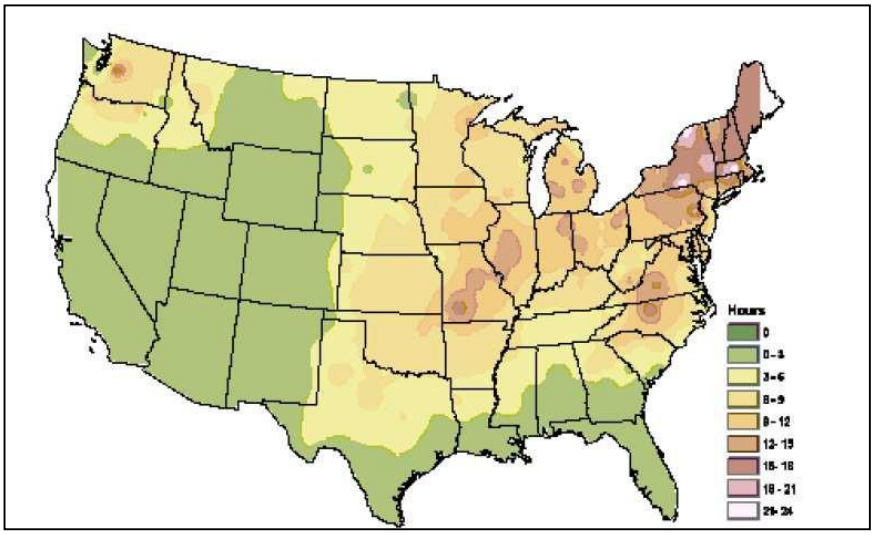
A major winter storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall, and cold temperatures. The National Weather Service describes different types of winter storm events as follows.

- **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

The entire county is vulnerable to heavy snow, ice, extreme cold temperatures and freezing rain. **Figure 3.31** shows the zones of average number of hours of freezing rain per year. Clinton County is located in the light-yellow zone, indicating that the county receives three to six hours of freezing rain per year.

Figure 3.31. NWS Statewide Average Number of Hours per Year with Freezing Rain



(Source: American Meteorological Society. "Freezing Rain Events in the United States." http://ams.confex.com/ams/pdfpapers/71872.pdf)

Strength/Magnitude/Extent

Severe winter storms include 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 3.43 includes NCEI reported events and damages for the past 25 years in Clinton County. There were 110 days with reported events.

Table 3.43. NCEI Clinton County Winter Weather Events Summary, 1997-2021

Type of Event	Inclusive Dates	Magnitude	# of Injuries	Property Damages	Crop Damages
Cold/Wind Chill	01/10/1997-01/13/1997	Wind chills as low as 30-50 below zero	0	$0	$0
Heavy Snow	01/27/1997	Approx. 5 in. of snow	0	$0	$0
Winter Storm	02/21/1997	2-4 in. of rain, 1-5 in. of snow	0	$0	$0
Ice Storm	12/21/1997		0	$0	$0
Ice Storm	01/04/1998	1/8-1/4 in. of ice	0	$0	$0
Extreme Cold/Wind Chill	10/06/2000-10/10/2000	Below freezing for 5 consecutive days	0	$0	$0
Extreme Cold/Wind Chill	12/10/2000-12/31/2000	Below freezing for all but 2 days throughout the duration	0	$0	$0
Winter Storm	12/11/2000	3-5 in. of snow	0	$0	$0
Winter Storm	01/28/2001	1-6 in. of snow, 1/4-1/2 in. of ice	0	$0	$0
Winter Storm	02/09/2001	6-10 in. of snow, 1/4-1/2 in. of ice	0	$0	$0
Winter Storm	02/27/2001	3-9 in. of snow	0	$0	$0
Winter Storm	01/30/2002-01/31/2002	8-14 in. of snow, 1 in. of ice	0	$200,000	$0
Heavy Snow	03/03/2002	2-6 in. of snow	0	$0	$0
Winter Storm	12/09/2003-12/10/2003	2-4 in. of snow	0	$0	$0
Winter Storm	01/25/2004	1/4 in. of ice	0	$0	$0
Winter Storm	02/05/2004	6-8 in. of snow	0	$0	$0
Winter Storm	01/04/2005-01/05/2005	1/4-3/4 in. of ice, 2-5 in. of snow	0	$0	$0
Ice Storm	11/29/2006	1/4-1/2 in. of ice	0	$0	$0
Winter Storm	01/12/2007-01/14/2007	1-6 in. of ice	0	$0	$0
Heavy Snow	01/20/2007-01/21/2007	4-6 in. of snow	0	$0	$0
Frost/Freeze	04/04/2007-04/10/2007		0	$0	$0
Ice Storm	12/10/2007-12/11/2007	1/4-1/2 in. of ice	0	$5,000	$0
Winter Storm	12/22/2007	7-9 in. of snow	0	$0	$0
Heavy Snow	02/05/2008-02/06/2008	4-6 in. of snow	0	$0	$0
Ice Storm	12/18/2008-12/19/2008	1/4 in. of ice	0	$0	$0
Heavy Snow	02/28/2009	4-8 in. of snow	0	$0	$0
Winter Storm	03/28/2009	2-3 in. of snow, sleet, and freezing rain	0	$0	$0
Blizzard	12/07/2009-12/09/2009	6 in. of snow	0	$0	$0
Blizzard	12/24/2009-12/26/2009	6 in. of snow	0	$0	$0
Winter Storm	01/06/2010-01/07/2010	6 in. of snow	0	$0	$0
Winter Storm	02/21/2010	8 in. of snow	0	$0	$0
Winter Weather	01/10/2011-01/11/2011	6 in. of snow	0	$0	$0
Blizzard	02/01/2011	6 in. of snow	0	$0	$0

Winter Storm	02/24/2011-02/25/2011	6 in. of snow	0	$0	$0
Winter Weather	02/13/2012	3 in. of snow	0	$0	$0
Winter Weather	01/30/2013	2 in. of snow	0	$0	$0
Winter Storm	02/21/2013-02/22/2013	7 in. of snow	0	$0	$0
Winter Storm	02/25/2013-02/27/2013	7 in. of snow	0	$0	$0
Winter Storm	03/23/2013-03/24/2013	4-6 in. of snow	0	$0	$0
Winter Weather	05/02/2013-05/03/2013	4 in. of snow	0	$0	$0
Heavy Snow	12/21/2013-12/22/2013	6-9 in. of snow	0	$0	$0
Cold/Wind Chill	01/06/2014	Wind chill approx. 30 below zero	0	$0	$0
Heavy Snow	02/04/2014-02/05/2014	12 in. of snow	0	$0	$0
Winter Storm	12/27/2015-12/28/2015	1/4-1 in. of ice, 3-4 in. of snow	0	$0	$0
Ice Storm	02/20/2018	1/8-1/3 in. of ice	0	$0	$0
Blizzard	11/25/2018	6-8 in. of snow	0	$0	$0
Winter Storm	01/11/2019-01/12/2019	8-12 in. of snow	0	$0	$0
Ice Storm	02/06/2019-02/07/2019	1/4 in. of ice	0	$0	$0
Winter Storm	12/15/2019	6-8 in. of snow	0	$0	$0
Winter Storm	01/11/2020	2-3 in. of snow	0	$0	$0
Winter Storm	01/01/2021	1-3 in. of snow	0	$0	$0
Extreme Cold/Wind Chill	02/14/2021	Wind chill approx. 20-30 below zero	0	$0	$0
Extreme Cold/Wind Chill	02/15/2021	Wind chill approx. 20-30 below zero	0	$0	$0
Extreme Cold/Wind Chill	02/16/2021	Wind chill approx. 20-30 below zero	0	$0	$0
Total			0	**$205,000**	$0

Source: NCEI, data accessed 12/01/2021

Winter Storms occur regularly on an annual basis in Clinton County, Missouri. Four Presidential Disaster Declarations for Winter Storms have been declared in Clinton County in the last 20 years. These disasters were declared February 6, 2002, December 12, 2007, December 27, 2007, and January 30, 2009. The February 6, 2002, and December 27, 2007, received Public Assistance funds.

Winter storms, cold, frost and freezing take a toll on crop production in the planning area. **Table 3.44** shows the USDA's Risk Management Agency payments for insured crop losses in the planning area as a result of cold conditions and snow for the past 10 years.

Table 3.44. Crop Insurance Claims Paid in Clinton County as a Result of Cold Conditions and Snow 2011-2021

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid ($)
2021	Corn	Cold Wet Weather	$1,107
2020	Corn	Cold Wet Weather	$5,297
2018	Corn	Frost	$28,956
2018	Soybeans	Cold Wet Weather	$1,220
2014	Corn	Cold Wet Weather	$5,064
2014	Wheat	Cold Winter	$4,575
2013	Wheat	Cold Wet Weather	$16,568
2013	Wheat	Cold Wet Weather	$16,320
2013	Wheat	Cold Wet Weather	$6,919
2013	Soybeans	Cold Wet Weather	$1,158
2013	Soybeans	Cold Wet Weather	$2,432
2013	Soybeans	Cold Wet Weather	$7,094
2012	Wheat	Cold Winter	$9,599
2011	Corn	Cold Wet Weather	$8,174
2011	Corn	Cold Wet Weather	$53,441
2011	Soybeans	Cold Wet Weather	$5,180
2011	Soybeans	Cold Wet Weather	$7,346
2011	Soybeans	Cold Wet Weather	$1,554
Total			**$182,004**

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

Probability of Future Occurrence

The probability for all the different types of winter weather is included as one probability, since one storm generally includes several different types of events. There were 54 severe winter weather events in Clinton County from 1996 to 2021 (25 years). This equates to a 216% probability of occurrence in any given year with approximately 2 events in any given year.

Changing Future Conditions Considerations

A shorter overall winter season and fewer days of extreme cold may have both positive and negative indirect impacts. Warmer winter temperatures may result in changing distributions of native plant and animal species and/or an increase in pests and non-native species. Warmer winter temperatures will result in a reduction of lake ice cover. Reduced lake ice cover impacts aquatic ecosystems by raising water temperatures. Water temperature is linked to dissolved oxygen levels and many other environmental parameters that affect fish, plant, and other animal populations. A lack of ice cover also leaves lakes exposed to wind and evaporation during a time of year when they are normally protected. As both temperature and precipitation increase during the winter months, freezing rain will be more likely. Additional wintertime precipitation in any form will contribute to saturation and increase the risk and/or severity of spring flooding. A greater proportion of wintertime precipitation may fall as rain rather than snow. (Source: 2018 Missouri State Hazard Mitigation Plan, Chapter 3,

Section 3.3.1, Changing Future Conditions Considerations, page 3.338)

Vulnerability

Vulnerability Overview

Heavy snow can bring a community to a standstill by inhibiting transportation (in whiteout conditions), weighing down utility lines, and by causing structural collapse in buildings not designed to withstand the weight of the snow. Repair and snow removal costs can be significant. Ice buildup can collapse utility lines and communication towers, as well as make transportation difficult and hazardous. Ice can also become a problem on roadways if the air temperature is high enough that precipitation falls as freezing rain rather than snow.

Buildings with overhanging tree limbs are more vulnerable to damage during winter storms when limbs fall. Businesses experience loss of income as a result of closure during power outages. In general, heavy winter storms increase wear and tear on roadways though the cost of such damages is difficult to determine. Businesses can experience loss of income as a result of closure during winter storms.

Overhead power lines and infrastructure are also vulnerable to damages from winter storms. In particular, ice accumulation during winter storm events damage to power lines due to the ice weight on the lines and equipment. Damages also occur to lines and equipment from falling trees and tree limbs weighted down by ice. Potential losses could include cost of repair or replacement of damaged facilities and lost economic opportunities for businesses.

Secondary effects from loss of power could include burst water pipes in homes without electricity during winter storms. Public safety hazards include risk of electrocution from downed power lines. Specific amounts of estimated losses are not available due to the complexity and multiple variables associated with this hazard. Standard values for loss of service for utilities reported in FEMA's 2009 BCA Reference Guide, the economic impact as a result of loss of power is $126 per person per day of lost service.

Potential Losses to Existing Development

From 1997-2021, a total of $205,000 in property loss was attributed to Winter Weather Events. That is an average of $8,200 per year. From 2011-2021, a total of $182,004 in crop insurance payments were issued due to Winter Weather Events. This averages to $18,200.40 annually.

Previous and Future Development

Future commercial development can expect functional downtime and decreased revenues during periods of severe winter weather. Road construction in the county will increase the need for snow removal and salt to keep transportation lifelines open during periods of severe winter weather.

Hazard Summary by Jurisdiction

Severe winter weather can cause power outages and put structures at risk to fires when individuals in homes resort to using portable fuel heaters. The risk of extreme cold deaths and frostbite varies among segments of the populations. People over 65 and those living below the poverty level have an increased vulnerability to severe winter weather. **Table 3.49** includes information on populations over 65 and the percent living below the poverty level by jurisdiction.

Table 3.49 Population over 65 and Population Living Below the Poverty Level

Jurisdiction	% of Families Living Below Poverty Level	% of Population Over 65
Clinton County	7.2%	17.5%
City of Cameron	23.5%	14.6%
City of Gower	9.4%	20.4%
City of Holt	10.3%	14.5%
City of Lathrop	9.8%	15.9%
City of Plattsburg	6.3%	17.5%
City of Trimble	8.1%	14.2%
Village of Turney	5.6%	3.5%

(Source: US Census Bureau American Community Survey 5-year 2015-2019)

Cameron is the jurisdiction with the highest percent of families living in poverty. Gower has the highest percentage of population over 65. The senior center in Plattsburg offers meal delivery to homebound seniors. This provides a communication network to the most vulnerable seniors. The churches in Gower actively seek out vulnerable seniors to assist.

Problem Statement

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. People over 65 and those living in poverty and the homeless have an increased risk of hypothermia and frostbite due to extreme cold and wind chill.

Public works departments and road districts can develop snow removal plans and maintain adequate snow removal equipment and salt to quickly open roads after periods of heavy snow and freezing rain. The county and cities can work with local electric coops and utility companies to develop vegetation management programs in rights of way to minimize damage to falling tree limbs laden with ice resulting from ice storms to minimize power outages throughout the county.

3.4.10 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

Due to the nature of tornadoes, they can occur anywhere in Clinton County.

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 3.50**) 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 3.50. 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 **Table 3.51**. 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 3.51. 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

Table 3.52 includes NCEI reported tornado events and damages since 1993 in Clinton County. Prior to that date, only really destructive tornadoes were recorded. 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.

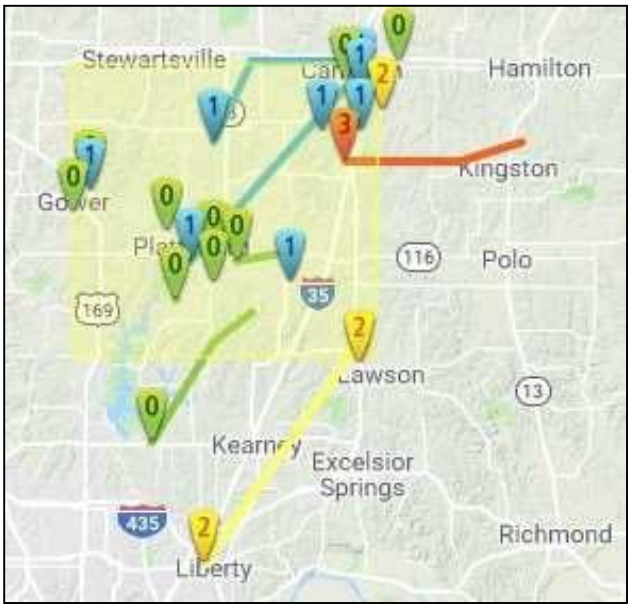
Table 3.52. Recorded Tornadoes in Clinton County, 1993 – Present

Date	Beginning Location	Ending Location	Length (miles)	Width (yards)	F/EF Rating	Death	Injury	Property Damage	Crop Damages
05/06/1993	Kearney	Holt	10	50	F0	0	0	$5,000	$0
05/06/1993	Cameron		1.2	50	F1	0	0	$50,000	$0
05/08/2002	Plattsburg	Plattsburg	.1	25	F0	0	0	$0	$0
05/29/2004	Gower	Gower	1	75	F0	0	0	$0	$0
05/29/2004	Plattsburg	Osborn	19	150	F1	0	0	$20,000	$0
05/01/2008	Plattsburg	Plattsburg	.1	25	EF0	0	0	$0	$0
04/25/2009	Cameron Airport	Cameron Airport	.1	25	EF0	0	0	$0	$0
05/12/2010	Plattsburg	Plattsburg	.29	25	EF0	0	0	$10,000	$0
08/26/2016	Lathrop	Lathrop	3.27	25	EF0	0	0	$2,000	$0
03/06/2017	Trimble	Lathrop	16.28	1,000	EF 2	0	0	$0	$0
Total						**0**	**0**	**$87,000**	**$0**

Source: National Centers for Environmental Information, http://www.NCEI.noaa.gov/stormevents/

There were 10 tornado events recorded in the NCEI database from 1995-2017. Fortunately, the damages from these events resulted in no deaths, injuries or crop damage. There was $87,000 in property damage. **Figure 3.32** shows historic tornado paths in the planning area.

Figure 3.32. Clinton County Map of Historic Tornado Events



Source: Clinton County HMP, 2018

According to the NCEI, there were no insurance payments for crop damages from 2007- 2020 as a result of tornadoes.

Probability of Future Occurrence

Since 10 tornadoes occurred during the 28-year period from 1993 to 2021, this results in a probability percentage of 35.7% chance of a tornado of any magnitude event in Clinton County in any given year.

Changing Future Conditions Considerations

According to the 2018 State 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 U.S. The research concluded that the number of days with large outbreaks has been increasing since the 1950s 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 the more densely packed tornadoes. Because Missouri experiences on average around 39.6 tornadoes a year, such research is closely followed by meteorologists in the state.

Vulnerability Overview

Tornado Alley refers to the area of the United States where tornadoes are most likely to occur. Some view it as the area where the most dangerous tornadoes occur, such as F4 and F5 tornadoes on the Fujita rating system, but this is not necessarily true. Most dangerous tornadoes are sporadic. Tornado Alley is in reference to the most frequently reported tornadoes. **Figure 3.33** refers to this area known as Tornado Alley. This area averages three tornadoes or more per year per 10,000 square miles in general. Clinton County is located in the center of Tornado Alley, which poses a high risk for future tornadoes.

Figure 3.33. Tornado Alley in the U.S.

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

Potential Losses to Existing Development

The method used in the 2018 State Plan to determine vulnerability to tornadoes across Missouri included statistical analysis of data from several sources: HAZUS building exposure value data, population density and mobile home data from the U.S. Census (2015 ACS), the calculated Social Vulnerability Index for Missouri Counties from the Hazards and Vulnerability Research Institute in the Department of Geography at the University of South Carolina, and storm events data (1950 to December 31, 2016) from the National Centers for Environmental Information (NCEI). 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. These rating values correspond to the following descriptive terms:

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

Additional details on the methodology can be found in the State Plan, starting on page 3.337. **Table 3.53** below provides the building exposure, population density, SOVI index ranking and percentage of mobile homes by county and the associated vulnerability rating. Based on this data, Clinton County has a medium vulnerability to tornadoes.

Table 3.53. Building Exposure, Population Density, SOVI Index Rating

Jurisdiction	Total Building Exposure (Hazus)	Exposure Rating	Population Density	Population Rating	SOVI Index Ranking	SOVI Rating	Percent Mobile Homes	Mobile Home
Clinton County	$2,282,850,000	1	49.19	1	Medium	3	5.5	2

Source: Missouri State Plan 2018, pg. 3.379

Previous and Future Development

It is uncertain at this point if planned development in Cameron, particularly near the hospital, may result in an increase in population in terms of increased exposure to damage. Due to the vulnerability of mobile homes to tornado and high wind damage, some jurisdictions do not allow mobile home parks. Several new early warning sirens are being planned for rural subdivisions in the county, including an additional siren for the City of Lathrop. These grant-funded sirens would increase preparedness in terms of providing early warning of severe weather like tornadoes, but they would not protect existing development from potential tornado damage.

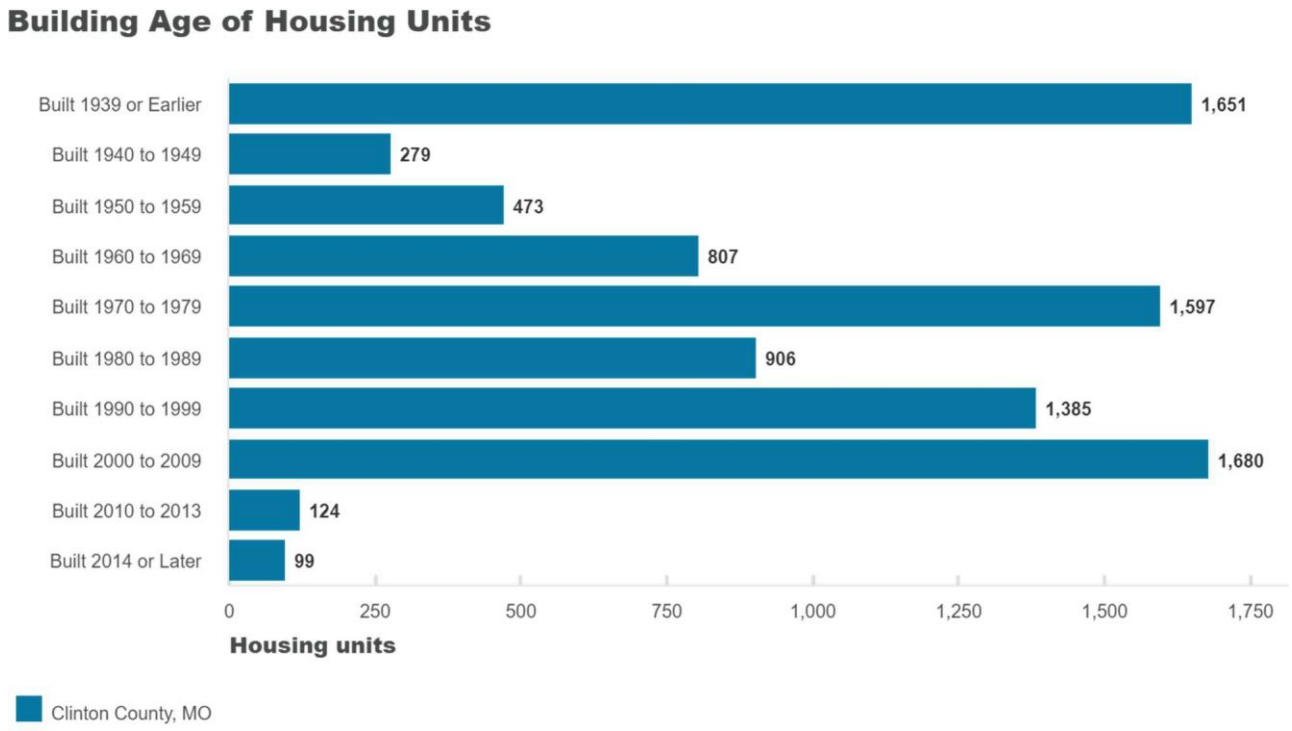
Hazard Summary by Jurisdiction

In Clinton County, a tornado could occur due to its location in Tornado Alley and historical precedence. The county also has an at-risk population of homes that are valued below $50,000 (5.7 percent) and mobile homes (6.6 percent). These homes are at risk because they could have weak structural protection from high winds associated with tornadoes due to their low value or may not have a foundation.

Homes that are over 25 years old also face the risk of being constructed under older building codes with less durable materials. A tornado, of any magnitude, could have a large, adverse impact on these homes. Because 63.5 percent of homes in Clinton County were built before 1990 (2015-2019 US Census ACS5-year estimates), the impact of a tornado could be substantial. Please see **Figure 3.34** for the ages of homes of jurisdictions in Clinton County.

A tornado event could occur anywhere in the planning area, but some jurisdictions would suffer heavier damages because of the age of the housing, concentration of buildings and higher number of mobile homes. School district assets are also at risk from tornadoes, so it is imperative for districts to conduct regular tornado drills. The Mid-Buchanan School District constructed a tornado shelter with funding from a 2011 FEMA mitigation grant. The shelter can accommodate 1,100 people and is available to the public for shelter during tornado and high wind events. Churches throughout the county also serve as public shelters.

Figure 3.34. Age of Housing Units in Clinton County



Problem Statement

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. According to the NCEI, over the past 28 years significant tornado events in Clinton County have not resulted in any deaths or injuries, but they have resulted in and $87,000 in property damage. Information in the 2018 State Plan indicates that Clinton County has a medium vulnerability to tornadoes based on frequency of occurrence and previous damages. However, the Risk Assessment survey taken by county residents noted tornadoes as a top concern.

The risk of property damage, injury, and death in the county can be mitigated by constructing FEMA safe rooms in facilities that house vulnerable populations such as nursing homes, government buildings, and schools. In addition, identifying safe refuge areas in public buildings, nursing homes and other facilities that house vulnerable populations that do not have a safe room could reduce risk. Retrofitting school district facilities with protective filming of windows and installation of blast proof doors will provide more protection for students and staff at school facilities. Additional warnings and alerts will also provide the public and schools more time to take cover during a tornado. In addition, public safety fairs provide an opportunity to disseminate information to homeowners about individual safe room construction in homes. Cities can adopt or update and enforce IBC 2012 building codes that include construction techniques such as roof tie down straps for mobile homes to mitigate damage to future development.

3.4.11 Wildfire

Hazard Profile

Hazard Description

The incident types considered for urban/structural fire include all fires in the following categories: 1) general fires, 2) structure fire, 3) fire in mobile property used as a fixed structure, and 4) mobile property (vehicle) fire. The fire incident types for wildfires include: 1) natural vegetation fire, 2) outside rubbish fire, 3) special outside fire, and 4) cultivated vegetation, crop fire.

The Missouri Division of Fire Safety (MDFS) indicates that approximately 80 percent of the fire departments in Missouri are staffed with volunteers. Whether paid or volunteer, these departments are often limited by lack of resources and financial assistance. The impact of a fire to a single-story building in a small community may be as great as that of a larger fire to a multi-story building in a large city.

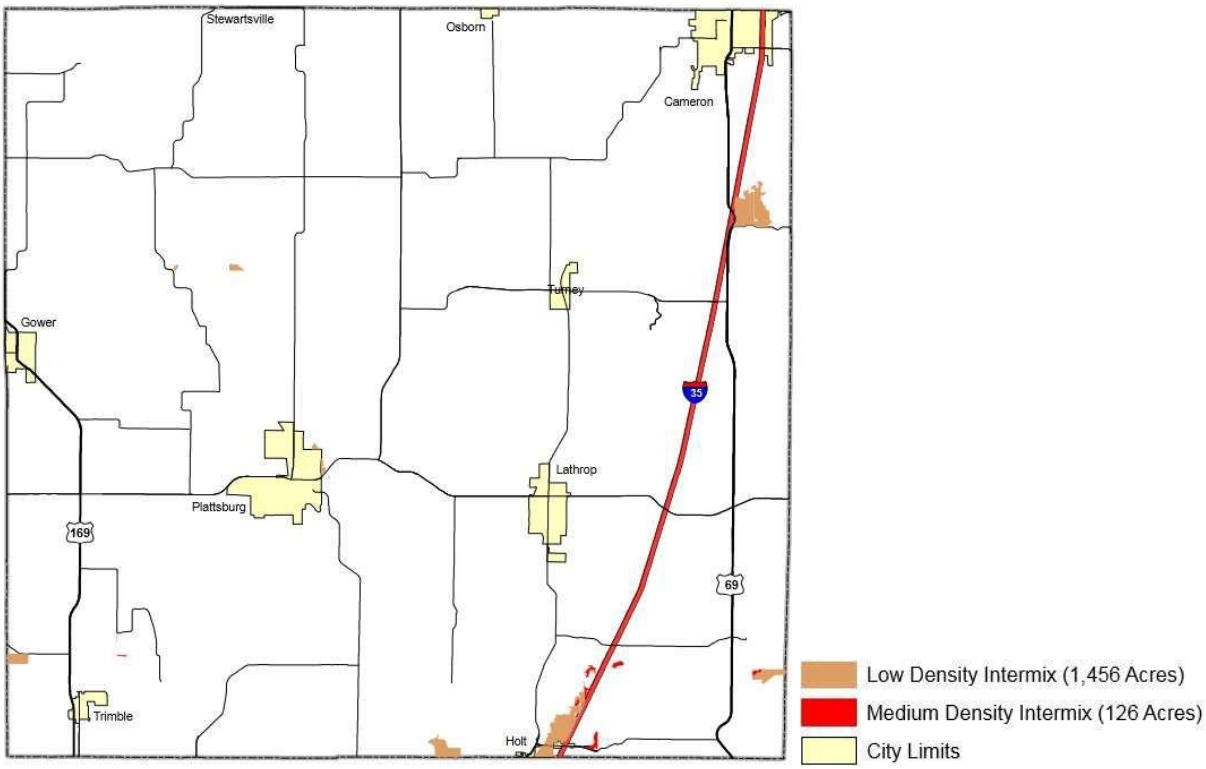
The Forestry Division of the Missouri Department of Conservation (MDC) is responsible for protecting privately owned and state-owned forests and grasslands from wildfires. To accomplish this task, eight forestry regions have been established in Missouri for fire suppression. The Forestry Division works 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 both structural and 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 to burn their garden spots, brush piles, and other areas in the spring. Some landowners also believe it is necessary to burn their forests in the spring to promote grass growth, kill ticks, and reduce brush. Therefore, spring months are the most dangerous for wildfires. The second most critical period of the year is fall. Depending on the weather conditions, a sizeable number of fires may occur between mid-October and late November.

Geographic Location

The risk of structural fire most likely does not vary widely across the planning area. However, damages due to wildfires would be higher in communities with more wildland–urban interface (WUI) areas. The term refers to the zone of transition between unoccupied land and human development and needs to be defined in the plan. Within the WUI, there are two specific areas identified: 1) Interface and 2) Intermix. The interface areas are those areas that abut wildland vegetation and the Intermix areas are those areas that intermingle with wildland areas. **Figure 3.35** is a WUI map of Clinton County, that identifies the density intermix. Intermix is mostly located near Holt and several miles south of Cameron, near Wallace State Park. There is no interface in the county.

Figure 3.35. Wildland—Urban Interface and Intermix Areas in Clinton County



Source: silvis.forest.wisc.edu/maps/wui

Strength/Magnitude/Extent

Structural and urban fires are a daily occurrence throughout the State. Statewide, approximately 100 fatalities occur annually, as well as numerous injuries affecting the lives of the victims, their families, and many others—especially those involved in fire and medical services. Unlike other disasters, structural fires can be caused by human criminal activity: arson. All citizens pay the costs of arson whether through increased insurance rates, higher costs to maintain fire and medical services, or the costs of supporting the criminal justice system.

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 firefighters to 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.

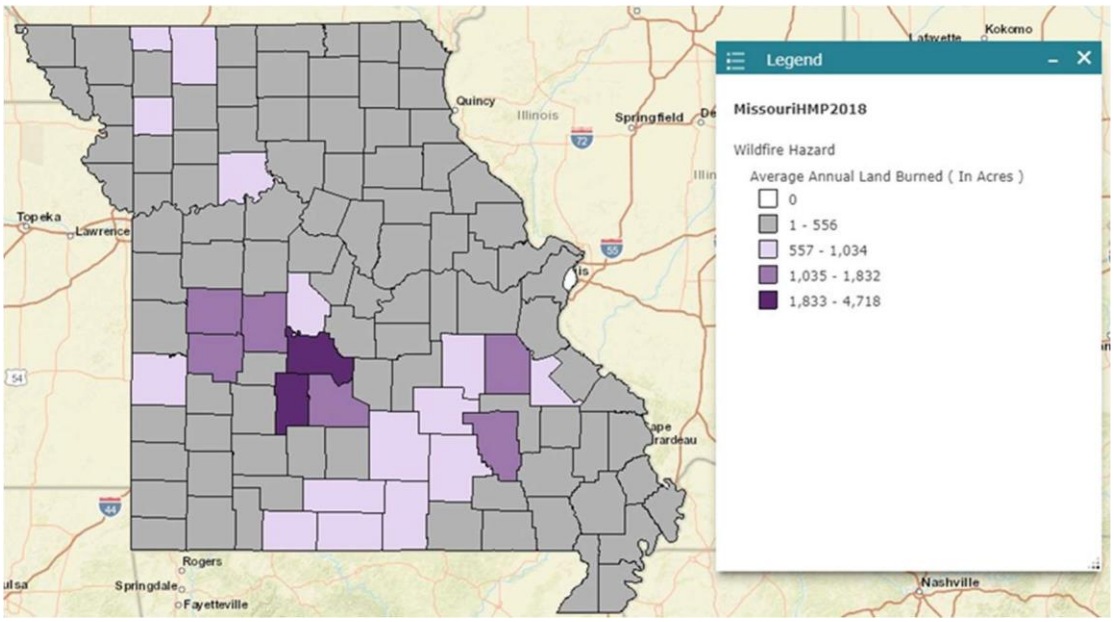
As defined by the National Fire Protection Agency (NFPA), a structure fire is defined as “any fire inside, on, under, or touching a structure.” Factors that can influence the extent and damage of a structural fire include:

- Structure type and age
- Building codes addressing fire prevention, detection, and extinguishments
- Density of development
- Presence of flammable substances
- Fire department response speed
- Firefighting technology
- Training of local fire management officials and firefighters
- Public information about common fire hazards and use of smoke alarms
- Notification techniques and procedures
- Water Pressure & Availability

There are additional economic consequences related to this hazard. Urban fires and explosions may result in lost wages due to temporarily or permanently closed businesses, destruction and damage involving business and personal assets, loss of tax base, recovery costs, and lost investments in destroyed property. In addition to this are of course the immediate need that victims of structural fires may face beyond medical attention, including addressing concerns over food, shelter, and healthcare. As non-profits are almost always seen as the source of response to these concerns, their capacity to absorb this burden is of a critical concern.

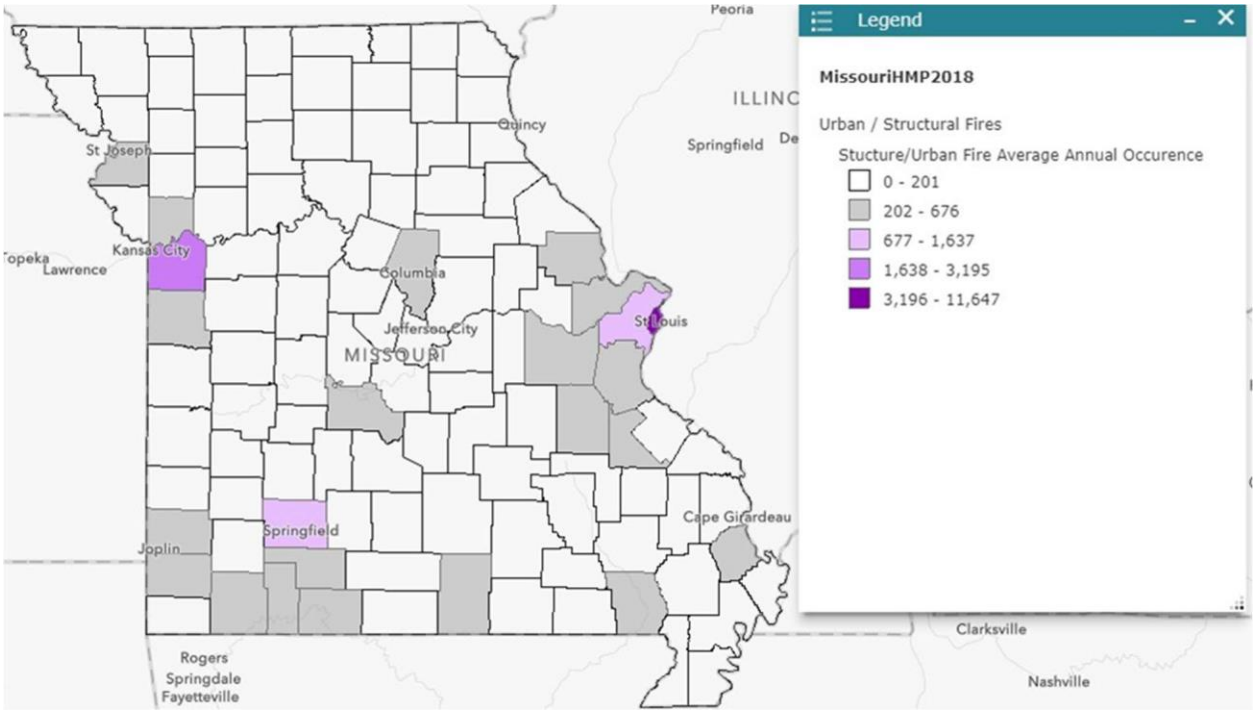
For some context on the danger these hazards present, **Figure 3.36** shows the average number of acres burned per year in each county in Missouri, and **Figure 3.37** shows the average number of structure/urban fires per year in each Missouri county.

Figure 3.36. Average Acres Burned Per Year in Missouri Counties



Source: https://amecei.maps.arcgis.com/apps/webappviewer/index.html?id=d97d80d5cff04996bff54b2250e47d83

Figure 3.37. Average Annual Structure/Urban Fires in Missouri Counties



Source: https://amecei.maps.arcgis.com/apps/webappviewer/index.html?id=d97d80d5cff04996bff54b2250e47d83

Previous Occurrences

Table 3.54 records the average number of wildfire incidents recorded by the MDC that occurred over the last decade from 2010-2019 and the average number of acres burned each year.

Table 3.54. Wildfire Incidents and Average Acres Burned in Clinton County (2010-2020)

Year	Total Incidents	Total Acres Burned	Avg. Acres Burned
2010	37	119	3.22
2011	52	628	12.08
2012	111	532	4.79
2013	37	126	3.41
2014	89	1,071	12.03
2015	97	1,198	12.35
2016	44	135	3.07
2017	45	334	7.42
2018	29	147.17	5.07
2019	3	1.55	0.52
2020	6	18.76	3.13

Source: https://mdc12.mdc.mo.gov/Applications/MDCFireReporting/Home/FireReportSearch

The largest wildfire of the last decade occurred April 2, 2011 near Lathrop, MO. The fire was discovered at 9:00 AM and contained by 2:00 PM with the hand of 11 hand crew members, 3 water unites, and 2 tankers. In total 158 acres were consumed in the fire.

Probability of Future Occurrence

Using data from **Table 3.54** and dividing the 550 fires over 11 years from 2010-2020, there is an average of 50 wildfires happening in any given year in Clinton County. Stretching across the same period of time if a wildfire does occurs it will likely burn 7.84 acres on average. Events are more likely to occur in wildfire-prone areas experiencing new or additional development.

The most determining factor in the future rate of urban/structural fires is the amount of aging structures in the county which may not be up to modern fire code standards. Referring to **Figure 3.25** under **Extreme Temperatures (3.4.7**), one can see there are approximately 1,651 structures in Clinton County that are over 80 years old and could be potential fire risks.

Changing Future Conditions Considerations

The 2018 Missouri Hazard Mitigation Plan describes the future of wildfire activity as being tied to the relationship between prescribed seasonal burning and forest understory growth. As temperatures increase, the prescribed burning season will shorten and this will lead to a growth in understory vegetation that could fuel future wildfires. Increased droughts will also dry out vegetation, further fueling future wildfires.

The 2018 plan indicates that changes in the climate should not impact the propensity for urban/structural fires greatly as these hazards are more tied to human activity than climate.

Vulnerability

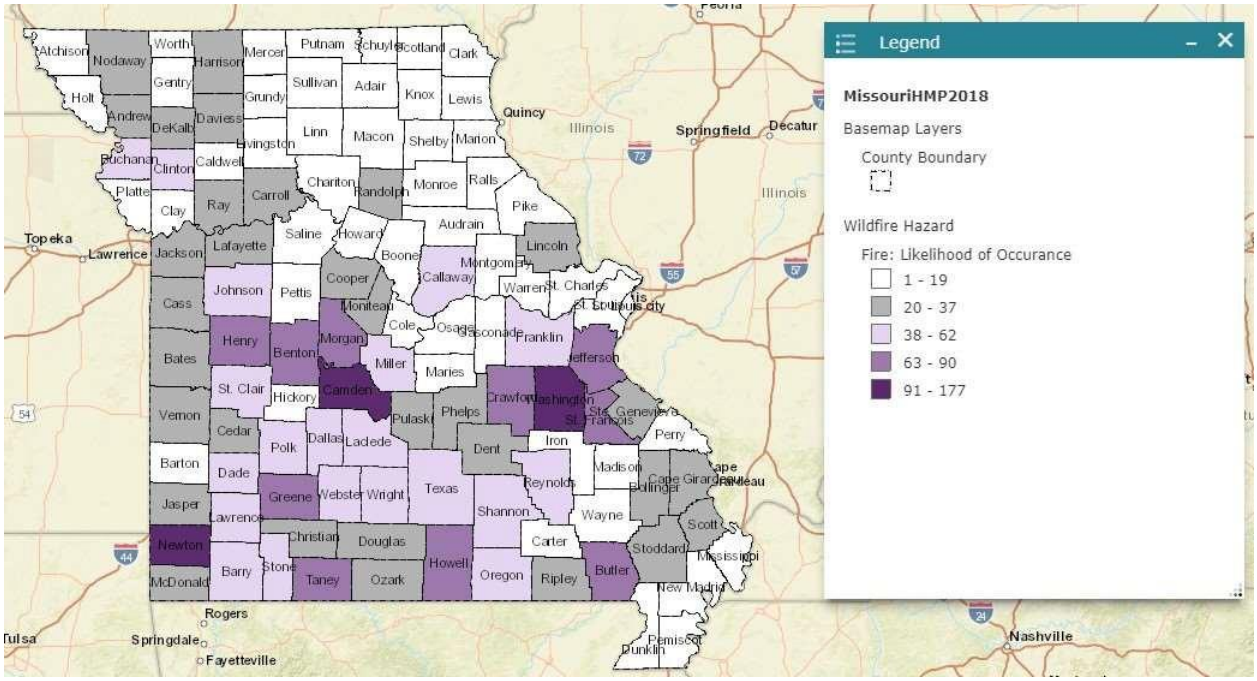
Vulnerability Overview

Using the data reported by the MDC's Wildfire Reporting in **Table 3.54**, there were 550 reported wildfires in Clinton County from the decade of 2010-2020. Using the methodology from the 2018 MO Hazard Mitigation Plan uses for estimating likelihood of occurrence (# of occurrences/# of years), Clinton County is likely to have 50 wildfire incidents in a given year. **Figure 3.38** from the 2018 State Plan demonstrates that Clinton County is at an elevated for wildfire occurrence compared to its

surrounding counties.

Due to lack of publicly available data on structure fires in Clinton County, the main point of reference will be the 2018 State Plan, using data from 2002-2012. This plan rated planning areas across six categories, each on a 5-point scale. Overall, Clinton County scored 13-points, putting it at a Low-Medium vulnerability (See **Table 3.55**). Due to the amount of fire departments in Missouri that are staffed mostly with volunteers, roughly 80 percent, the impact of a fire to a single-story building in a small community may be as great as that of a larger fire to a multi-story building in a large city.

Figure 3.38. Likelihood of Wildfire Occurrence by Missouri County



Source: https://amecei.maps.arcgis.com/apps/webappviewer/index.html?id=d97d80d5cff04996bff54b2250e47d83

Table 3.55. Clinton County Urban/Structural Fire Vulnerability 2002-2012

Factor Considered	Vulnerability Measure	Vulnerability Rating
Building Exposure ($)	$2,282,850,000	1
Housing Density (# per sq. mile)	21.20	1
Social Vulnerability Index Rating	Medium	3
Likelihood of Occurrence (# / 11 years)	133	3
Total Annualized Property Loss	$762,583	1
# of Deaths Injuries	20	4
	Overall Vulnerability Rating:	13 (Low-Medium)

Source: 2018 Missouri State Hazard Mitigation Plan

Potential Losses to Existing Development

As Seen in **Table 3.54**, Clinton County has experienced an average of 392 (4,310.48 acres burned / 11 years) acres of wildfire destruction per year over the last eleven years. As indicated in **Figure 3.36**, county has seen a larger amount of acreage burned compared to surrounding counties in Northwest Missouri, and **Figure 3.38** the county is at an elevated risk of seeing wildfires occur each year in comparison to its surrounding counties.

Impact of Previous and Future Development

Structural fires are impacted solely by human development. While the climate may change, the only impact this can have on the propensity for urban/structural fires will be how human behavior is impacted. An example of this would be if there is an increased strain on the electrical grid which leads to a greater chance for electrical fires, or if individuals seeking shelter from the cold are more likely to start indoor fires. The main cause for concern and risk assessment should be focused on older, larger structures, as they may be more likely to catch fire and impact surrounding structures of a similar nature, and areas with a higher housing density, such as Maysville.

Hazard Summary by Jurisdiction

Table 3.55 above summarizes the structure exposure for Clinton County and its jurisdictions for wildfires. Communities with more WUI areas will be at greater risk of wildland fires. The exposure amount indicates the dollar amount of assets at risk and the variability of vulnerability from place to place.

Problem Statement

Wildfire occurrence is frequent within DeKalb County. These events can destroy, damage, and threaten structures in hazard prone areas. Populations and structures in WUI areas of the county have an increased risk to wildfires due to the level of fuel mixed with structures. Cities that have adopted landscape ordinances can include fire safe landscape design requirements in these areas. The school districts that have facilities located in WUI areas have a slightly elevated risk of wildfire due to the proximate amount of fuel present.

The county and its communities can promote fire resistant construction materials and landscape design techniques to mitigate the risk to wildfire in future development. Information about these materials and techniques are included in the MDC publication, “Living with Wildfire”. Including this information in education and awareness programs for the public may potentially mitigate wildfire damage in the county

3.4.12 Public Emergencies/Environmental

Hazard Profile

Hazard Description

Public health emergencies can take many forms—pandemics, large-scale incidents of food or water contamination, or extended periods without adequate water and sewer services. There can also be harmful exposure to chemical, radiological, or biological agents, and largescale infestations of disease-carrying insects or rodents. The first part of this section focuses on emerging public health concerns and pandemics, while the second part addresses natural and human-caused air and water pollution.

Public health emergencies can occur as primary events by themselves, or they may be secondary to another disaster or emergency, such as tornado, flood, or hazardous material incident. The common characteristic of most public health emergencies is that they adversely impact or have the potential to adversely impact a large number of people. Public health emergencies can be worldwide or localized in scope and magnitude.

In particular, two public health hazards have recently emerged as issues of great concern, with far reaching consequences. One pertains to the intentional release of a radiological, chemical, or biological agent, as a terrorist act of sabotage to adversely impact a large number of people. The second hazard concerns a deadly outbreak (other than one caused by an act of terrorism) that could kill or sicken thousands of people across the county or around the globe. The primary communicable or infectious diseases addressed within this plan are influenza and COVID-19.

- **Influenza-** Whether natural or manmade, health officials say the threat of a dangerous new strain of influenza (flu) virus in pandemic proportions is a very real possibility in the years ahead. Unlike most illnesses, the flu is especially dangerous because it is spread through the air. A classic definition of influenza is a respiratory infection with fever. Each year, flu infects humans and spreads around the globe. There are three types of influenza virus: Types A, B, and C. Type A is the most common, most severe, and the primary cause of flu epidemics. Type B cases occur sporadically and sometimes as regional or widespread epidemics. Type C cases are quite rare and hence sporadic, but localized outbreaks have occurred. Seasonal influenza usually is treatable, and the mortality rate remains low. Each year, scientists estimate which particular strain of flu is likely to spread, and they create a vaccine to combat it. A flu pandemic occurs when the virus suddenly changes or mutates and undergoes an —antigenic shift, permitting it to attach to a person's respiratory system and leave the body's immune system defenseless against the invader.

- **COVID-19-** According to the Centers for Disease Control and Prevention (CDC), COVID-19 is a respiratory virus that is transmitted through respiratory droplets when people with the virus cough, sneeze, sing, talk or breathe while in close contact with others. These droplets and particles can linger in the air for minutes to hours, making the virus spread through airborne transmission. Appearing two-14 days after exposure, symptoms may include fever chills, cough, shortness of breath or difficulty breathing, fatigue, muscle or body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea or vomiting and/or diarrhea. While influenza (flu), and COVID-19 are both contagious respiratory illnesses, COVID-19 is caused by infection with a new coronavirus (called SARS-CoV-2), and appears to spread more easily than flu and cause more serious illness in more vulnerable populations, such as older populations and those with pre-existing conditions. In severe cases, intubation is required and, if unsuccessful in managing respiratory symptoms, may result in death. Since

being identified by the World Health Organization as a potential global health concern in January 2020 and then as a pandemic in March 2020, the virus has spread globally, with more than 27.7 million cases in the United States, including 486,000 deaths, as of February 15, 2021. As with other flu-like viruses, COVID-19 has mutated since its unknown etiologic origination in Wuhan City, China, according to the U.S. Food and Drug Administration, thus resulting in genetic variation in the population of circulating viral strains, such as the B.1.1.7 variant discovered in England in September 2020 and now in the U.S.

Additional diseases of public health concern include tuberculosis, Smallpox, St. Louis Encephalitis, Meningitis, Lyme disease, West Nile, SARS, Zika, and Ebola; however, these diseases will not be profiled for this plan. Additional environmental concerns addressed in this hazard profile focus on air and water pollution, because if people breathe contaminated air and/or drink contaminated water, the potential implications on public health can be devastating and widespread.

Air Pollution

While much more of a concern in metropolitan areas, high amounts of ozone, carbon dioxide, nitrogen compounds, and other vehicular pollutants, can impact air quality and pose a health risk. For more information on Missouri's Air Pollution Control Program, contact the Missouri Department of Natural Resources at http://dnr.mo.gov/env/apcp. There are no air monitoring stations in DeKalb County.

Water Pollution

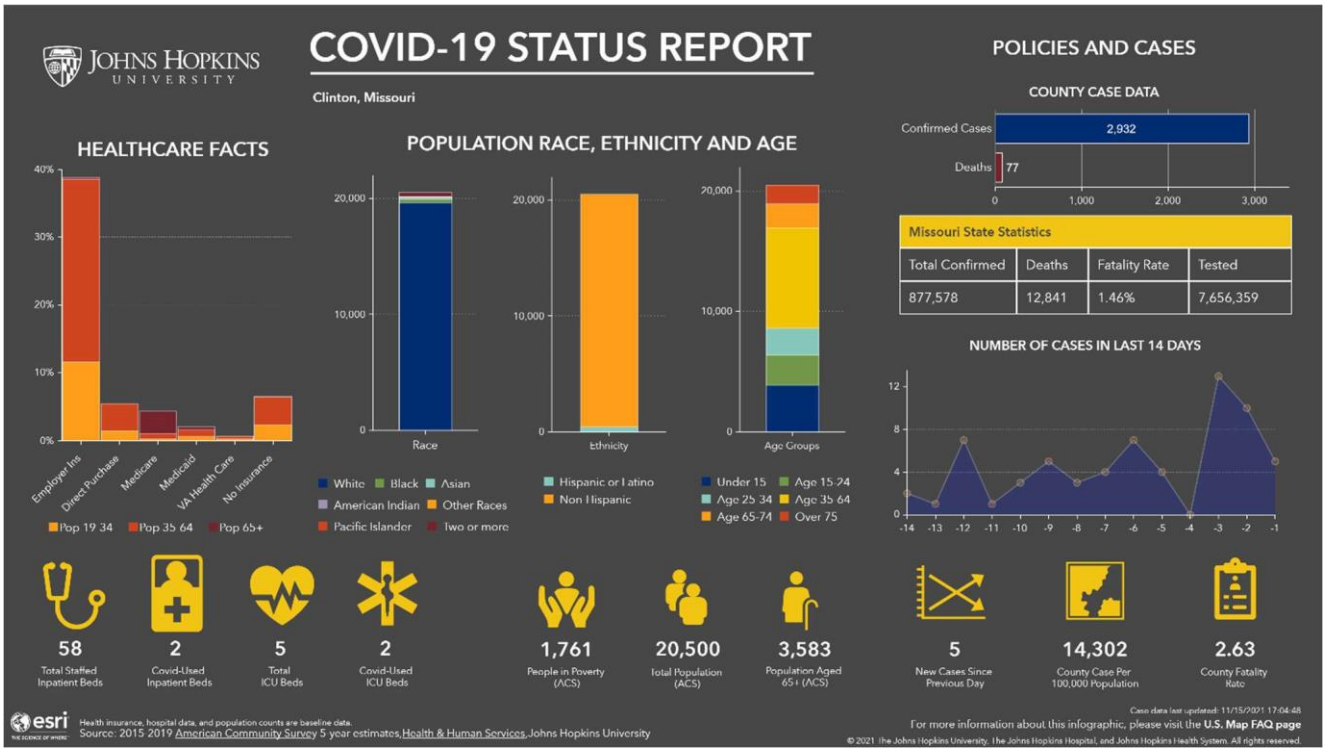
According to the State Plan, there are currently 115,772 miles of classified streams in Missouri and 142,666 miles of unclassified streams. There are 363,653 acres of classified lakes and 68,302 acres of unclassified lakes. To review water quality data for the county, go to The Missouri Department of Natural Resources Water Quality Data Search online at https://apps5.mo.gov/mocwis_public/wqa/waterbodySearch.do. In Clinton County, there are not any impaired waters according to DNR's MO 2016 Section 305b Water Quality Report (https://data.mo.gov/Natural-Resources/MO-2016-Section-305b-Water-Quality-Report-Complete/y6wx-fxgp).

The Environmental Protection Agency (EPA) also maintains the National Pollutant Discharge Elimination System (NPDES). Authorized by the Clean Water Act, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discreet conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. In most cases, the NPDES permit program is administered by authorized states. Since its introduction in 1972, the NPDES permit program is responsible for significant improvements to our Nation's water quality.

Geographic Location

All communities in Clinton County are at risk to public health emergencies. The Missouri Department of Health and Senior Services tracks the spread of influenza and other communicable diseases within the State through reporting from hospitals, laboratories, and healthcare providers. The following infographic, **Figure 3.39**, from Johns Hopkins University, shows 1,490 confirmed cases of COVID-19 in Clinton County and 34 deaths as of November 10, 2021.

Figure 3.39. COVID-19 Cases by County, Johns Hopkins University



Source: Johns Hopkins University Coronavirus Resource Center, https://bao.arcgis.com/covid-19/jhu/county/29049.html

Strength/Magnitude/Extent

The State Hazard Mitigation Plan, which was last updated in 2018, cited the probability of a pandemic at less than one percent. However, the COVID-19 outbreak has become a significant public health emergency. COVID-19 made landfall on the west coast of the United States in late January 2020.

Missouri reported its first corona virus-related death on March 18, 2020, just five days after a state of emergency was declared. By March 21, Governor Mike Parson would announce a ban on gatherings of 10 or more people. A stay-at-home order was issued for Missouri residents and the Missouri National Guard was activated by April 2. Executive Order 20-12, issued on April 24, 2020, extended the state emergency through December 30, 2020, Executive Order 20-19 once again extended the state emergency and Air Guard activation until March 31, 2021 (https://www.sos.mo.gov/library/reference/orders/2020).

On June 11, 2020, Parson announced the state had met the four pillars for his reopening plan, including expanded testing capacity, expanded reserves of personal protective equipment (PPE), successful monitoring of hospital and health care system capacity, and improved ability to track potential outbreaks with public health data (https://governor.mo.gov/press-releases/archive/governor-parson-announces-missouri-will-fully-reopen-enter-phase-2-recovery). A state COVID-19 dashboard, https://showmestrong.mo.gov/data/public-health/, continues tracking the number of tests administered, active cases, deaths and vaccinations (**Figure 3.40**).

Figure 3.40. COVID-19 Public Health Dashboard

COVID-19 in Missouri at a Glance

Last updated on **2/16/2021**. *The 7-day range reflects 2/7/2021 through 2/13/2021. A delay allows daily data to be accurate and complete. See FAQ for details.*

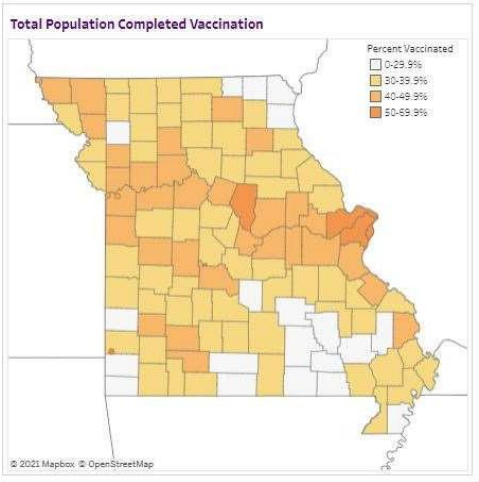
Vaccinations	Vaccine Doses Administered in the Past 7 Days **154,481**	Average of **22,069** per day	The number of vaccine doses administered in the past week. The Pfizer and Moderna vaccines both require two doses per person. See our new vaccine dashboard and the new vaccine website for more information **(links below)**.
Confirmed Cases	New PCR Cases in the Past 7 Days **4,183**	Average of **598** per day **68** PCR cases per 100K residents	The number of total people with a positive PCR COVID-19 test in the past week. If a person has both a positive PCR and Antigen test, they are only counted as a confirmed case.
Probable Cases (NEW)	New Antigen Cases in the Past 7 Days **1,771**	Average of **253** per day **29** Antigen cases per 100K residents	The number of total people with a positive Antigen COVID-19 test in the past week. If a person has both a positive PCR and Antigen test, they are only counted as a confirmed case.
Deaths	New Deaths in the Past 7 Days **11** (see note)	Average of **2** per day (see note) **0.2** deaths per 100K residents	The number of Missourians who died from COVID-19 in the past week. Note: Deaths are often reported with a delay. We encourage you to look at historical 7-day averages on our Statewide and County dashboards **(links below)**.
PCR Tests	New PCR Tests in the Past 7 Days **69,425**	Average of **9,918** per day **1,131** PCR tests per 100K residents	The number of total PCR tests in the past week. Testing helps identify new cases so we can take actions to slow the spread of the virus.
Antigen Tests (NEW)	New Antigen Tests in the Past 7 Days **36,885**	Average of **5,269** per day **601** Antigen tests per 100K residents	The number of total Antigen tests in the past week. Testing helps identify new cases so we can take actions to slow the spread of the virus.
PCR Positivity Rate	Positivity Rate over the Past 7 Days (CDC method) **6.6%**		Positivity rate can be calculated multiple ways. The CDC method uses the number of positive PCR tests divided by the total number of PCR tests. **See FAQ for more details (link below).**
Antigen Positivity Rate (NEW)	Positivity Rate over the Past 7 Days (Antigen Only) **5.0%**		Positivity rate can be calculated multiple ways. Our method uses the number of positive Antigen tests divided by the total number of Antigen tests. **See FAQ for more details (link below).**
Hospitali-zations	COVID-19 Patients in the Hospital **1,309** (as of 2/13/2021)	**296** in the ICU **197** on ventilators	The number of Missourians in the hospital who are confirmed or suspected to have COVID-19. This number is important for assessing the overall strain on the Missouri health care system. **See note below for more context.**

Source: Missouri DHSS, https://showmestrong.mo.gov/data/public-health/

Similarly, many counties erected their own public health dashboards or provided the information to DHSS for inclusion on its COVID-19 web site, as did Clinton County Health Department. According to data at https://health.mo.gov/living/healthcondiseases/communicable/novel-coronavirus/data/public-health/county.php, there were 2,235 total cases in the county as of November 10, 2021, with 77 confirmed COVID-19 deaths. Nearby DeKalb County had 1,193 cases with 34 deaths and Caldwell County, which is the smallest of the three counties, had 923 cases with 20 deaths. Therefore, Clinton County showed a higher COVID-19 infection and mortality rate when compared to neighboring counties; however, it has the largest overall population of the three counties. Initially, due to limited testing capacity, eligibility criteria had to be met in order for people to receive a test. As more tests became available and in an effort to confirm/track cases, tests were scheduled and administered either through free community testing sites. A list of testing sites was made available at https://health.mo.gov/living/healthcondiseases/communicable/novel-coronavirus/mobile-testing.php. Because of the airborne and close contact nature of COVID-19 transmissions, all people, including Clinton County residents, are at risk of contracting the virus but can help in the prevention of its spread through simple measures like wearing a mask, frequent hand washing, avoiding close contact with others and those who are sick, disinfecting objects and surfaces, covering the mouth and nose with a tissue to cough or sneeze, and staying home away from others if sick (https://health.mo.gov/living/healthcondiseases/communicable/novel-

coronavirus/prevention.php). Free vaccinations were approved for the prevention of COVID-19 in spring 2021, with the most-vulnerable populations eligible during the first round, followed by front-line workers, older populations, and those 12 and older. COVID-9 vaccinations were approved for the administration to youth ages 5-11 years old in late fall 2021, https://www.cdc.gov/media/releases/2021/s1102-PediatricCOVID-19Vaccine.html. As of November 10, 43.2 percent of Clinton residents were fully vaccinated, compared with 28.9 percent in DeKalb County, and 35.3 percent in Caldwell County **(Figure 3.41**).

Figure 3.41. COVID-19 Vaccination Details, Missouri



Source: DHSS, https://health.mo.gov/living/healthcondiseases/communicable/novel-coronavirus/data/public-health/vaccine-county.php

Previous Occurrences

Since the early 1900s, five lethal pandemics have swept the globe: Spanish Flu of 1918-1919; Asian Flu of 1957-1958; Hong Kong Flu of 1968-1969; Swine Flu of 2009-2010; and COVID-19 of 2019-present. The Spanish Flu was the most severe pandemic in recent history. The number of deaths was estimated to be 50-100 million worldwide and 675,000 in the United States. Its primary victims were mostly young, healthy adults. COVID-19 ranks as the deadliest pandemic in the United States with a reported 763,647 deaths as of November 15, 2021, according to Johns Hopkins University of Medicine (https://coronavirus.jhu.edu/) with a higher mortality rate among older populations, those with pre-existing conditions, and disadvantaged populations. The 1957 Asian Flu pandemic killed about 70,000 people in the United States, mostly the elderly and chronically ill. The 1968 Hong Kong Flu pandemic killed 34,000 Americans. The 2009 Swine Flu caused 12,469 deaths in the United States.

Environmental Issues

The EPA maintains a list of facilities that release the most toxic chemicals each year. The most current report, from 2019, shows no known toxics release inventory (TRI) sites in Clinton County; 23 sites in Buchanan County to the west; four sites in Livingston County to the east; three sites in Ray County to the southeast; six sites in Platte County to the southwest and 23 sites in Clay County to the south (https://gispub.epa.gov/trina2019/).

Probability of Future Hazard Events

It is impossible to predict when the next pandemic will occur or its impact, thus noted as less than one percent. The CDC continually monitors and assesses pandemic threats and prepares for an

influenza pandemic. Novel influenza A viruses with pandemic potential include Asian lineage avian influenza A (H5N1) and (H7N9) viruses. These viruses have all been evaluated using the Influenza Risk Assessment Tool (IRAT) to assess their potential pandemic risk. Because the CDC cannot predict how severe a future pandemic will be, advance planning is needed at the national, state and local level. The Missouri Department of Health and Senior Service maintains a Pandemic Influenza Plan for the State.

Today, a much larger percentage of the world's population is clustered in cities, making them ideal breeding grounds for epidemics. Additionally, the explosive growth in air travel means the virus could literally be spread around the globe within hours. Under such conditions, there may be very little warning time. Outbreaks are expected to occur simultaneously throughout much of the nation, preventing shifts in human and material resources that normally occur with other natural disasters. These and many other aspects make influenza pandemic unlike any other public health emergency or community disaster.

Environmental concerns are also on the rise, with recent scientific data emphasizing the long-term impacts that air and water pollution can have on the ecology of affected areas. With continued enforcement of regulatory standards for airborne releases and discharges to waterways, routine emissions by industrial facilities are relatively easy to monitor and control. However, the potential always remains for unauthorized 3.511 3 Risk Assessment dumping and releases and for failure of systems to control industrial discharges, resulting in potential environmental emergencies (2018 Mo State Hazard Mitigation Plan, pp. 3.510-3.511).

Changing Future Conditions Considerations

According to the U.S. Global Change Research Program, the influences of climate change on public health is significant and varied. The influences range from the clear threats of temperature extremes and severe storms to less obvious connections related to insects. Climate and weather can also affect water and food quality in particular areas, with implications for public health.

Hot days can be unhealthy—even dangerous. High air temperatures can cause heat stroke and dehydration, and affect people's cardiovascular and nervous systems. Midwestern cities like St. Louis are vulnerable to heat waves, because many houses and apartments lack air conditioning, and urban areas are typically warmer than their rural surroundings. In recent decades, severe heat waves have killed hundreds of people across the Midwest. Heat stress is expected to increase as climate change brings hotter summer temperatures and more humidity. Certain people are especially vulnerable, including children, the elderly, the sick, and the poor.

Higher temperatures and wetter conditions tend to increase mosquito and tick activity, leading to an increased risk of zoonotic diseases. Mosquitos are known to carry diseases such as West Nile virus (WNV), La Crosse/California encephalitis, Jamestown Canyon virus, St. Louis encephalitis, and Eastern equine encephalitis. The two major concerns associated with warmer and wetter conditions are that the mosquito species already found in Missouri and the diseases that they carry will become more prevalent, and that new species carrying unfamiliar diseases will start to appear for the first time.

Warmer winters with fewer hard freezes in areas that already see WNV-carrying mosquitos are likely to observe both a higher incidence of WNV and a longer WNV season, ultimately leading to an increase in human cases. Non-native mosquito species may move into Missouri if the climate becomes more suitable for them, bringing with them diseases such as Jamestown Canyon virus, Chikungunya, and Dengue Fever.

Ticks are also well-known disease vectors in Missouri, carrying pathogens such as Lyme disease,

anaplasmosis, Ehrlichiosis, Powassan virus, and Babesiosis. Warmer, wetter weather can lead to an increase in algal blooms and declining beach health. An increase in flood events may also be associated with an increased incidence of mold problems in homes and businesses, as well as contamination of wells and surface waters due to sewer overflows and private septic system failures.

If these predictions come true, communities must contend with the human health impacts related to the increased prevalence of infectious diseases, heat waves, and changes in air and water quality. Public health officials will need to focus on spreading information and enacting pest and disease reduction. Flood prone communities will need to focus on continuously improving flood controls and mitigation strategies, including restricting building and chemical storage in floodplains, upgrading well and septic requirements, and providing water testing kits to residents (2018 Mo State Hazard Mitigation Plan, p. 3.511).

Vulnerability

Vulnerability Overview

Public Health Emergencies

For planning purposes, it is reasonable to assume a rapid movement of a pandemic flu virus from major metropolitan areas to rural areas of Missouri. The 2018 Missouri Hazard Mitigation Plan accurately stated that the effect of a pandemic on individual communities would be relatively prolonged – weeks to months – and could have a devastating effect on the health and well-being of Missouri citizens and the American public. CDC estimates of such an outbreak, as reported in the 2018 State Plan, included these estimates, most of which have been met and exceeded by COVID-19:

- Up to 200 million persons will be infected
- Between 40 and 100 million persons will become clinically ill
- Between 18 and 45 million persons will require outpatient care
- Between 300,000 and 800,000 persons will be hospitalized
- Between 88,000 and 300,000 people will die nationwide
- Effective preventative and therapeutic measures, including vaccines and antiviral agents, likely will be in short supply, as well as some antibiotics to treat secondary infections
- Economic losses from the next pandemic may range from $71 to 166 billion, depending on the attach rate.

Compared to public health emergencies, as previously described, environmental incidents involving air and water pollution would likely impact a more localized area; however, long-term effects on the environment in the impacted area could linger for many years.

As previously noted, all of Missouri and Clinton County is at risk to public health emergencies, while some special populations are at increased risk for infectious diseases (2018 MO Hazard Mitigation Plan, 3.512), including the institutionalized elderly, prison populations and children, particularly un-immunized children.

Environmental Issues

Although Missouri has never had an environmental disaster of large proportions, there are many instances where hazardous substances can impact the environment with considerable consequences to either air or water. Floods often temporarily interrupt community water supplies, creating the need for emergency potable water for thousands of people. Floodwaters also disrupt wastewater treatment facilities, resulting in the discharge of raw or improperly treated sewage. Periodically, water

pollutants cause fish kills in Missouri streams, and excessive air pollutants associated with smog in large metropolitan areas create public health problems.

Potential Losses to Existing Development

Public Health Emergencies

According to the State Plan, Buildings, infrastructure, and critical facilities are not vulnerable to this hazard. It affects only persons susceptible to the illness. The lasting impacts and potential losses are largely social/economic and are dependent on the type, extent, and duration of the illness. A 2007 study prepared by the Trust for America's Health, a nonprofit organization dedicated to making disease prevention a national priority, developed a model to assess the potential impact of a pandemic flu on each state's workforce and how 20 key industry sectors and trade would be affected. Economic impact to Missouri was estimated to include the following:

- Projected GDP Loss from Pandemic: $12.4 billion
- Projected GDP Percentage Loss from Pandemic: 5.74%
- Ranking of Percentage Losses Out of 50 States (Highest = 1): 14
- Projected Impact on the Workforce: $5.5 billion in losses
- Projected Impact on Industries: $4.7 billion in losses
- Projected Trade Impact: $2.2 billion in losses
- Projected Number of Lives Lost: 47,000
- Projected Number of Sick Workers (assuming 3 weeks of work lost (with 50 weeks of work per year) from those who are either ill, fear the risk of infection at work, or need to take care of sick family members): 1,717,000

Source: Mo State Hazard Mitigation Plan, p.3.513

For this State Hazard Mitigation Plan Update, pandemic influenza was used as the worst-case scenario for estimating potential losses. The Missouri Department of Health and Senior Service's Pandemic Influenza Plan assumes the clinical disease attack rate would be 30 percent in the overall population. Combining this assumption with an estimate of age distribution for influenza cases and the estimated direct and indirect health care costs, the economic impact of pandemic influenza can be calculated for each county within Missouri. The table below presents the estimates for age distribution and disease outcome.

Table 3.56 Potential Vulnerability of Clinton County for Pandemic Influenza

Population	Potential Population Affected	Total Hospitalizations per Age Group (#) 1) 0-19 2) 20-64 3) 65+			Economic Impact per Age Group ($) 1) 0-19 2) 20-64 3) 65+			Total Economic Impact	Vulnerability
12,687	6,183	1) 13.29	2) 45.46	3) 16.42	1) 61,358.67	2) $430,147.20	3) $177,009.50	$668,515.37	Low

Source: 2018 Mo Hazard Mitigation Plan, p. 3.515

Impact of Previous and Future Development

Public Health Emergencies

As populations increase and the cost of health care climbs, potential losses can be expected to rise.

Environmental Issues

Throughout the State, continuing suburban development impacts streams in several ways. Shortening and culverting of channels leads to the direct loss of streams and riparian areas. The increase in impervious surface area in the surrounding watershed leads to unnatural hydrograph patterns, with lower baseflow and higher stormflow. The altered channel and higher peak flows can increase erosion, while the runoff from the impervious surface carries increased levels of sediment and various chemicals from the urban environment. Elevated nutrient levels or bacterial contamination is also likely if individual or community domestic sewage systems are not well maintained.

Hazard Summary by Jurisdiction

Although county level data on COVID-19 infections and deaths was available through the CDC, jurisdiction level data was not compiled in a publicly accessible format. It is known that according to CDC data, from January 2020 through the end of December 2021 there had been 3,691 reported positive cases of infection, and 27 confirmed deaths from the virus.

Problem Statement

Preparing for, responding to and recovering from public health emergencies like COVID-19 will require a strategy with many similarities to other disease outbreaks, be they naturally occurring or resulting from terrorist action. The time-honored public health activities to lessen the impact on morbidity and mortality such as education, vaccination, prophylaxis, isolation/quarantine and the closure of public facilities are common to all, despite the particular disease of concern. In addition, clear, concise communication with the public, within the Missouri Department of Health and Senior Services (DHSS), and with other agencies remains a critical component, as does the ability of the involved agencies to achieve collaboration and coordination. By its very nature, an influenza pandemic, once started, will not be stopped until it has run its course. This course can be shortened and weakened by many things, with vaccination being the gold standard for protecting the population. Pandemic plans describe strategies of preparedness, response and recovery to attempt to decrease illnesses and deaths during the pandemic period to manageable levels (i.e., that do not overwhelm the critical infrastructures of the State), and to promote community resiliency and rapid recovery.

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 Hazard Mitigation Review Guide (October 1, 2012)*.

- **Mitigation Goals** are general guidelines that explain what you want to achieve. Goals are long-term policy statements and global visions that support the mitigation strategy. The goals address the risk of hazards identified in the plan.

- **Mitigation Actions** are specific actions, projects, activities, or processes taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. Implementing mitigation actions helps achieve the plan's mission and goals.

4.1 Goals

44 CFR Requirement §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Clinton County's 2023 HMP goals are:

Goal 1: Protect the Lives, Property and Livelihoods of All Citizens.
- Objective 1.1: Protect the lives and property of Clinton County residents.
- Objective 1.2: Provide sufficient warning of impending disasters.
- Objective 1.3: Identify the citizens most vulnerable to disasters and plan accordingly.

Goal 2: Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices.
- Objective 2.1: Decrease the impact of natural hazards.
- Objective 2.2: Decrease the cost of the next disaster.
- Objective 2.3: Increase Clinton County's economic resistance to disasters.

Goal 3: Ensure Continued Operation of Government and Emergency Functions in a Disaster.

- Objective 3.1: Increase disaster mitigation management capability in local governments.
- Objective: 3.2: Strengthen critical infrastructure.

Goal 4: Ensure Access to Information About Hazard Preparation and Recovery.

- Objective 4.1: Increase knowledge among citizens about disaster safety.

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.

Some specific sources for mitigation action ideas include the following:

- FEMA's Mitigation Action Ideas Publication, https://www.fema.gov/media-library/assets/documents/30627
- FEMA's Climate Resilient Activities for Hazard Mitigation Assistance, https://www.fema.gov/media-library/assets/documents/110202
- EPA's Hazard Mitigation for Natural Disasters Publication, https://www.epa.gov/waterutilityresponse/hazard-mitigation-natural-disasters
- EPAs Planning for an Emergency Drinking Water Supply Publication, https://www.epa.gov/waterutilityresponse/water-utility-planning-emergency-drinking-water-supply

During the second MPC meeting changes in risk since adoption of the previously approved plan were discussed. The second meeting concluded with the distribution of a list of possible mitigation actions to prompt discussions within and among the jurisdictions. Actions from the previous plan included completed actions, on-going actions, and actions upon which progress had not been made. he MPC Each jurisdiction was instructed to prove information regarding the "Action Status" using the following status choices:

- Completed, with a description of the process (if provided)
- Not Started/Continue in Plan Update, with a reason for the lack of progress (if provided)
- In Progress/Continue in Plan Update, with a description of the progress to date (if provided)
- Deleted, with a description for the reason for deletion (if provided)

Former actions that have been completed were deleted since the jurisdiction has that capability. New actions were created that reflected the changes in development and priorities, such as actions for acquiring additional outdoor warning sirens for areas with recent growth. Plan actions have been revised to reflect progress. For the third meeting, individual jurisdictions, including school and special districts, discussed mitigation strategy. 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:

- A list of actions proposed in the previous mitigation plan, the current 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, and
- Public input during meetings, responses to Data Collection Questionnaires, and other

efforts to involve the public in the plan development process.

Based on the 2018 status updates, there were 3 completed actions, 5 deleted actions, and 40 continuing actions. Each participating jurisdiction has at least one continuing or new action.

Table 4.1 provides a summary of the 2018 action statuses for each jurisdiction.

Table 4.1. 2018 Action Status Summary

Jurisdiction	Completed Actions	Continuing Actions (ongoing or modify)	Deleted Actions
Clinton County	1.2.a **Total: 1**	1.1.a, 2.1.1, 2.2.a, 2.2.b, 3.1.a, 3.1.b, 3.1.c, 3.1.d 3.1.e, 3.2.1, 3.2.2, 4.1.a, 4.1.b, 4.1.c **Total: 14**	1.1.b, 2.3.1 **Total: 2**
City of Cameron	**Total: 0**	1.2.1, 2.1.2 **Total: 2**	**Total: 0**
City of Gower	**Total: 0**	1.1.c, 1.2.4 **Total: 2**	1.2.3, 2.1.3 **Total: 2**
City of Lathrop	1.2.4 **Total: 1**	1.1.d, 1.3.2, 1.3.1,1.3.3, 2.1.5, 2.3.2, 2.3.a, 2.3.b, 3.1.f, 3.1.g, 3.2.3 **Total: 11**	**Total: 1**
City of Plattsburg	**Total: 0**	1.2.5, 2.1.5, 3.1.k **Total: 3**	**Total: 0**
City of Trimble	1.2.6 **Total: 1**	1.3.4, 2.1.7, 2.3.5 **Total: 3**	**Total: 0**
Village of Turney (Non-Participant)	--	--	--
Cameron R-I School District	**Total: 0**	1.2.2, 4.1.d **Total: 2**	**Total: 0**
Lathrop R-II School District	**Total: 0**	1.1.e, 1.1.1, 3.1.i, 3.1.j **Total: 3**	**Total: 0**
Clinton R-III School District (Did not participate in 2018)	--	--	--
	Total Completed Actions: 3	**Total Continuing Actions: 40**	**Total Deleted Actions: 5**

Table 4.2 provides a summary of the completed 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)
1.2.a – Clinton County: Use electronic media to alert residents of emergencies and to provide necessary information.	Clinton County is using the Nixle community information service notification system to provide mobile device outreach to residents who subscribe.
1.2.5 – City of Lathrop: Submit notice of interest for a grant for an outdoor warning siren	The City of Lathrop submitted and was awarded an HMGP grant application by SEMA and FEMA in 2022 for its fourth siren.
1.2.6 – City of Trimble: Submit notice of interest for a grant for an outdoor warning siren	The City of Trimble installed and tested a new outdoor storm warning siren in November 2022.

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

Table 4.3 provides a summary of the deleted actions from the previous plan.

Table 4.3. Summary of Deleted Actions from the Previous Plan

Deleted Actions	Reason for Deletion
1.1.b – Clinton County: Assess existing public facilities for the location of suitable "safe areas." If available, these "safe areas" should be clearly marked and employees and visitors should be informed of their location in public facilities.	Lack of funding and resources.
1.2.3 – City of Gower: Submit notice of interest for acquiring an outdoor warning siren	The City of Gower was able to finance an additional outdoor warning siren without an HMGP grant, and it is now installed and operational.
2.1.3 – City of Gower: Adoption and enforcement of floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs)	City is not in a floodplain
2.3.1 – Clinton County: Add backup generators to critical facilities, including water distribution, wastewater treatment facilities and emergency shelters.	Lack of funding and resources.

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

Actions that have not been completed, are either (1) deleted with an explanation why the action is no longer relevant; or (2) continued with the intent to complete. Limited funding, staffing and resources are common barriers to implementation. MPC members were encouraged to view proposed actions within the broad priorities of hazard mitigation and weighed the potential cost of each project in relation to the anticipated future cost savings.

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 2018 Missouri State Hazard Mitigation Plan. The benefit/cost review at the planning stage primarily consisted of a qualitative analysis and was not the detailed process required grant funding application. For each action, the plan sets forth a narrative describing the types of benefits that could be realized from action implementation. The cost was estimated as closely as possible, with further refinement to be supplied as project development occurs.

The jurisdictions independently prioritized their actions. The methodology from the 2018 plan was used, in which jurisdictions self-determined which actions were high, medium and low priorities. Consideration included the action's potential to save lives and protect property, cost and local capacity to implement/pursue. STAPLEE methodology was not used but available to jurisdictions if they wanted to use it. Actions followed the SMART criteria of being Specific, Measurable, Action oriented, Relevant and Time-bound. The goals and actions were consistent with the hazards identified in the plan and reflected the local priorities and vulnerability to hazards. The actions for the 2023 plan are listed below, followed by a summary table (**Table 4.4**) that lists the actions in the categories of prevention, structure and infrastructure projects, emergency services and education/outreach.

Goal 1: Protect the Lives, Property and Livelihoods of All Citizens
- Objective 1.1: Protect the lives and property of Clinton County residents.

2023 Action Clinton County 1.1.1 (2018 Action 1.1.a)

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Problematic road routes
Hazard(s) Addressed:	Dam Failure, Flood, Winter Weather
Action or Project	
Action/Project Number:	1.1.1
Name of Action or Project:	Emergency Access Routes
Action or Project Description:	Review emergency access routes and evacuation routes; mitigate any problem areas
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	Varies
Benefits:	Mitigate problematic routes
Plan for Implementation	
Responsible Organization/Department:	Road and Bridge
Action/Project Priority:	High
Timeline for Completion:	2 years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operations Plan
Progress Report	
Action Status	Continuing Not Started
Report of Progress	

2023 Action Lathrop R-II 1.1.2 (2018 Action 1.1.1)

Action Worksheet	
Name of Jurisdiction:	Lathrop R-II School District
Risk / Vulnerability	
Problem being Mitigated:	Vulnerable students
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.1.2
Name of Action or Project:	Safe Room for Lathrop School District
Action or Project Description:	Submit notice of interest for a safe room
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	
Benefits:	Protect lives of Clinton County residents
Plan for Implementation	
Responsible Organization/Department:	School Board
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, HMGP safe room grant
Local Planning Mechanisms to be Used in Implementation, if any:	School Emergency Plan
Progress Report	
Action Status	Continuing In Progress
Report of Progress	No funds – at the discussion stage on progressing on notice of interest. Action modified from "Encourage the incorporation and design of safe rooms in the construction of new public facilities like libraries, community centers, etc." to current form.

2023 Action Lathrop 1.1.3 (2018 Action 1.1.d)

Action Worksheet	
Name of Jurisdiction:	Lathrop
Risk / Vulnerability	
Problem being Mitigated:	Unknown location of citizens after a natural hazard event
Hazard(s) Addressed:	Earthquake, Thunderstorm, Winter Weather, Tornado, Fire
Action or Project	
Action/Project Number:	1.1.3
Name of Action or Project:	Address List
Action or Project Description:	Maintain an up-to-date list of addresses with shelters to assist fire departments and emergency services agencies to locate survivors after natural hazard event.
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	None
Benefits:	Improved and efficient communication and location of survivors
Plan for Implementation	
Responsible Organization/Department:	City Administrator, in coordination with the community center and churches
Action/Project Priority:	High
Timeline for Completion:	2 years
Potential Fund Sources:	None
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing Not Started
Report of Progress	

2023 Action Cameron R-I 1.1.4 (2018 Action 1.2.2)

Action Worksheet	
Name of Jurisdiction:	Cameron School District
Risk / Vulnerability	
Problem being Mitigated:	Vulnerable population
Hazard(s) Addressed:	Earthquake, Flood, Thunderstorm, Winter Weather, and Tornado
Action or Project	
Action/Project Number:	1.1.4
Name of Action or Project:	Backup Generators
Action or Project Description:	Add backup generator to provide heat and electricity
Applicable Goal Statement:	Protect the Lives, Property, and Livelihoods of All Citizens
Estimated Cost:	$30,000
Benefits:	Protects citizens from cold during power outages
Plan for Implementation	
Responsible Organization/Department:	Superintendent & District Maintenance
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	School Emergency Plan
Progress Report	
Action Status	Continuing Not Started
Report of Progress	The District is determining which building is most easily accessible for citizens in the event of a weather event and need for shelter and would like to finish the construction at the high school prior to moving forward. The high school is the largest building available with the largest capacity, but construction prevents it from being the ideal building to use for the community shelter. After determining the most accessible and largest building for community access, the District will seek bids for a generator that will adequately provide emergency power.

2023 Action Lathrop 1.1.5 (2018 Action 1.3.1)

Action Worksheet	
Name of Jurisdiction:	Lathrop
Risk / Vulnerability	
Problem being Mitigated:	Lack of power in an emergency
Hazard(s) Addressed:	Earthquake, Thunderstorm, Winter Weather, Tornado
Action or Project	
Action/Project Number:	1.1.5
Name of Action or Project:	Generator/Emergency Power
Action or Project Description:	Increase the number of facilities with generators/emergency power that can be used as shelters in the event of natural disasters.
Applicable Goal Statement:	Protect the Lives, Property, and Livelihoods of All Citizens
Estimated Cost:	Varies depending on the facility – Approximately $40,000
Benefits:	Public and City has source of electricity after a natural disaster
Plan for Implementation	
Responsible Organization/Department:	City Administrator
Action/Project Priority:	High
Timeline for Completion:	2 years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	Comprehensive Plan
Progress Report	
Action Status	Continuing In Progress
Report of Progress	There are generators at the Community Center and Fire Station, but the City is also interested in adding a generator to the Red Cross designated shelter.

2023 Action Lathrop R-II 1.1.6 (2018 Action 1.1.e)

Action Worksheet	
Name of Jurisdiction:	Lathrop R-II School District
Risk / Vulnerability	
Problem being Mitigated:	Lack of marked safe areas
Hazard(s) Addressed:	Earthquake, Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.1.6
Name of Action or Project:	Marked safe areas
Action or Project Description:	Assess existing public facilities for the location of suitable "safe areas." If available, these "safe areas" should be clearly marked and employees and visitors should be informed of their location
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	$0 - $500 for signage
Benefits:	Marked safe areas
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	Medium
Timeline for Completion:	3 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing In Progress
Report of Progress	Continuing to locate areas

2023 Action Plattsburg 1.1.7

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Tornadoes
Problem being Mitigated:	Lack of sheltering space
Action or Project	
Applicable Goal Statement:	Provide community storm shelters for the general public
Action/Project Number:	1.1.7
Name of Action or Project:	Above ground storm shelters
Mitigation Category:	Structure & Infrastructure Projects
Action or Project Description:	Have four commercially fabricated, FEMA-approved, above-ground community storm shelters professionally installed in four strategically selected locations throughout town.
Estimated Cost:	$121,000
Benefits:	This would allow residents who don't have access to a basement or a saferoom the ability to safely ride out a tornado in a FEMA-approved shelter.
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Planning Agency
Supporting Organization/Department:	City of Plattsburg – Public Works Department; Plattsburg Parks Board; City of Plattsburg – Administration Department; Plattsburg Fire Protection District
Action/Project Priority:	1st Shelter = High Priority; 2nd – 4th Shelter = Medium Priority
Timeline for Completion:	With funding, we could purchase and install one shelter every six months, for a total project timeline of two years.
Potential Fund Sources:	FEMA Grants, State Grants, Municipal Funds, Private Donations, Bonds, Community Partnerships
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping
Progress Report	
Action Status:	New, in progress
Report of Progress:	

2023 Action Plattsburg 1.1.8

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies
Problem being Mitigated:	Displaced persons due to an emergency; Life/Safety risk associated with extreme heat or cold (MU-12 Protect Structures)
Action or Project	
Applicable Goal Statement:	Upgrade existing structure to make it useful as a community shelter, cooling center, warming center, or Emergency Operations Center annex in case of emergencies or disasters.
Action/Project Number:	1.1.8
Name of Action or Project:	Community Shelter/Emergency Operations Center
Mitigation Category:	Structure & Infrastructure Projects
Action or Project Description:	There is an existing structure adjacent to City Hall which is owned by a non-profit organization and is available for community needs. This project is to add a generator to the building and purchase a limited supply of cots, bedding, emergency rations kits, and shelter supplies so that the building can be utilized as an emergency shelter or a cooling/warming center.
Estimated Cost:	$85,000
Benefits:	This would provide emergency shelter for at-risk populations who are affected by various types of disasters. Additionally, the location near City Hall makes the building a suitable backup Emergency Operations Center.
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Planning Agency
Supporting Organization/Department:	Community Courtyard Board of Directors
Action/Project Priority:	Medium Priority
Timeline for Completion:	With funding, this project would take approximately eighteen months to complete.
Potential Fund Sources:	FEMA Grants, Private Donations, Municipal Funds
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping
Progress Report	
Action Status:	New, in progress
Report of Progress:	

Goal 1: Protect the Lives, Property and Livelihoods of All Citizens
- Objective 1.2: Provide sufficient warning of impending disasters.

2023 Action Gower 1.2.1 (2018 Action 1.1.c)

Action Worksheet	
Name of Jurisdiction:	Gower
Risk / Vulnerability	
Problem being Mitigated:	Unprepared public
Hazard(s) Addressed:	Flood, Thunderstorm, Winter Storm, Tornado
Action or Project	
Action/Project Number:	1.2.1
Name of Action or Project:	Weather Radios and Weather Phone Apps
Action or Project Description:	City will inform citizens about the importance of having and using a weather radio or a weather phone app.
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	None
Benefits:	Sufficient warning of impending disasters
Plan for Implementation	
Responsible Organization/Department:	Mayor
Action/Project Priority:	High
Timeline for Completion:	2 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing In Progress
Report of Progress	Modified to include weather phone apps since that has become more popular

2023 Action Cameron 1.2.2 (2018 Action 1.2.1)

Action Worksheet	
Name of Jurisdiction:	Cameron
Risk / Vulnerability	
Problem being Mitigated:	Insufficient warning of impending disasters
Hazard(s) Addressed:	Thunderstorms, Tornado
Action or Project	
Action/Project Number:	1.2.2
Name of Action or Project:	Outdoor Warning Siren
Action or Project Description:	Submit notice of interest for acquiring an outdoor warning siren
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	Unsure
Benefits:	Provide sufficient warning of impending disasters
Plan for Implementation	
Responsible Organization/Department:	City Council
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing Not Started
Report of Progress	Funding source was not identified

2023 Action Plattsburg 1.2.3 (2018 Action 1.2.5)

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Problem being Mitigated:	Insufficient warning of impending disasters
Hazard(s) Addressed:	Tornadoes, Attack, Civil Disorder, Hazardous Materials Release
Action or Project	
Action/Project Number:	1.2.3
Name of Action or Project:	Outdoor Warning Sirens
Action or Project Description:	Purchase and install two additional outdoor warning sirens to supplement our existing outdoor warning siren network for the portions of our community where our existing sirens cannot be heard.
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	$57,000
Benefits:	This would increase warning and notification of an impending emergency for approximately 25% of our community in the far Northern and Southeastern portions of our city. These sirens would be able to be heard at our two largest outdoor parks, areas where citizens would be most vulnerable to a tornado due to a lack of sheltering options. Likewise, one of these sirens would cover the industrial park where many employees work in windowless factories and may be unaware of changing weather conditions outside.
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Planning Agency & Public Works Department
Action/Project Priority:	High
Timeline for Completion:	3 years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping, Storm Siren Coverage Map
Progress Report	
Action Status	Continuing
Report of Progress	In 2019, the City of Plattsburg purchased and installed three new outdoor warning sirens, placing them strategically throughout Plattsburg to ensure optimal coverage. The city has commissioned an Outdoor Warning Siren Audible Map to determine if additional sirens are needed to improve our coverage area.

2023 Action Clinton County 1.2.4 (2018 Action 1.2.a)

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Uninformed public
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	1.2.4
Name of Action or Project:	Electronic Media
Action or Project Description:	Use electronic media to alert residents of emergencies and to provide necessary information.
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	No additional fee since already have electronic notification system
Benefits:	Quickly inform public
Plan for Implementation	
Responsible Organization/Department:	Clinton County Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	2 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operations Plan
Progress Report	
Action Status	Continuing in Progress
Report of Progress	Clinton County is using the Nixle community information service notification system to provide mobile device outreach to residents who subscribe. Continuing need to ensure more residents are subscribed.

2023 Action Trimble 1.2.5 (2018 Action 1.2.6)

Action Worksheet	
Name of Jurisdiction:	Trimble
Risk / Vulnerability	
Problem being Mitigated:	Insufficient warning of impending disasters
Hazard(s) Addressed:	Thunderstorms, Tornado
Action or Project	
Action/Project Number:	1.2.5
Name of Action or Project:	Outdoor Warning Siren
Action or Project Description:	Submit notice of interest for an outdoor warning siren
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	$17,500
Benefits:	Provide sufficient warning of impending disasters
Plan for Implementation	
Responsible Organization/Department:	City Council
Action/Project Priority:	Medium
Timeline for Completion:	2 years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing in Progress
Report of Progress	The City of Trimble is in the process of installing a new storm warning siren.

2023 Action Turney 1.2.6 (2018 Action 1.2.7)

Action Worksheet	
Name of Jurisdiction:	Turney
Risk / Vulnerability	
Problem being Mitigated:	Insufficient warning of impending disasters
Hazard(s) Addressed:	Thunderstorms, Tornado
Action or Project	
Action/Project Number:	1.2.6
Name of Action or Project:	Outdoor Warning Siren
Action or Project Description:	Submit notice of interest for a grant for an outdoor warning siren.
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	$17,500
Benefits:	Sufficient warning of impending disasters
Plan for Implementation	
Responsible Organization/Department:	City Council
Action/Project Priority:	Low
Timeline for Completion:	5 Years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing in Progress
Report of Progress	No new updates from the Village of Turney, but Clinton County has included as site for a storm warning siren in Turney in their HMGP application that is currently under state and federal review.

2023 Action Lathrop 1.2.7 (2018 Action 1.2.4)

Action Worksheet	
Name of Jurisdiction:	Lathrop
Risk / Vulnerability	
Problem being Mitigated:	Insufficient warning of impending disasters
Hazard(s) Addressed:	Thunderstorms, Tornado
Action or Project	
Action/Project Number:	1.2.7
Name of Action or Project:	Outdoor Warning Siren
Action or Project Description:	Submit notice of interest for a grant for an outdoor warning siren.
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	$17,500
Benefits:	Sufficient warning of impending disasters
Plan for Implementation	
Responsible Organization/Department:	City Administrator
Action/Project Priority:	High
Timeline for Completion:	1 year
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing in Progress
Report of Progress	The City of Lathrop submitted and was awarded an HMGP grant application for its fourth siren in 2022.

2023 Action Turney 1.2.8 (2018 Action 1.1.f)

Action Worksheet	
Name of Jurisdiction:	Turney
Risk / Vulnerability	
Problem being Mitigated:	Unprepared public
Hazard(s) Addressed:	Flood, Thunderstorm, Winter Storm, Tornado
Action or Project	
Action/Project Number:	1.2.8
Name of Action or Project:	Weather Radios
Action or Project Description:	City will inform citizens about the importance of having and using a weather radio.
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	None
Benefits:	Sufficient warning of impending disasters
Plan for Implementation	
Responsible Organization/Department:	Mayor
Action/Project Priority:	Low
Timeline for Completion:	5 years
Potential Fund Sources:	Internals
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing in Progress
Report of Progress	

2023 Action Gower 1.2.9 (2018 Action 1.2.b)

Action Worksheet	
Name of Jurisdiction:	Gower
Risk / Vulnerability	
Problem being Mitigated:	Unprepared public
Hazard(s) Addressed:	Thunderstorms, Tornado
Action or Project	
Action/Project Number:	1.2.9
Name of Action or Project:	Weather electronic notification
Action or Project Description:	City will inform citizens about the importance of having and using a weather radio.
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	None
Benefits:	Sufficient warning of impending disasters
Plan for Implementation	
Responsible Organization/Department:	Mayor
Action/Project Priority:	Low
Timeline for Completion:	5 years
Potential Fund Sources:	Internals
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing in Progress
Report of Progress	

2023 Action Clinton County 1.2.10

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Insufficient warning of impending disasters
Hazard(s) Addressed:	Thunderstorms, Tornado
Action or Project	
Action/Project Number:	1.2.10
Name of Action or Project:	Outdoor Warning Siren
Action or Project Description:	Outdoor Warning sirens for 8 locations to support rural subdivisions
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	$216,000
Benefits:	Sufficient warning of impending disasters
Plan for Implementation	
Responsible Organization/Department:	County Emergency Management Director & County Commission
Action/Project Priority:	High
Timeline for Completion:	2 Years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operations Plans
Progress Report	
Action Status	New, In Progress
Report of Progress	Clinton County applied for an HMGP grant with SEMA & FEMA to fund this siren project. They are currently awaiting final review of their application.

Goal 1: Protect the Lives, Property and Livelihoods of All Citizens
- Objective 1.3: Identify the Citizens Most Vulnerable to Disasters and Plan Accordingly

2023 Action Lathrop 1.3.1 (2018 Action 1.3.2)

Action Worksheet	
Name of Jurisdiction:	Lathrop
Risk / Vulnerability	
Problem being Mitigated:	Safe place for vulnerable citizens
Hazard(s) Addressed:	Thunderstorms, Tornado
Action or Project	
Action/Project Number:	1.3.1
Name of Action or Project:	Wind-Resistant Shelters at New Trailer Parks
Action or Project Description:	Require construction of a wind-resistant shelter with a capacity suitable to handle the expected population in any new trailer park, or park undergoing renovation or expansion.
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	Estimated at $35,000 for small shelter
Benefits:	Protect vulnerable citizens
Plan for Implementation	
Responsible Organization/Department:	City Administrator
Action/Project Priority:	High
Timeline for Completion:	2 Years
Potential Fund Sources:	Private, Grants (If shelter is also open to general public)
Local Planning Mechanisms to be Used in Implementation, if any:	Zoning Ordinance, Building Code, Site Plan Review
Progress Report	
Action Status	Continuing, Not Started
Report of Progress	--

2023 Action Trimble 1.3.2 (2018 Action 1.3.a)

Action Worksheet	
Name of Jurisdiction:	Trimble
Risk / Vulnerability	
Problem being Mitigated:	Vulnerable citizens
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	1.3.2
Name of Action or Project:	Vulnerable Citizen Awareness
Action or Project Description:	Develop a campaign for citizens to make a plan to assist elderly, disabled and other vulnerable friends or neighbors during a natural hazard.
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	None – Materials available for free but staff would develop the local press release and disseminate the information
Benefits:	Most vulnerable citizens are identified and will be assisted
Plan for Implementation	
Responsible Organization/Department:	City Council
Action/Project Priority:	Low
Timeline for Completion:	5 years
Potential Fund Sources:	Interna, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, Not Started
Report of Progress	--

2023 Action Turney 1.3.3 (2018 Action 1.3.b)

Action Worksheet	
Name of Jurisdiction:	Turney
Risk / Vulnerability	
Problem being Mitigated:	Vulnerable Citizen Awareness
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	1.3.3
Name of Action or Project:	Assisting Vulnerable Citizens
Action or Project Description:	Develop a campaign for citizens to make a plan to assist elderly, disabled and other vulnerable friends or neighbors during a natural hazard.
Applicable Goal Statement:	Protect the Lives, Property and Livelihoods of All Citizens
Estimated Cost:	None – Materials available for free but staff would develop the local press release and disseminate the information
Benefits:	Most vulnerable citizens are identified and will be assisted
Plan for Implementation	
Responsible Organization/Department:	City Council
Action/Project Priority:	Low
Timeline for Completion:	5 years
Potential Fund Sources:	Interna, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, Not Started
Report of Progress	No resources to get campaign started

2023 Action Plattsburg 1.3.4

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Tornadoes
Problem being Mitigated:	Lack of severe weather shelters in residential structures
Action or Project	
Applicable Goal Statement:	Increase the number of residential storm shelters in the community (T-1 Encourage Construction of Safe Rooms)
Action/Project Number:	1.3.4
Name of Action or Project:	Residential severe weather shelters
Mitigation Category:	Local Planning and Regulations
Action or Project Description:	Establish a local grant program to encourage the construction of residential severe weather shelters.
Estimated Cost:	$168,000
Benefits:	This would provide grant funding to retrofit existing residential structures that don't have a safe severe weather shelter with an approved shelter. This program could partially fund severe weather shelters in a minimum of 42 residences (if we allocated a maximum of $4,000 per shelter.)
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Planning Agency
Supporting Organization/Department:	City of Plattsburg – Building Inspections & Code Enforcement Dept.
Action/Project Priority:	High-Medium Priority
Timeline for Completion:	With funding, we could complete the project within three years.
Potential Fund Sources:	FEMA Grants, State Grants, Municipal Funds, Private Donations
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping
Progress Report	
Action Status:	New, in progress
Report of Progress:	

Goal 2: Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles, and Practices

- Objective 2.1: Decrease the Impact of Natural Hazards

2023 Action Turney 2.1.1 (2018 Action 2.1.a)

Action Worksheet	
Name of Jurisdiction:	Turney
Risk / Vulnerability	
Problem being Mitigated:	Low water levels
Hazard(s) Addressed:	Drought
Action or Project	
Action/Project Number:	2.1.1
Name of Action or Project:	Water-Saving Measures
Action or Project Description:	Inform residents of water-saving measures that prioritize water use, particularly for emergency uses such as firefighting.
Applicable Goal Statement:	Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices
Estimated Cost:	Volunteer time only
Benefits:	Decrease impact of natural hazards
Plan for Implementation	
Responsible Organization/Department:	City Council
Action/Project Priority:	Low
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, Not Started
Report of Progress	Information to distribute not identified

2023 Action Clinton County 2.1.2 (2018 Action 2.2.a)

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Flooding and storm water
Hazard(s) Addressed:	Dam Failure, Flood, Thunderstorm
Action or Project	
Action/Project Number:	2.1.2
Name of Action or Project:	Storm Water / Watershed Management Plan
Action or Project Description:	Develop a countywide multi-jurisdiction comprehensive storm water / watershed management plan
Applicable Goal Statement:	Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices
Estimated Cost:	Unsure – cost of consultant to develop plan is estimated at $40,000
Benefits:	Managed storm water runoff and decreased erosion
Plan for Implementation	
Responsible Organization/Department:	Clinton County Zoning Department
Action/Project Priority:	Low
Timeline for Completion:	5 years
Potential Fund Sources:	Grants
Local Planning Mechanisms to be Used in Implementation, if any:	Land Use Plan
Progress Report	
Action Status	Continuing, Not Started
Report of Progress	In need of an external organization to assist in the process

2023 Action Plattsburg 2.1.3

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Severe Thunderstorm
Problem being Mitigated:	Flooding / Flash Flooding
Action or Project	
Applicable Goal Statement:	Decrease risk of loss of life or property damage due to flooding / flash flooding (F-13 Improve Stormwater Drainage System Capacity)
Action/Project Number:	2.1.3
Name of Action or Project:	Stormwater Dredging
Mitigation Category:	Structure & Infrastructure Projects
Action or Project Description:	Improve existing stormwater drainage ditch by dredging ditch to a deeper level, cleaning out debris, lining ditch with rock or concrete, and taking other measures to keep stormwater from overflowing the ditch.
Estimated Cost:	$65,000
Benefits:	Reduction of flooding-related damages and risk to life; neighborhood beautification
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Planning Agency
Supporting Organization/Department:	City of Plattsburg – Public Works Department
Action/Project Priority:	High Priority
Timeline for Completion:	With funding, the project should be completed within two years.
Potential Fund Sources:	FEMA Grants, State Funding, Municipal Funds
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping, Floodplain Map
Progress Report	
Action Status:	New, in progress
Report of Progress:	

2023 Action Plattsburg 2.1.4

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Severe Thunderstorm
Problem being Mitigated:	Flooding / Flash Flooding
Action or Project	
Applicable Goal Statement:	Decrease risk of loss of life or property damage due to flooding / flash flooding (F-13 Improve Stormwater Drainage System Capacity) (F-21 Preserve Floodplain as Open Space)
Action/Project Number:	2.1.4
Name of Action or Project:	Stormwater Channeling
Mitigation Category:	Structure & Infrastructure Projects; Natural Systems Protection
Action or Project Description:	Purchase a vacant piece of sloped land within the flood hazard zone which channels water toward a residential neighborhood and installation of an underground stormwater detention system to prevent flash flooding from inundating existing drainage ditch and flooding portions of our community.
Estimated Cost:	$140,000
Benefits:	Stormwater would be captured and slowly released into the drainage ditch over time, preventing flooding (which occurs frequently.) Additionally, trash and contaminants would be captured in the detention system and properly disposed-of.
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Planning Agency
Supporting Organization/Department:	City of Plattsburg – Public Works Department
Action/Project Priority:	Medium Priority
Timeline for Completion:	With funding, two years
Potential Fund Sources:	FEMA Grants, State Funding, Municipal Funds
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping, Floodplain Map
Progress Report	
Action Status:	New, in progress
Report of Progress:	

2023 Action Plattsburg 2.1.5

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Severe Thunderstorm, Public Health Emergencies/Environmental Issues
Problem being Mitigated:	Flooding / Flash Flooding
Action or Project	
Applicable Goal Statement:	Decrease risk of loss of life or property damage due to flooding / flash flooding (F-13 Improve Stormwater Drainage System Capacity)
Action/Project Number:	2.1.5
Name of Action or Project:	Closed-Pipe Stormwater System
Mitigation Category:	Structure & Infrastructure Projects
Action or Project Description:	Installation of a storm sewer system in the portion(s) of our city which are prone to flooding; replacing open-trench drainage ditches with closed-pipe systems.
Estimated Cost:	$1,750,000
Benefits:	Reduction of flooding-related damages and risk to life; mosquito/vector control (eliminating open ditches); eliminating dangers to pedestrians associated with open trenches
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Planning Agency
Supporting Organization/Department:	City of Plattsburg – Public Works Department
Action/Project Priority:	Medium Priority
Timeline for Completion:	With funding, the project should be completed within three years.
Potential Fund Sources:	FEMA Grants, State Funding, Municipal Funds, Bonds
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping, Floodplain Map
Progress Report	
Action Status:	New, in progress
Report of Progress:	

Goal 2: Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles, and Practices

- Objective 2.2: Decrease the Cost of the Next Disaster

<u>2023 Action Clinton County 2.2.1</u> (2018 Action 2.1.1)

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Flooding
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	2.2.1
Name of Action or Project:	NFIP Participation
Action or Project Description:	Adoption and enforcement of floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs)
Applicable Goal Statement:	Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices
Estimated Cost:	None
Benefits:	Reduce losses from flooding
Plan for Implementation	
Responsible Organization/Department:	Flood Plain Administrator
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Land Use Plan
Progress Report	
Action Status	Continuing, in Progress
Report of Progress	

2023 Action Cameron 2.2.2 (2018 Action 2.1.2)

Action Worksheet	
Name of Jurisdiction:	Cameron
Risk / Vulnerability	
Problem being Mitigated:	Flooding
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	2.2.2
Name of Action or Project:	NFIP Participation
Action or Project Description:	Adoption and enforcement of floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs)
Applicable Goal Statement:	Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices
Estimated Cost:	None
Benefits:	Reduce losses from flooding
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Land Use Plan
Progress Report	
Action Status	Continuing, in Progress
Report of Progress	

2023 Action Lathrop 2.2.3 (2018 Action 2.1.4)

Action Worksheet	
Name of Jurisdiction:	Lathrop
Risk / Vulnerability	
Problem being Mitigated:	Flooding
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	2.2.3
Name of Action or Project:	NFIP Participation
Action or Project Description:	Adoption and enforcement of floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs)
Applicable Goal Statement:	Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices
Estimated Cost:	None
Benefits:	Reduce losses from flooding
Plan for Implementation	
Responsible Organization/Department:	City Administrator
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Land Use Plan
Progress Report	
Action Status	Continuing, in Progress
Report of Progress	

2023 Action Plattsburg 2.2.4 (2018 Action 2.1.5)

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Problem being Mitigated:	Flooding
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	2.2.4
Name of Action or Project:	NFIP Participation
Action or Project Description:	Adoption and enforcement of floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs)
Applicable Goal Statement:	Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices
Estimated Cost:	None
Benefits:	Reduce losses from flooding
Plan for Implementation	
Responsible Organization/Department:	City Code Administrator
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Land Use Plan
Progress Report	
Action Status	Continuing, in Progress
Report of Progress	

2023 Action Trimble 2.2.5 (2018 Action 2.1.6)

Action Worksheet	
Name of Jurisdiction:	Trimble
Risk / Vulnerability	
Problem being Mitigated:	Flooding
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	2.2.5
Name of Action or Project:	NFIP Participation
Action or Project Description:	Adoption and enforcement of floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs)
Applicable Goal Statement:	Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices
Estimated Cost:	None
Benefits:	Reduce losses from flooding
Plan for Implementation	
Responsible Organization/Department:	City Code Administrator
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Land Use Plan
Progress Report	
Action Status	Continuing, in Progress
Report of Progress	

2023 Action Clinton County 2.2.6 (2018 Action 2.2.b)

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Lack of buffer zones allows
Hazard(s) Addressed:	Dam Failure, Flood, Fire
Action or Project	
Action/Project Number:	2.2.6
Name of Action or Project:	Hazard buffer zones
Action or Project Description:	Incorporate hazard buffer zones into subdivision platting regulations.
Applicable Goal Statement:	Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices
Estimated Cost:	None
Benefits:	Decreases costs of disaster if slower to spread to adjacent properties
Plan for Implementation	
Responsible Organization/Department:	Zoning Department
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Land Use Plan
Progress Report	
Action Status	Continuing
Report of Progress	

2023 Action Plattsburg 2.2.7

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Severe Thunderstorm
Problem being Mitigated:	Flooding / Flash Flooding
Action or Project	
Applicable Goal Statement:	Reduce number of properties threatened by flooding / flash flooding (F-12 Remove Existing Structures from Flood Hazard Areas)
Action/Project Number:	2.2.7
Name of Action or Project:	Purchase floodplain properties
Mitigation Category:	Prevention; Local Planning & Regulations
Action or Project Description:	Plattsburg has 17 residential, 5 commercial, and 1 governmental structure located in the flood plain or flood hazard zone. This project would be to purchase some of these properties to demolish the structures in order to reduce risks associated with flood emergencies
Estimated Cost:	$25,000 - $5,000,000 (depending on number of properties purchased)
Benefits:	This would not only reduce the number of properties vulnerable in case of a flood, but some of the structures could be relocated to higher ground and re-sold and some of the property could be repurposed for use which isn't incompatible for
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Preparedness Agency
Supporting Organization/Department:	City of Plattsburg – Administration Department
Action/Project Priority:	Medium Priority
Timeline for Completion:	This project could be completed on an instance-by-instance basis as the individually identified floodplain / flood hazard zone properties became available for purchase.
Potential Fund Sources:	FEMA Grant Funding, HUD Funding, Municipal Funds, Funding from area Community Action Agency
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping, Floodplain Map
Progress Report	
Action Status:	New, in progress
Report of Progress:	

Goal 2: Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles, and Practices

- Objective 2.3: Increase Clinton County's Economic Resistance to Disasters

2023 Action Lathrop 2.3.1 (2018 Action 2.3.a)

Action Worksheet	
Name of Jurisdiction:	Lathrop
Risk / Vulnerability	
Problem being Mitigated:	Unprepared commercial and industrial facilities
Hazard(s) Addressed:	Earthquake, Flood, Thunderstorm, Winter Storm, Tornado
Action or Project	
Action/Project Number:	2.3.1
Name of Action or Project:	Disaster Plans
Action or Project Description:	Create up-to-date commercial and industrial disaster plans that are coordinated with community disaster plans.
Applicable Goal Statement:	Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices
Estimated Cost:	Staff time if internally completed
Benefits:	Increase economic resistance to disasters
Plan for Implementation	
Responsible Organization/Department:	City Administrator and Lathrop Fire District
Action/Project Priority:	Medium
Timeline for Completion:	3 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Plan
Progress Report	
Action Status	Continuing In Progress
Report of Progress	Fire department has worked with local elevator and school systems. Will update to include new school buildings in fire plan.

2023 Action Trimble 2.3.2 (2018 Action 2.3.c)

Action Worksheet	
Name of Jurisdiction:	Trimble
Risk / Vulnerability	
Problem being Mitigated:	Economic Vulnerability
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Thunderstorm, Winter Weather and Tornado
Action or Project	
Action/Project Number:	2.3.2
Name of Action or Project:	Backup Water System
Action or Project Description:	Develop plans for backup water systems for critical facilities
Applicable Goal Statement:	Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices
Estimated Cost:	Estimated at $500,000
Benefits:	Increased economic resistance to disasters
Plan for Implementation	
Responsible Organization/Department:	Clinton County Public Water Supply District #1 and City Council
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, Not Started
Report of Progress	

Goal 3: Ensure Continued Operation of Government and Emergency Functions in a Disaster - Objective 3.1: Increase Disaster Mitigation Management Capability in Local Governments

2023 Action Clinton County 3.1.1 (2018 Action 3.1.a)

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Communication breakdown
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	3.1.1
Name of Action or Project:	Accessible list
Action or Project Description:	Maintain a publicly accessible list of names, positions, contact information, roles, and responsibilities for all public safety positions and departments.
Applicable Goal Statement:	Ensure Continued Operation of Government and Emergency Functions in a Disaster
Estimated Cost:	None
Benefits:	Increased economic resistance to disasters
Plan for Implementation	
Responsible Organization/Department:	Clinton County Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	2 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

2023 Action Lathrop 3.1.2 (2018 Action 2.3.b)

Action Worksheet	
Name of Jurisdiction:	Lathrop
Risk / Vulnerability	
Problem being Mitigated:	Communication breakdown
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	3.1.2
Name of Action or Project:	Emergency List
Action or Project Description:	Maintain emergency lists with names and phone numbers of plant managers and other large employers.
Applicable Goal Statement:	Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices
Estimated Cost:	None
Benefits:	Increased communication with the business sector of the local economy
Plan for Implementation	
Responsible Organization/Department:	City Administrator
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing In Progress
Report of Progress	Keep updating list and expanding methods of communications

2023 Action Lathrop R-II 3.1.3 (2018 Action 3.1.i)

Action Worksheet	
Name of Jurisdiction:	Lathrop R-II School District
Risk / Vulnerability	
Problem being Mitigated:	Communication breakdown
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	3.1.3
Name of Action or Project:	Emergency List
Action or Project Description:	Maintain a publicly accessible list of names, positions, contact information, roles, and responsibilities for all public safety positions and departments.
Applicable Goal Statement:	Ensure Continued Operation of Government and Emergency Functions in a Disaster
Estimated Cost:	None
Benefits:	Increase disaster mitigation management capability
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	High
Timeline for Completion:	1 year
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	School Emergency Plan
Progress Report	
Action Status	Continuing In Progress
Report of Progress	Keep updating list and expanding methods of communications

2023 Action Clinton County 3.1.4 (2018 Action 3.1.b)

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Gaps in county capabilities and resources to address a disaster
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	3.1.4
Name of Action or Project:	Mutual Aid Agreements
Action or Project Description:	Execute and maintain mutual aid agreements with all relevant agencies.
Applicable Goal Statement:	Ensure Continued Operation of Government and Emergency Functions in a Disaster
Estimated Cost:	None
Benefits:	Increased capacity and availability of resources
Plan for Implementation	
Responsible Organization/Department:	Clinton County Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	2 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plans
Progress Report	
Action Status	Continuing In Progress
Report of Progress	Continuing

2023 Action Clinton County 3.1.5 (2018 Action 3.1.c)

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Limited disaster mitigation management capability in local governments
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	3.1.5
Name of Action or Project:	Coordinate and Link Websites
Action or Project Description:	Coordinate and link web sites for counties, municipalities, school districts, Local Emergency Planning Commission and emergency services.
Applicable Goal Statement:	Ensure Continued Operation of Government and Emergency Functions in a Disaster
Estimated Cost:	None
Benefits:	Increase disaster mitigation management capability in local governments
Plan for Implementation	
Responsible Organization/Department:	Clinton County Emergency Management Director
Action/Project Priority:	Low
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plans
Progress Report	
Action Status	Continuing In Progress
Report of Progress	

2023 Action Clinton County 3.1.6 (2018 Action 3.1.e)

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Inability to access GIS hazard information
Hazard(s) Addressed:	Dam, Earthquake, Flood, Thunderstorm, Winter Weather, Tornado
Action or Project	
Action/Project Number:	3.1.6
Name of Action or Project:	GIS hazard information availability
Action or Project Description:	Make all GIS hazard information available online to county and municipal permitting departments.
Applicable Goal Statement:	Ensure Continued Operation of Government and Emergency Functions in a Disaster
Estimated Cost:	$10,000 for GIS contractor
Benefits:	Increase disaster mitigation management capability in local governments
Plan for Implementation	
Responsible Organization/Department:	Clinton County Zoning Department
Action/Project Priority:	Medium
Timeline for Completion:	4 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plans and Land Use Plan
Progress Report	
Action Status	Continuing, Not Started
Report of Progress	None

2023 Action Lathrop R-II 3.1.7 (2018 Action 3.1.j)

Action Worksheet	
Name of Jurisdiction:	Lathrop R-II School District
Risk / Vulnerability	
Problem being Mitigated:	Lack of information about emergency services
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	3.1.7
Name of Action or Project:	Website Links
Action or Project Description:	Coordinate and link web sites for counties, municipalities, school districts, Local Emergency Planning Commission and emergency services.
Applicable Goal Statement:	Ensure Continued Operation of Government and Emergency Functions in a Disaster
Estimated Cost:	None
Benefits:	Increase disaster mitigation capability
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	Low
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	School Emergency Plan
Progress Report	
Action Status	Continuing
Report of Progress	None

2023 Action Lathrop 3.1.8 (2018 Action 3.1.f)

Action Worksheet	
Name of Jurisdiction:	Lathrop
Risk / Vulnerability	
Problem being Mitigated:	Limited disaster mitigation management capability in local governments
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	3.1.8
Name of Action or Project:	Coordinate and Link
Action or Project Description:	Coordinate and link web sites for counties, municipalities, school districts, Local Emergency Planning Commission and emergency services.
Applicable Goal Statement:	Ensure Continued Operation of Government and Emergency Functions in a Disaster
Estimated Cost:	None
Benefits:	Increase disaster mitigation management capability in local governments
Plan for Implementation	
Responsible Organization/Department:	City Administrator
Action/Project Priority:	Low
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Plan
Progress Report	
Action Status	Continuing
Report of Progress	Need to update links and make searching information easier

2023 Action Lathrop 3.1.9 (2018 Action 3.1.h)

Action Worksheet	
Name of Jurisdiction:	Lathrop
Risk / Vulnerability	
Problem being Mitigated:	Lack of information about emergency services
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	3.1.9
Name of Action or Project:	Coordinate and Link
Action or Project Description:	Coordinate and link web sites for counties, municipalities, school districts, Local Emergency Planning Commission and emergency services.
Applicable Goal Statement:	Ensure Continued Operation of Government and Emergency Functions in a Disaster
Estimated Cost:	None
Benefits:	Increase disaster mitigation capability
Plan for Implementation	
Responsible Organization/Department:	City Administrator
Action/Project Priority:	Low
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	
Progress Report	
Action Status	Continuing, not started
Report of Progress	

2023 Action Clinton County 3.1.10 (2018 Action 3.1.d)

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Lack of access to records in the event of a natural disaster
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	3.1.10
Name of Action or Project:	Safeguard Records
Action or Project Description:	Continue to safeguard the most important government records in case of power outage or disaster, update plans as necessary.
Applicable Goal Statement:	Ensure Continued Operation of Government and Emergency Functions in a Disaster
Estimated Cost:	Estimated at $20,000 to convert paper files to electronic files
Benefits:	Increase disaster mitigation management capability in local governments
Plan for Implementation	
Responsible Organization/Department:	County Technology Department/Consultant
Action/Project Priority:	High
Timeline for Completion:	2 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, In Progress
Report of Progress	Implemented but will improve the process

2023 Action Lathrop 3.1.11 (2018 Action 3.1.g)

Action Worksheet	
Name of Jurisdiction:	Lathrop
Risk / Vulnerability	
Problem being Mitigated:	Lack of access to records in the event of a natural disaster
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	3.1.11
Name of Action or Project:	Safeguard Records
Action or Project Description:	Continue to safeguard the most important government records in case of power outage or disaster, update plans as necessary.
Applicable Goal Statement:	Ensure Continued Operation of Government and Emergency Functions in a Disaster
Estimated Cost:	Estimated at $20,000 to convert paper files to electronic files and backup system
Benefits:	Increase disaster mitigation management capability in local governments
Plan for Implementation	
Responsible Organization/Department:	City Administrator
Action/Project Priority:	High
Timeline for Completion:	2 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, In Progress
Report of Progress	None

2023 Action Plattsburg 3.1.12 (2018 Action 3.1.k)

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Problem being Mitigated:	Lack of access to records in the event of a natural disaster
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	3.1.12
Name of Action or Project:	Safeguard Records
Action or Project Description:	Continue to safeguard the most important government records in case of power outage or disaster, update plans as necessary.
Applicable Goal Statement:	Ensure Continued Operation of Government and Emergency Functions in a Disaster
Estimated Cost:	Estimated at $15,000 to convert paper files to electronic files
Benefits:	Increase disaster mitigation management capability in local governments
Plan for Implementation	
Responsible Organization/Department:	City Administrator
Action/Project Priority:	High
Timeline for Completion:	2 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, In Progress
Report of Progress	Ongoing project. Exploring options to digitize records.

2023 Action Turney 3.1.13 (2018 Action 3.2.a)

Action Worksheet	
Name of Jurisdiction:	Turney
Risk / Vulnerability	
Problem being Mitigated:	Inability to access records and files
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	3.1.13
Name of Action or Project:	Safeguard records/files
Action or Project Description:	Safeguard the most important government records and files in case of disaster
Applicable Goal Statement:	Ensure Continued Operation of Government and Emergency Functions in a Disaster
Estimated Cost:	$10,00 to convert paper files to electronic files and add back up
Benefits:	Increase disaster mitigation management capability in local governments
Plan for Implementation	
Responsible Organization/Department:	City Council Chairman
Action/Project Priority:	Low
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, not started
Report of Progress	No update provided from Village of Turney

Goal 3: Ensure Continued Operation of Government and Emergency Functions in a Disaster - Objective 3.2: Strengthen Critical Infrastructure

2023 Action Lathrop 3.2.1 (2018 Action 2.3.2)

Action Worksheet	
Name of Jurisdiction:	Lathrop
Risk / Vulnerability	
Problem being Mitigated:	Economic Vulnerability
Hazard(s) Addressed:	Earthquake, Flood, Thunderstorm, Winter Weather and Tornado
Action or Project	
Action/Project Number:	3.2.1
Name of Action or Project:	Backup Generators
Action or Project Description:	Add backup generators to critical facilities, including water distribution, wastewater treatment facilities and emergency shelters.
Applicable Goal Statement:	Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices
Estimated Cost:	$25,000
Benefits:	Increases county's economic resistance to disasters
Plan for Implementation	
Responsible Organization/Department:	City Administrator
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	
Progress Report	
Action Status	Continuing, In Progress
Report of Progress	3 generators added to wastewater treatment plan, will apply for further funding to furnish generators for other critical facilities.

2023 Action Clinton County 3.2.2 (2018 Action 3.2.1)

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Vulnerable infrastructure
Hazard(s) Addressed:	Earthquake, Flood, Thunderstorm, Winter Weather, Tornado, Fire
Action or Project	
Action/Project Number:	3.2.2
Name of Action or Project:	Upgrades or retrofits for critical structures
Action or Project Description:	Review, prioritize, institute and monitor needed upgrades or retrofits for critical buildings and infrastructures
Applicable Goal Statement:	Ensure Continued Operation of Government and Emergency Functions in a Disaster
Estimated Cost:	Varies depending on upgrade or retrofit of building ($10,000 to $100,000)
Benefits:	Strengthened infrastructure
Plan for Implementation	
Responsible Organization/Department:	Clinton County Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing, In Progress
Report of Progress	Partially completed

2023 Action Clinton County 3.2.3 (2018 Action 3.2.2)

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Economic Vulnerability
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Thunderstorm, Winter Weather and Tornado
Action or Project	
Action/Project Number:	3.1.1
Name of Action or Project:	Backup Water System
Action or Project Description:	Develop plans for backup water systems for critical facilities
Applicable Goal Statement:	Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles and Practices
Estimated Cost:	Haven't explored specifics at this stage (Estimated $3 million countywide)
Benefits:	Increased economic resistance to disasters
Plan for Implementation	
Responsible Organization/Department:	Clinton County Emergency Management Director
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, Not Started
Report of Progress	

2023 Action Lathrop 3.2.4 (2018 Action 3.2.3)

Action Worksheet	
Name of Jurisdiction:	Lathrop
Risk / Vulnerability	
Problem being Mitigated:	Vulnerable infrastructure
Hazard(s) Addressed:	Earthquake, Flood, Thunderstorm, Winter Weather, Tornado, Fire
Action or Project	
Action/Project Number:	3.2.4
Name of Action or Project:	Upgrades or retrofits for critical structures
Action or Project Description:	Review, prioritize, institute and monitor needed upgrades or retrofits for critical buildings and infrastructures
Applicable Goal Statement:	Ensure Continued Operation of Government and Emergency Functions in a Disaster
Estimated Cost:	Varies depending on upgrade or retrofit (Estimated at $500,000)
Benefits:	Strengthened infrastructure
Plan for Implementation	
Responsible Organization/Department:	Clinton County Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing, In Progress
Report of Progress	Continue to upgrade water district, wastewater district, storm siren and generators as needed and as funding is available

2023 Action Turney 3.2.5 (2018 Action 3.1.l)

Action Worksheet	
Name of Jurisdiction:	Turney
Risk / Vulnerability	
Problem being Mitigated:	Vulnerable infrastructure
Hazard(s) Addressed:	Earthquake, Flood, Thunderstorm, Winter Weather, Tornado, Fire
Action or Project	
Action/Project Number:	3.2.5
Name of Action or Project:	Upgrades and retrofits
Action or Project Description:	Review, prioritize, institute and monitor needed upgrades or retrofits for critical buildings and infrastructures, such as the city barn
Applicable Goal Statement:	Ensure Continued Operation of Government and Emergency Functions in a Disaster
Estimated Cost:	$70,000 to retrofit city barn
Benefits:	Strengthen critical infrastructure
Plan for Implementation	
Responsible Organization/Department:	City Council Chairman
Action/Project Priority:	Low
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, not started
Report of Progress	None, no communication from Village of Turney

2023 Action Plattsburg 3.2.6

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Earthquake, Severe Thunderstorms, Severe Winter Weather, Tornadoes, Utility Emergencies
Problem being Mitigated:	Unexpected Loss of Electricity
Action or Project	
Applicable Goal Statement:	Decrease community vulnerability in the event of an unexpected loss of electricity (MU-13 Protect Infrastructure and Critical Facilities)
Action/Project Number:	3.2.6
Name of Action or Project:	Backup Generators
Mitigation Category:	Structure & Infrastructure Projects
Action or Project Description:	Purchase and install backup electrical generators (and quick generator hook-ups) for public buildings, community facilities, and critical infrastructure.
Estimated Cost:	$60,000
Benefits:	This will improve community resiliency by allowing public buildings and critical infrastructure to continue operating if a disaster were to disrupt the electrical supply.
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Preparedness Agency
Supporting Organization/Department:	City of Plattsburg – Public Works Department
Action/Project Priority:	Medium Priority
Timeline for Completion:	With funding, this project would take approximately three years to complete.
Potential Fund Sources:	FEMA Grant Funding, State Funding, Municipal Funds, Funds from other government entities, Private donations
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping
Progress Report	
Action Status:	New, in progress
Report of Progress:	

Goal 4: Ensure Access to Information About Hazard Preparation and Recovery
- Objective 4.1: Increase Knowledge among citizens about disaster safety

2023 Action Clinton County 4.1.1 (2018 Action 4.1.a)

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Uninformed/unprepared citizens
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	4.1.1
Name of Action or Project:	Disaster preparedness for children
Action or Project Description:	Educate grade school-age children in disaster preparedness and how to survive disasters.
Applicable Goal Statement:	Ensure Access to Information About Hazard Preparation and Recovery
Estimated Cost:	None
Benefits:	Increased knowledge among citizens about disaster safety
Plan for Implementation	
Responsible Organization/Department:	Clinton County Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	1 year
Potential Fund Sources:	Internal, Private, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, In Progress
Report of Progress	None

2023 Action Cameron R-I 4.1.2 (2018 Action 4.1.d)

Action Worksheet	
Name of Jurisdiction:	Cameron R-I School District
Risk / Vulnerability	
Problem being Mitigated:	Children not knowing what to do during a natural disaster
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	4.1.2
Name of Action or Project:	Grade School Disaster Preparedness
Action or Project Description:	Educate grade school-age children in disaster preparedness and how to survive disasters.
Applicable Goal Statement:	Ensure Access to Information About Hazard Preparation and Recovery
Estimated Cost:	None
Benefits:	Children will be prepared in the event of a natural disaster
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	High
Timeline for Completion:	1 year
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	School Emergency Plan
Progress Report	
Action Status	Continuing, In Progress
Report of Progress	Will continue to expand and improve education for disaster preparedness. ● Safety training is provided to all staff annually. ● The assistant principals created a district-wide drill schedule to practice tornado, fire, intruder, and earthquake protocols. ● Processes and procedures for all safety drills and possible events are shared with the students at the start of the year and prior to each drill ● Teachers offer constant reminders and practice in between drills within the classrooms independent of scheduled drills ● Each drill is reviewed for strengths and weaknesses ● Science weather curriculum units include instruction of what to do in the event of flooding, tornados, fires, etc. ● The district works cooperatively with the city, police, and law enforcement agencies to ensure we have a common plan in place in the event of a disaster ● The fire department annually presents information to our elementary students to share what to do in case of a fire at school and home

2023 Action Clinton County 4.1.3 (2018 Action 4.1.b)

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Unable to access hazard maps
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	4.1.3
Name of Action or Project:	Access to Hazard Maps
Action or Project Description:	Publish detailed hazard maps on all city and county websites and provide paper copies to the public
Applicable Goal Statement:	Ensure Access to Information About Hazard Preparation and Recovery
Estimated Cost:	$5,000 for GIS consultant
Benefits:	Increased knowledge among citizens about disaster safety
Plan for Implementation	
Responsible Organization/Department:	Clinton County Emergency Management Director
Action/Project Priority:	Medium
Timeline for Completion:	3 years
Potential Fund Sources:	Internal, Private
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, not started
Report of Progress	None

2023 Action Clinton County 4.1.4 (2018 Action 4.1.c)

Action Worksheet	
Name of Jurisdiction:	Clinton County
Risk / Vulnerability	
Problem being Mitigated:	Unaware citizens living in/near inundation zones
Hazard(s) Addressed:	Dam Failure and Flood
Action or Project	
Action/Project Number:	4.1.4
Name of Action or Project:	Inundation Zone Awareness
Action or Project Description:	Continue to educate inform dam owners and citizens living near the inundation zones of dams about the need to properly maintain and upgrade these structures, particularly those that are more than 50 years old.
Applicable Goal Statement:	Ensure Access to Information About Hazard Preparation and Recovery
Estimated Cost:	Staff time
Benefits:	Informed dam owners and citizens
Plan for Implementation	
Responsible Organization/Department:	Clinton County Emergency Management Director
Action/Project Priority:	Medium
Timeline for Completion:	3 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Land Use Plan, Local Emergency Operations Plan
Progress Report	
Action Status	Continuing, not started
Report of Progress	None

2023 Action Clinton County R-III 4.1.5

Action Worksheet	
Name of Jurisdiction:	Clinton County R-III School District
Risk / Vulnerability	
Problem being Mitigated:	Children not knowing what to do during a natural disaster
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	4.1.5
Name of Action or Project:	Grade School Disaster Preparedness
Action or Project Description:	Educate grade school-age children in disaster preparedness and how to survive disasters.
Applicable Goal Statement:	Ensure Access to Information About Hazard Preparation and Recovery
Estimated Cost:	None
Benefits:	Children will be prepared in the event of a natural disaster
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	High
Timeline for Completion:	1 year
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	School Emergency Plan
Progress Report	
Action Status	Continuing, In Progress
Report of Progress	New Action

Table 4.4. Mitigation Action Matrix

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Develop ment	Continued Compliance with NFIP
	Prevention Public Education							
1.3.2	Vulnerable Citizens Awareness	Trimble	Low	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	
1.3.3	Vulnerable Citizens Awareness	Turney	Low	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	
2.1.1	Water-Saving Measures	Turney	Low	2	Drought			X
4.1.4	Inundation Zone Awareness	Clinton County	Medium	2	Dam Failure, Flood	X	X	X
	Structure and Infrastructure Projects							
1.1.2	Safe Room for Lathrop school District	Lathrop R-II	High	2	Thunderstorm, Tornado	X	X	X
1.1.4	Backup Generators	**Cameron R-I**	**High**	3	Earthquake, Flood, Thunderstorm, Winter Weather, and Tornado	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
1.1.5	Generator / Emergency Power	**Lathrop**	**High**	3	Earthquake, Thunderstorm, Winter Weather, Tornado	X	X	X
1.1.7	Above Ground Storm Shelters	**Plattsburg**	**High**	3	Tornado	X	X	X
1.2.2	Outdoor Warning Siren	**Cameron**	**Medium**	2	Thunderstorm, Tornado	X	X	X
1.2.3	Outdoor Warning Sirens	**Plattsburg**	**High**	2	Tornadoes, Attack, Civil Disorder, Hazardous Materials Release	X	X	X
1.2.5	Outdoor Warning Siren	**Trimble**	**Medium**	2	Thunderstorm, Tornado	X	X	X
1.2.6	Outdoor Warning Siren	**Turney**	**Low**	2	Thunderstorm, Tornado	X	X	X
1.2.7	Outdoor Warning Siren	**Lathrop**	**High**	2	Thunderstorm, Tornado	X	X	X
1.2.10	Outdoor Warning Siren	**Clinton County**	**High**	2	Thunderstorm, Tornado	X	X	X
1.3.1	Wind-Resistant Shelters at New Trailer Parks	**Lathrop**	**High**	3	Thunderstorm, Tornado	X	X	X
1.3.4	Residential Severe Weather Shelters	**Plattsburg**	**High**	3	Tornado	X	X	X
2.1.5	Closed-Pipe Stormwater System	**Plattsburg**	**Medium**	2	Flooding, Flash Flooding	X	X	X
2.2.1	NFIP Participation	**Clinton County**	**High**	3	Flood	X	X	X
2.2.2	NFIP Participation	**Cameron**	**High**	3	Flood	X	X	X
2.2.3	NFIP Participation	**Lathrop**	**High**	3	Flood	X	X	X
2.2.4	NFIP Participation	**Plattsburg**	**High**	3	Flood	X	X	X
2.2.5	NFIP Participation	**Trimble**	**High**	3	Flood	X	X	X
2.2.6	Hazard Buffer Zones	**Clinton County**	**Medium**	2	Dam Failure, Flood, Fire	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Develop ment	Continued Compliance with NFIP
2.2.7	Purchase Floodplain Properties	**Plattsburg**	**Medium**	2	Flooding, Flash Flooding	X	X	X
2.3.2	Backup Water System	**Trimble**	**Medium**	2	Dam Failure, Drought, Earthquake, Flood, Thunderstorm, Winter Weather and Tornado	X	X	X
3.2.1	Backup Generators	**Lathrop**	**High**	3	Earthquake, Flood, Thunderstorm, Winter Weather and Tornado	X	X	X
3.2.2	Upgrades or Retrofits for Critical Infrastructures	**Clinton County**	**High**	2	Earthquake, Flood, Thunderstorm, Winter Weather and Tornado	X	X	X
3.2.3	Backup Water System	**Clinton County**	**Medium**	2	Dam Failure, Drought, Earthquake, Flood, Thunderstorm, Winter Weather and Tornado	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Develop ment	Continued Compliance with NFIP
3.2.4	Vulnerable Infrastructure	**Lathrop**	**High**	2	Drought, Earthquake, Flood, Thunderstorm, Winter Weather and Tornado	X	X	X
3.2.5	Vulnerable Infrastructure	**Turney**	**Low**	2	Earthquake, Flood, Thunderstorm, Winter Weather and Tornado	X	X	X
3.2.6	Backup Generators	**Plattsburg**	**Medium**	2	Earthquake, Severe Thunderstorms, Severe Winter Weather, Tornadoes, Utility Emergencies	X	X	X
	Natural Systems Protection							
2.1.2	Stormwater / Watershed Management Plan	Clinton County	Low	3	Dam Failure, Flood, Thunderstorm	X	X	X
2.1.3	Stormwater Dredging	**Plattsburg**	**High**	2	Flooding, Flash Flooding	X	X	X
2.1.4	Stormwater Channeling	**Plattsburg**	**Medium**	2	Flooding, Flash Flooding	X	X	X
	Emergency Services							
1.1.1	Emergency Access Routes	Clinton County	High	2	Dam Failure, Flood, Winter Weather	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Develop ment	Continued Compliance with NFIP
1.1.3	Address List	Lathrop	High	4	Earthquake, Thunderstorm, Winter Weather, Tornado, Fire	X	X	X
1.1.6	Marked Safe Areas	**Lathrop R-II**	**Medium**	2	Earthquake, Thunderstorm, Tornado	X	X	X
1.1.8	Community Shelter / Emergency Operations Center	**Plattsburg**	**Medium**	3	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
2.3.1	Disaster Plans	**Lathrop**	**Medium**	3	Earthquake, Flood, Thunderstorm, Winter Storm, Tornado	X	X	X
3.1.2	Emergency List	**Lathrop**	**High**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Develop ment	Continued Compliance with NFIP
3.1.3	Emergency List	**Lathrop R-II**	**High**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
3.1.4	Mutual Aid Agreements	**Clinton County**	**High**	3	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
3.1.5	Coordinate and Link Websites	**Clinton County**	**Low**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Develop ment	Continued Compliance with NFIP
3.1.6	GIS Hazard Information Availability	**Clinton County**	**Medium**	2	Dam, Earthquake, Flood, Thunderstorm, Winter Weather, Tornado	X	X	X
3.1.7	Website Links	**Lathrop R-II**	**Low**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
3.1.8	Website Links	**Lathrop**	**Low**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Develop ment	Continued Compliance with NFIP
3.1.9	Coordinate and Link	**Lathrop**	**Low**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
3.1.10	Safeguard Records	**Clinton County**	**High**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
3.1.11	Safeguard Records	**Lathrop**	**High**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Develop ment	Continued Compliance with NFIP
3.1.12	Safeguard Records	**Plattsburg**	**High**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
3.1.13	Safeguard Records / Files	**Turney**	**Low**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
4.1.3	Access to Hazard Maps	**Clinton County**	**Medium**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
	Education and Outreach							
1.2.1	Weather Radios and Weather Phone Apps	**Gower**	**High**	2	Flood, Thunderstorm, Winter Storm, Tornado	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Develop ment	Continued Compliance with NFIP
1.2.4	Use electronic media to alert residents of emergencies and to provide necessary information.	**Clinton County**	**High**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
1.2.8	Weather Radios	**Turney**	**Low**	2	Flood, Thunderstorm, Winter Storm, Tornado	X	X	X
1.2.9	Weather Electronic Notification	**Gower**	**Low**	2	Thunderstorm, Tornado	X	X	X
3.1.1	Accessible List	**Clinton County**	**High**	2	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
4.1.1	Uninformed/Unprepared Citizens	**Clinton County**	**High**	1	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Develop ment	Continued Compliance with NFIP
4.1.2	Grade School Disaster Preparedness	**Cameron R-I**	**High**	1	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	X	X
4.1.5	Grade School Disaster Preparedness	**Clinton County R-III**	**High**	1	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies	X	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 MPC can be a standing committee, with oversight by a responsible agency or elected body. Oversight responsibility could fall to such entities as the county emergency management agency, the Regional Planning Commission or Council of Governments, or Local Emergency Operations Committee. If the MPC is not a standing committee, responsibility for maintenance needs to be delegated to another individual or entity. Describe the role of the MPC or other entity in plan monitoring, evaluation and maintenance. Maintenance should 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 Board of Supervisors and governing bodies of participating jurisdictions; and
- Inform and solicit input from the public.

The (MPC or other designated responsible entity) is an advisory body and can only make recommendations to county, city, town, or district elected officials. Its primary duty is to see the plan successfully carried out and to report to the community governing boards and the public on the status of plan implementation and mitigation opportunities. Other duties include reviewing and promoting mitigation proposals, hearing stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information in areas accessible to the public.

5.1.2 Plan Maintenance Schedule

The Clinton County Emergency Management Director (EMD) will be responsible for initiating the plan review at the All-Hazards meeting every other year. For the other jurisdictions, their MPC representative
will be responsible for initiating reviews.

In coordination with all participating jurisdictions, a five year written update of the plan will be submitted to the Missouri State Emergency Management Agency (SEMA) and FEMA Region VII per Requirement §201.6(c)(4)(i) of the Disaster Mitigation Act of 2000, unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule.

5.1.3 Plan Maintenance Process

Progress on the proposed actions can be monitored by evaluating changes in vulnerabilities identified in the plan. The MPC (or other designated responsible entity) during the annual[10(b)] meeting should review changes in vulnerability identified as follows:

- Decreased vulnerability as a result of implementing recommended actions,
- Increased vulnerability as a result of failed or ineffective mitigation actions,
- Increased vulnerability due to hazard events, and/or
- Increased vulnerability as a result of new development (and/or annexation).

Future 5-year updates to this plan will include the following activities:

- Consideration of changes in vulnerability due to action implementation,
- Documentation of success stories where mitigation efforts have proven effective,
- Documentation of unsuccessful mitigation actions and why the actions were not effective,
- Documentation of previously overlooked hazard events that may have occurred since the previous plan approval,
- Incorporation of new data or studies with information on hazard risks,
- Incorporation of new capabilities or changes in capabilities,
- Incorporation of growth data and changes to inventories, and
- Incorporation of ideas for new actions and changes in action prioritization.

In order to best evaluate any changes in vulnerability as a result of plan implementation, the participating jurisdictions will adopt the following process:

- Each proposed action in the plan identified an individual, office, or agency responsible for action implementation. This entity will track and report on an annual basis to the jurisdictional MPC (or designated responsible entity) member on action status. The entity will provide input on whether the action as implemented meets the defined objectives and is likely to be successful in reducing risk.

- If the action does not meet identified objectives, the jurisdictional MPC (or designated responsible entity) member will determine necessary remedial action, making any required modifications to the plan.

Changes will be made to the plan to remedy actions that have failed or are not considered feasible. Feasibility will be determined after a review of action consistency with established criteria, time frame, community priorities, and/or funding resources. Actions that were not ranked high but were identified as potential mitigation activities will be reviewed as well during the monitoring of this plan. Updating of the plan will be accomplished by written changes and submissions, as the (MPC or designated responsible entity) deems appropriate and necessary. Changes will be approved by the Clinton 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.

Where possible, plan participants, including school and special districts, will use existing plans and/or programs to implement hazard mitigation actions. Those existing plans and programs were described in Chapter 2 of this plan. Based on the capability assessments of the participating jurisdictions, communities in Clinton 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:

- Comprehensive plans of participating jurisdictions
- Ordinances of participating jurisdictions
- Local Emergency Operations Plan
- Capital improvement plans and budgets
- Other community plans
- School District Emergency Plans

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 Clinton County Emergency Management Director will provide the updated Mitigation Strategy with current status of each mitigation action to the County (Boards of Supervisors or Commissions) as well as all Mayors, City Clerks, and School District Superintendents. The Emergency Manager 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
Clinton County	Land Use Plan, Zoning Ordinance, Critical Facilities Plan, Local Emergency Operation Plan	Land Use Plan, Zoning Ordinance, Critical Facilities Plan, Local Emergency Operation	Land Use Plan, Zoning Ordinance, Critical Facilities Plan, Local Emergency Operation Plan
Cameron	Comprehensive Plan, Economic Development Plan, Land Use Plan, Site Plan Review	Comprehensive Plan, Economic Development Plan, Land Use Plan, Site Plan Review	Comprehensive Plan, Economic Development Plan, Land Use Plan, Site Plan Review
Gower	Land Use Plan, Zoning Ordinance, Subdivision Ordinance	Land Use Plan, Zoning Ordinance, Subdivision Ordinance	Land Use Plan, Zoning Ordinance, Subdivision Ordinance
Lathrop	Comprehensive Plan, Zoning Ordinance, Building Code, Floodplain Ordinance, Subdivision Ordinance	Comprehensive Plan, Zoning Ordinance, Building Code, Floodplain Ordinance, Subdivision Ordinance	Comprehensive Plan, Zoning Ordinance, Building Code, Floodplain Ordinance, Subdivision Ordinance
Plattsburg	Comprehensive Plan, Land Use Plan, Zoning Ordinance, Building Code, Subdivision Ordinance, Site Plan Review	Comprehensive Plan, Land Use Plan, Zoning Ordinance, Building Code, Subdivision Ordinance, Site Plan Review	Comprehensive Plan, Land Use Plan, Zoning Ordinance, Building Code, Subdivision Ordinance, Site Plan Review
Trimble	Site Plan Review	Site Plan Review	Site Plan Review
Turney	None	None	None
Cameron School District	School Emergency Plan	School Emergency Plan	School Emergency Plan
Clinton School District	School Emergency Plan	School Emergency Plan	School Emergency Plan
Lathrop School District	School Emergency Plan	School Emergency Plan	School Emergency Plan

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 reviews will be posted in the local newspaper as well as on the Clinton County website following each review of the mitigation plan. When the MPC reconvenes for the five-year update, it will coordinate with all stakeholders participating in the planning process. Included in this group will be those who joined the MPC after the initial effort, to update and revise the plan. Public notices 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.

Clinton County Multi-Jurisdictional Hazard Mitigation Plan

Appendix A:

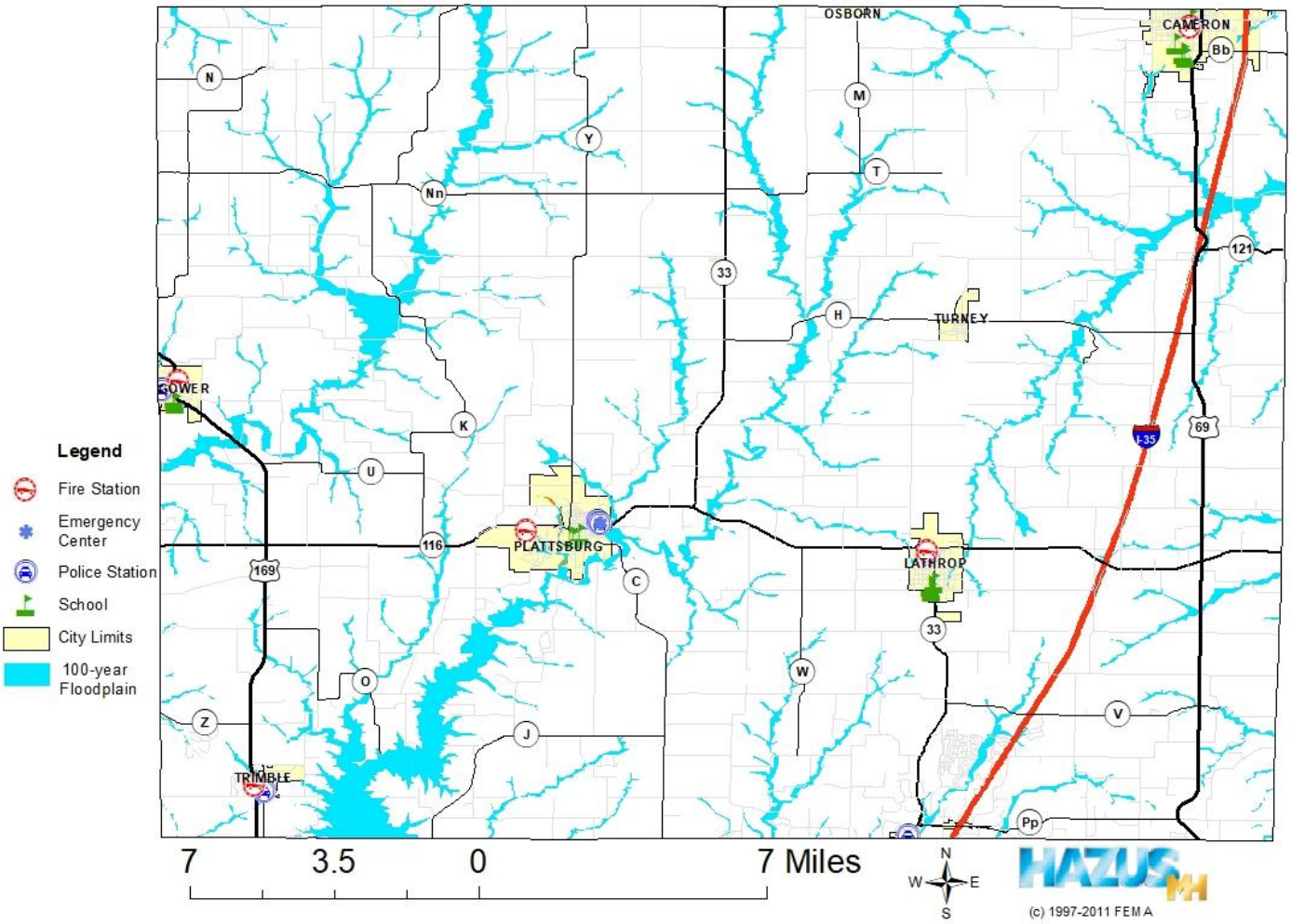
Resources

Clinton County Dams (Info taken from: National Inventory of Dams, <http://nid.sec.usace.armymil/>									
Dam Name	**NID ID**	**Federal ID**	**Owner Names**	**Owner Types**	**Primary Owner Type**	**Number of Associated Structures**	**Designer Names**	**Non-Federal Dam on Federal Property**	**State Regulated Dam**
Mile Deep Lake Dam	MO11116	MO11116		Private	Private	0	BUFORD EVERETT	No	Yes
Freeman Farms Dam Number One	MO11114	MO11114	ELDON FREEMAN	Private	Private	0		No	No
Freeman Farm Number Two Dam	MO11113	MO11113	ELDON FREEMAN	Private	Private	0		No	No
Crouch Lake Dam West	MO11909	MO11909	ROGER CROUCH	Private	Private	0		No	No
Gower Reservoir Dam	MO10788	MO10788	CITY OF GOWER	Local Government	Local Government	0		No	No
Joseph Lake Dam	MO11110	MO11110	JOSEPH LAKE JR	Private	Private	0		No	No
Spring Lake Dam	MO11122	MO11122	LAKE ARROWHEAD TRUSTEES	Private	Private	0	DONALD MILSTEAD	No	Yes
Woods Dam	MO11822	MO11822	WILLIAM D WOODS	Private	Private	0		No	No
Six Mile Lane Lake Dam	MO10266	MO10266	PLATTSBURG CASTERS	Private	Private	0	RIDDLE	No	Yes
Plattsburg Old Reservoir Dam	MO10267	MO10267	CITY OF PLATTSBURG	Local Government	Local Government	0		No	No

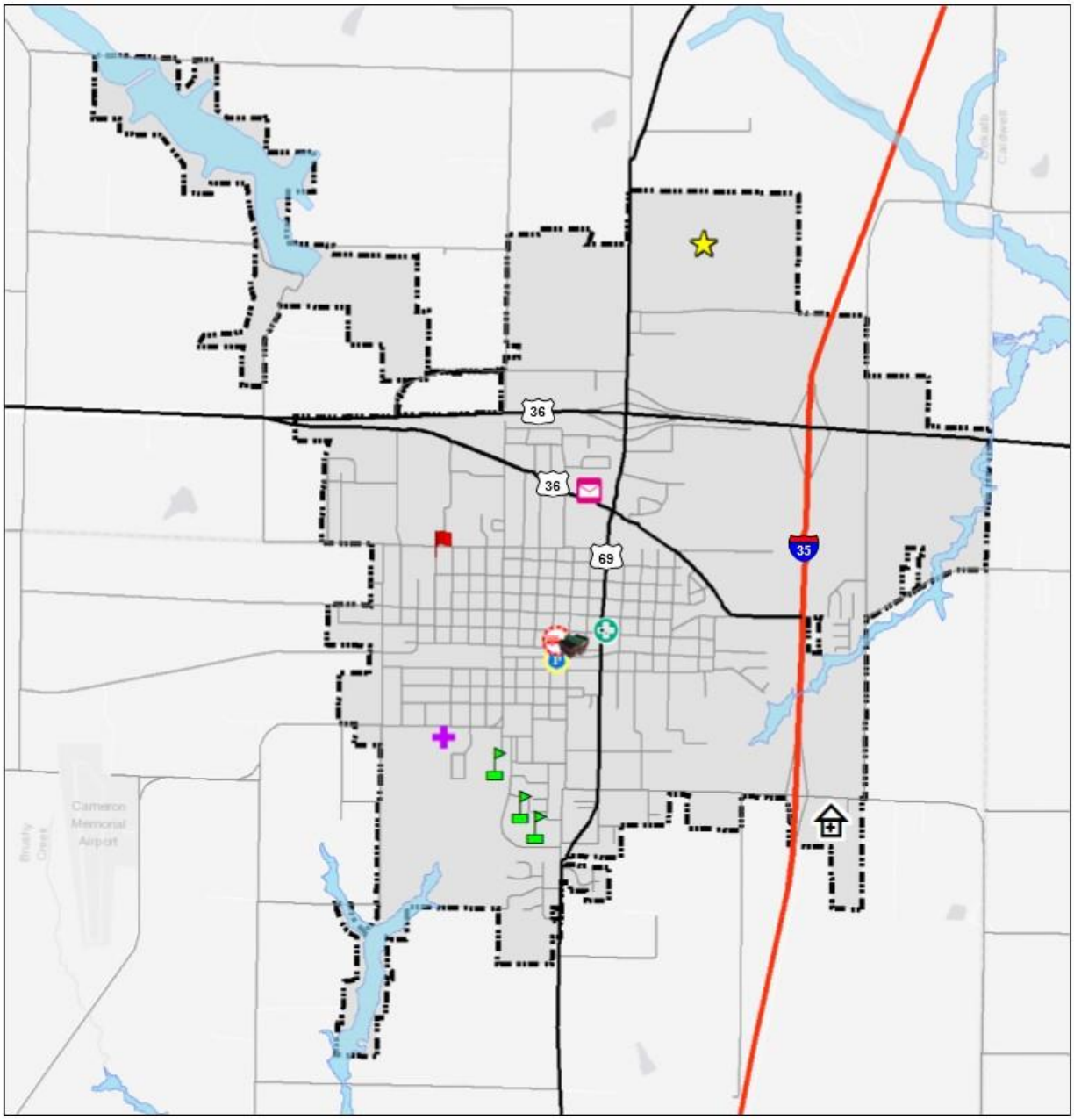
Dam Name	NID ID	Federal ID	Owner Names	Owner Types	Primary Owner Type	Number of Associated Structures	Designer Names	Non-Federal Dam on Federal Property	State Regulated Dam
Newby Lake Dam	MO10635	MO10635	PAUL NEWBY	Private	Private	0		No	No
Morse Lake Dam	MO10696	MO10696	GEORGE MORSE	Private	Private	0		No	No
Jones Lake Dam-Sec 10	MO11109	MO11109	NONE	Private	Private	0		No	No
Lathrop Lake and Forest Club Dam	MO10294	MO10294	LATHROP LAKE+FOREST CLUB	Private	Private	0		No	No
Hartell Lakes	MO10270	MO10270	UNKNOWN	Private	Private	0		No	No
Freeman Farm Number Three Dam	MO11112	MO11112	ELDON FREEMAN	Private	Private	0		No	No
Zurbuchen Lake Dam	MO11821	MO11821	RUDOLPH ZURBUCHEN	Private	Private	0		No	No
Skipton Lake Dam	MO11242	MO11242	DR GEORGE SKIPTON	Private	Private	0		No	No
Mallen Lake Dam	MO50074	MO50074	EUGENE MALLEN	Private	Private	0		No	No
Mcginness Lake Dam	MO10121	MO10121	LOGAN MCGINNESS	Private	Private	0		No	No
Freemans Farm Dam Number Four	MO10277	MO10277	ELDON FREEMAN	Private	Private	0		No	No
Lake Arrowhead Dam	MO11016	MO11016	LAKE ARROWHEAD POA	Private	Private	0	DONALD MILSTEAD	No	Yes

Dam Name	NID ID	Federal ID	Owner Names	Owner Types	Primary Owner Type	Number of Associated Structures	Designer Names	Non-Federal Dam on Federal Property	State Regulated Dam
Crouch Lake Dam East	MO11910	MO11910	ROGER CROUCH	Private	Private	0		No	No
Burlington Reservoir Dam	MO10554	MO10554	CITY OF CAMERON	Local Government	Local Government	0		No	No
Lake Concord Dam	MO11115	MO11115	AMERICAN BANK/PLATTSBURG	Private	Private	0		No	No

Clinton County Floodplain with Critical Facilities

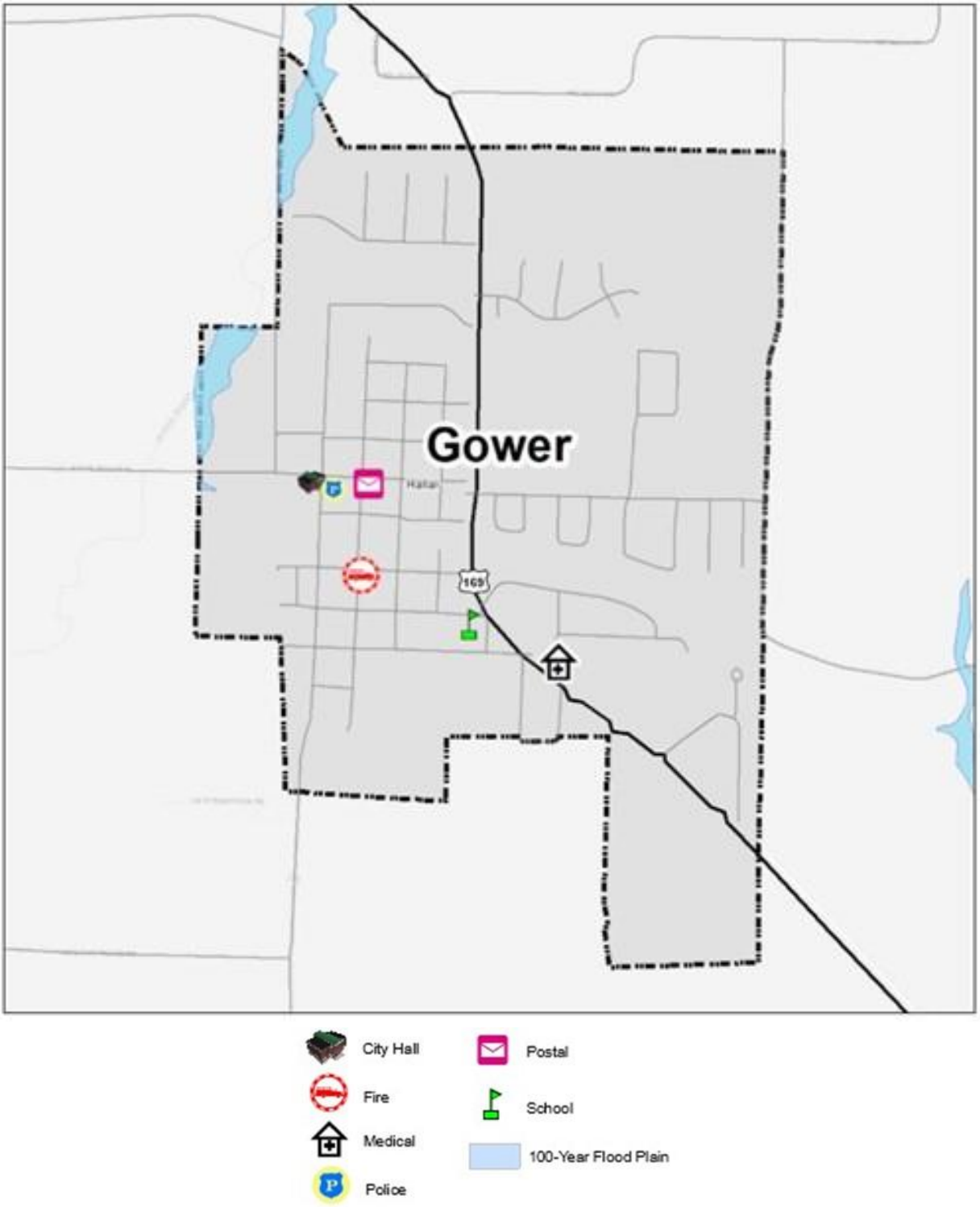


Cameron 100-Year Floodplain

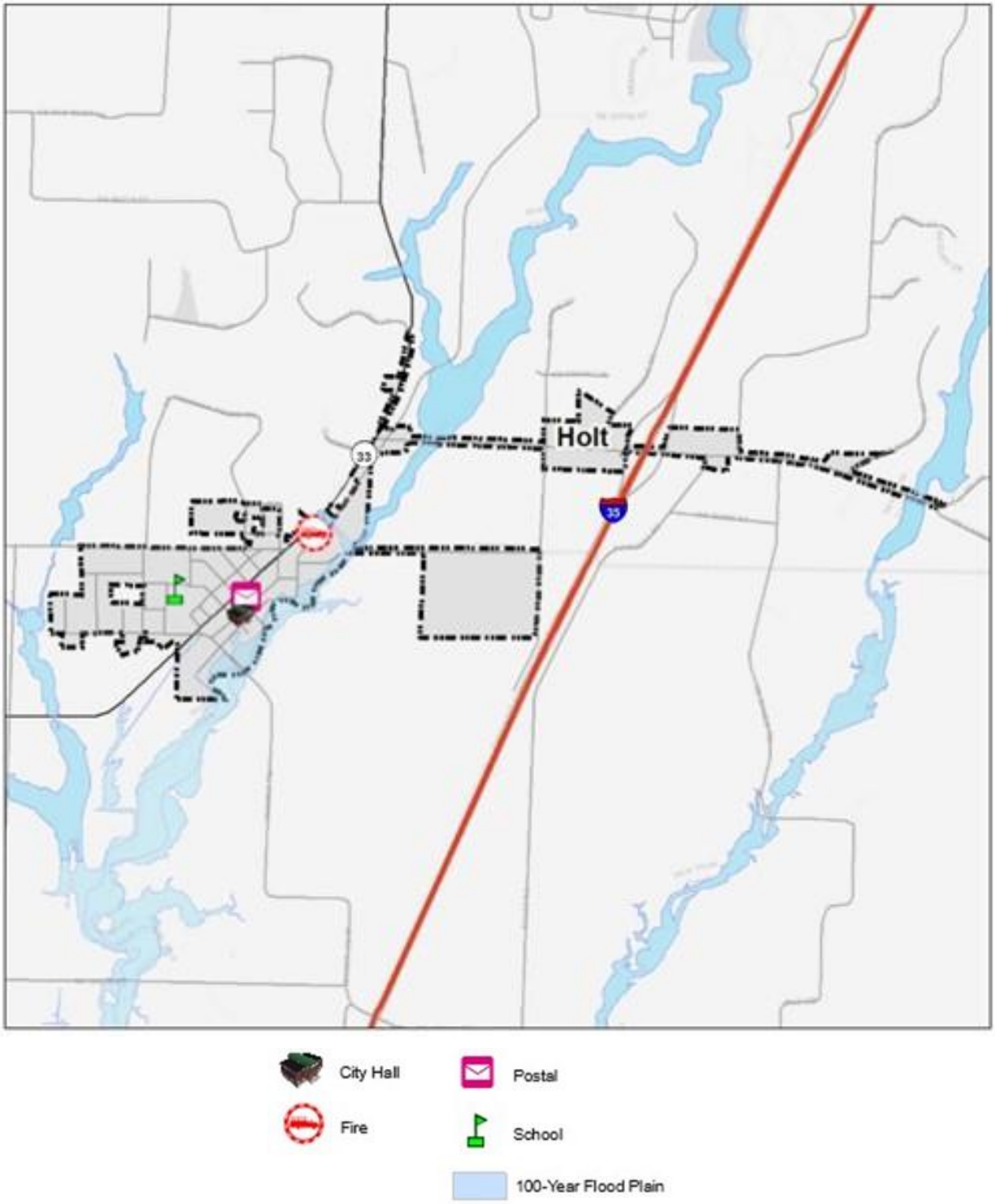


City Hall
Community
Correctional Facility
Courthouse
Fire
Senior Center
Medical
Police
Postal
School
Veterans Home
100-Year Flood Plain

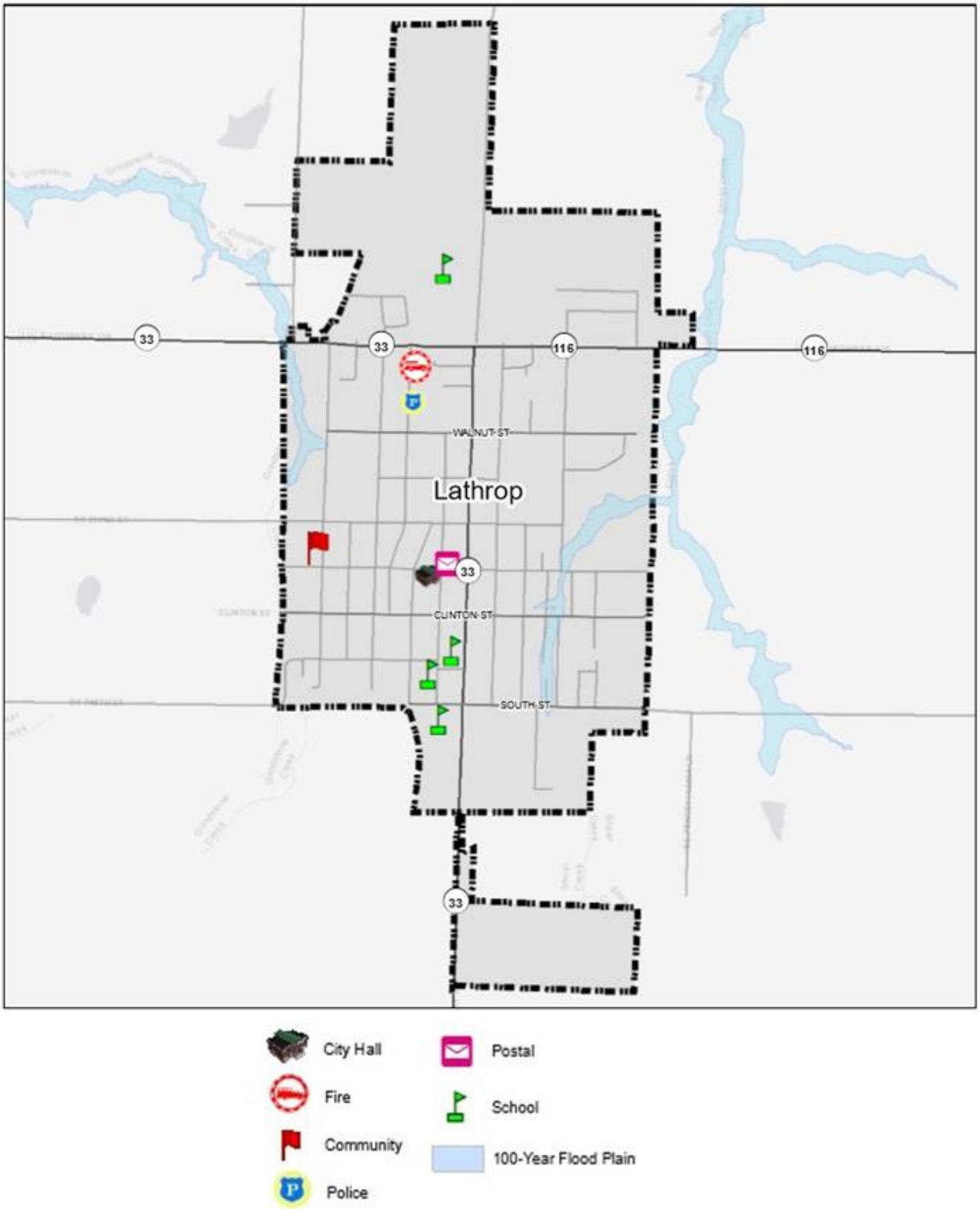
Gower 100-Year Floodplain



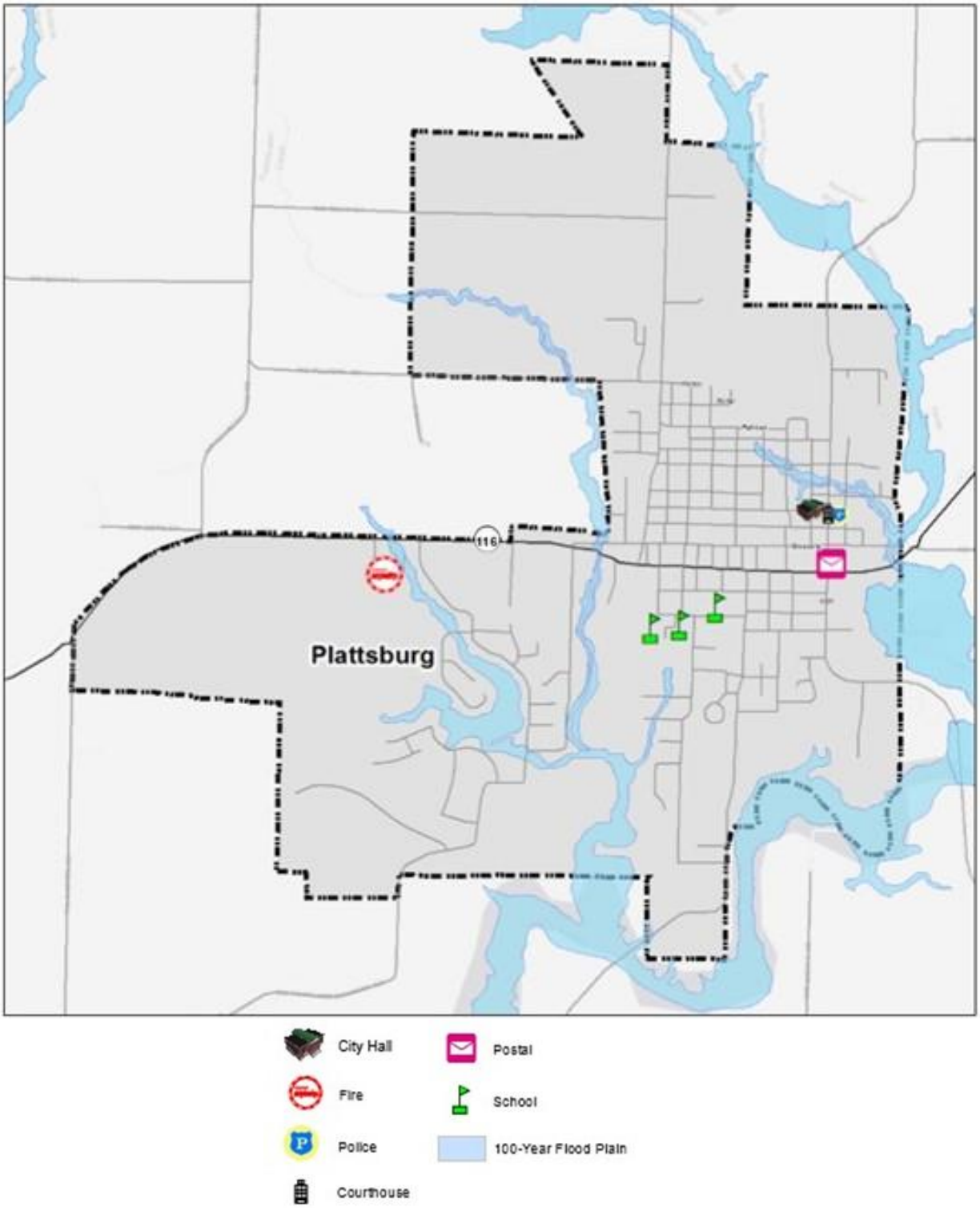
Holt 100-Year Floodplain



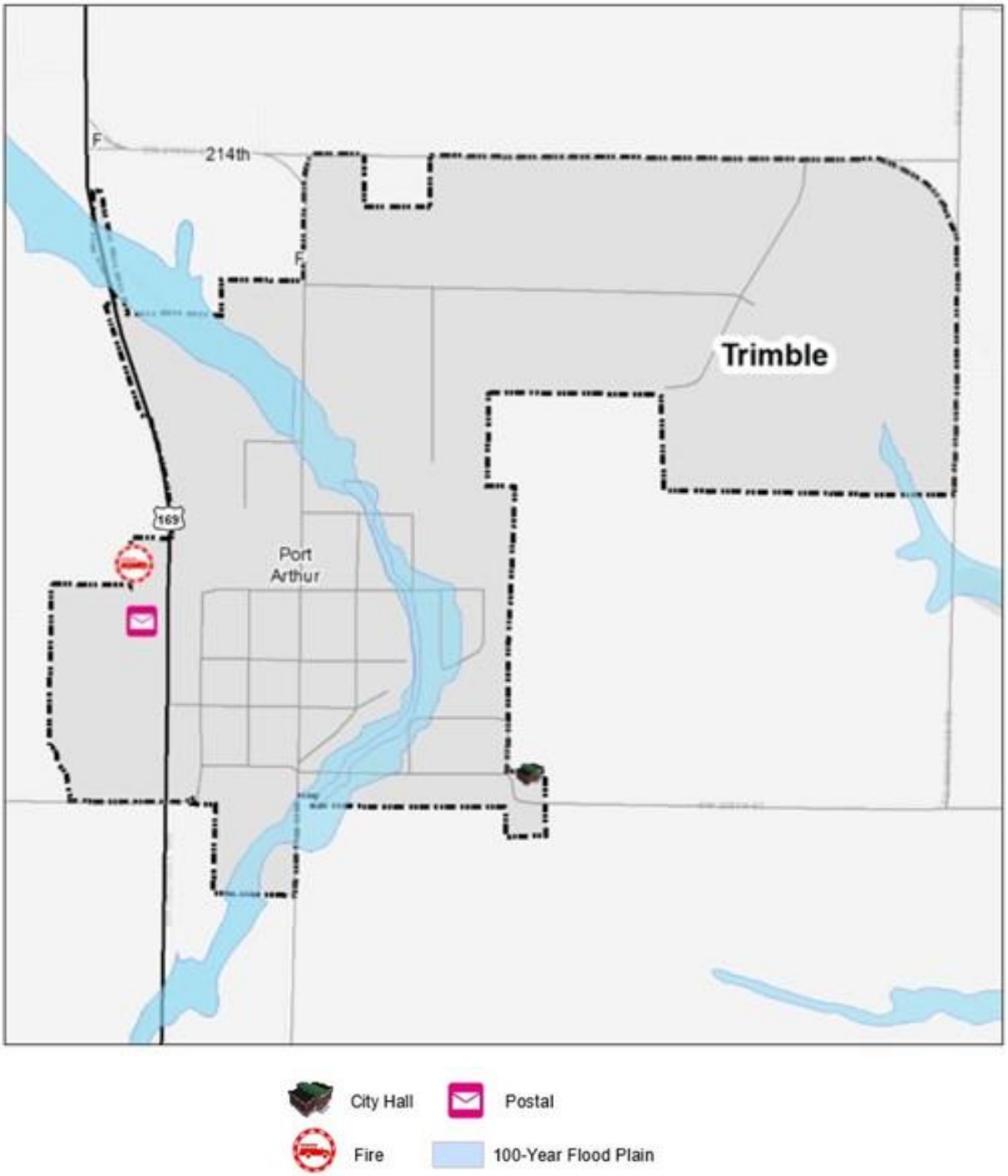
Lathrop 100-Year Floodplain



Plattsburg 100-Year Floodplain

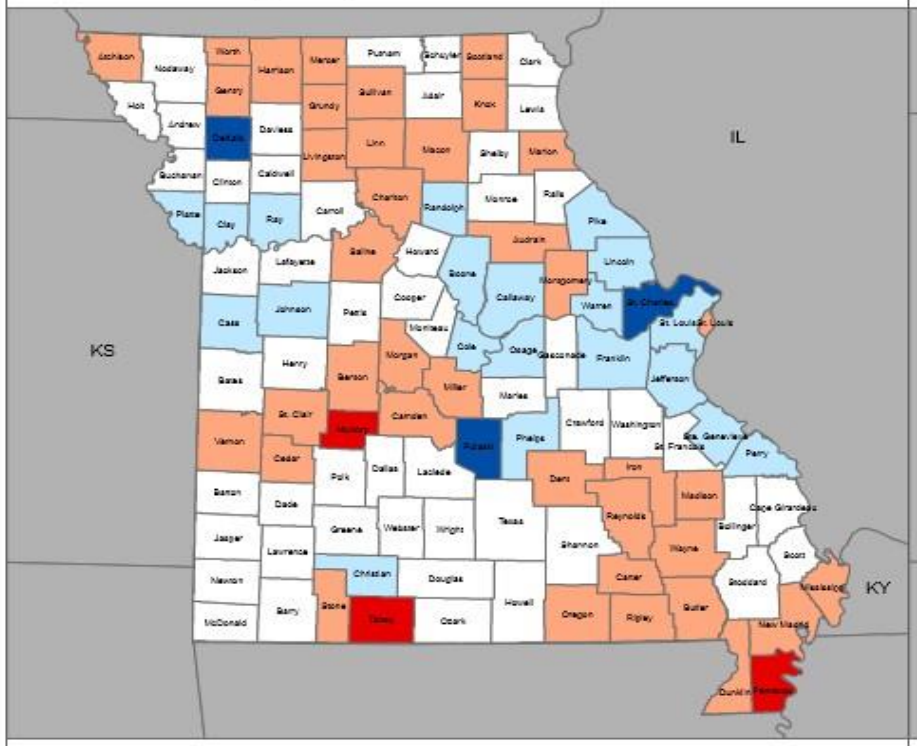


Trimble 100-Year Floodplain



Social Vulnerability to Environmental Hazards
State of Missouri

County Comparison Within the Nation



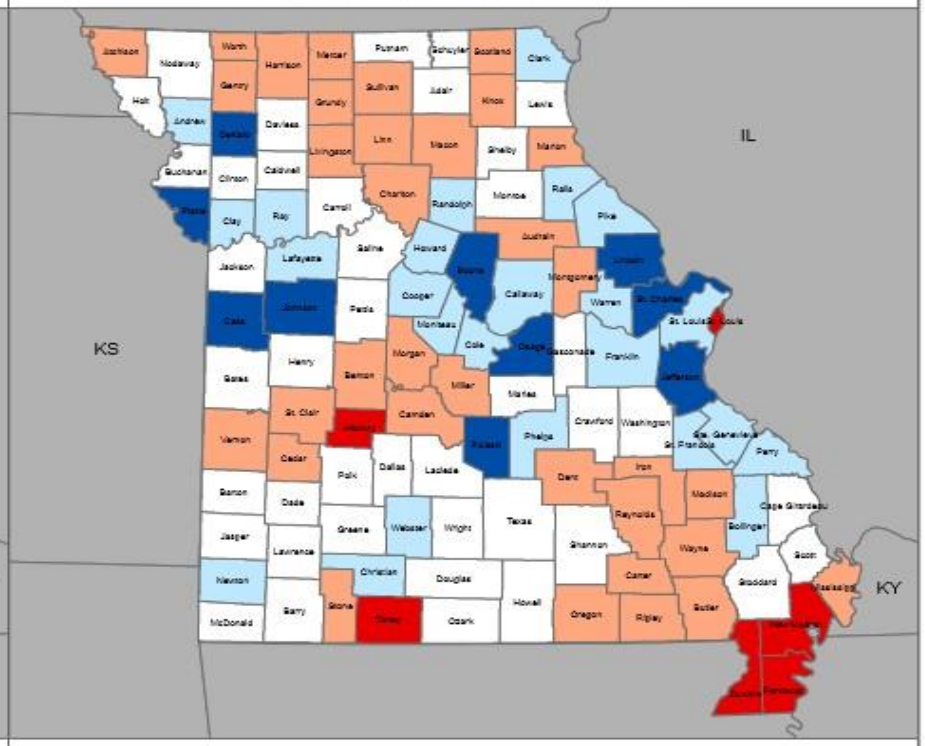
N

0 25 50 100 Miles

National Quantiles

- High (Top 20%)
- Medium High
- Medium
- Medium Low
- Low (Bottom 20%)

County Comparison within the State



N

0 25 50 100 Miles

State Quantiles

- High (Top 20%)
- Medium High
- Medium
- Medium Low
- Low (Bottom 20%)

Social Vulnerability Index 2010-2014
Based on American Community Survey 2010-2014, 5 Year Census Data Product - ACS 2010-2014

HVRI

United States Census Bureau

QuickFacts

Missouri; Clinton County, Missouri; United States

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more***.

Table

All Topics	Missouri	Clinton County, Missouri	United States
Population Estimates, July 1 2022, (V2022)	**6,177,957**	NA	**333,287,557**
PEOPLE			
Population			
Population Estimates, July 1 2022, (V2022)	**6,177,957**	NA	**333,287,557**
Population Estimates, July 1 2021, (V2021)	6,169,823	21,287	332,031,554
Population estimates base, April 1, 2020, (V2022)	6,154,920	NA	331,449,520
Population estimates base, April 1, 2020, (V2021)	6,154,920	21,184	331,449,520
Population, percent change - April 1, 2020 (estimates base) to July 1, 2022, (V2022)	0.4%	NA	0.6%
Population, percent change - April 1, 2020 (estimates base) to July 1, 2021, (V2021)	0.2%	0.5%	0.2%
Population, Census, April 1, 2020	6,154,913	21,184	331,449,281
Population, Census, April 1, 2010	5,988,927	20,743	308,745,538
Age and Sex			
Persons under 5 years, percent	5.8%	5.7%	5.7%
Persons under 18 years, percent	22.4%	23.0%	22.2%
Persons 65 years and over, percent	17.6%	18.3%	16.8%
Female persons, percent	50.6%	49.5%	50.5%
Race and Hispanic Origin			
White alone, percent	82.6%	95.2%	75.8%
Black or African American alone, percent (a)	11.8%	1.4%	13.6%
American Indian and Alaska Native alone, percent (a)	0.6%	0.9%	1.3%
Asian alone, percent (a)	2.2%	0.5%	6.1%
Native Hawaiian and Other Pacific Islander alone, percent (a)	0.2%	0.1%	0.3%
Two or More Races, percent	2.6%	2.0%	2.9%
Hispanic or Latino, percent (b)	4.7%	2.5%	18.9%
White alone, not Hispanic or Latino, percent	78.7%	93.1%	59.3%

Population Characteristics			
Veterans, 2017-2021	377,127	1,701	17,431,290
Foreign born persons, percent, 2017-2021	4.2%	1.4%	13.6%
Housing			
Housing units, July 1, 2021, (V2021)	2,807,604	9,027	142,153,010
Owner-occupied housing unit rate, 2017-2021	67.6%	76.1%	64.6%
Median value of owner-occupied housing units, 2017-2021	$171,800	$164,200	$244,900
Median selected monthly owner costs -with a mortgage, 2017-2021	$1,343	$1,365	$1,697
Median selected monthly owner costs -without a mortgage, 2017-2021	$472	$516	$538
Median gross rent, 2017-2021	$886	$856	$1,163
Building permits, 2021	21,372	68	1,736,982
Families & Living Arrangements			
Households, 2017-2021	2,433,819	7,946	124,010,992
Persons per household, 2017-2021	2.46	2.60	2.60
Living in same house 1 year ago, percent of persons age 1 year+, 2017-2021	86.0%	89.7%	86.6%
Language other than English spoken at home, percent of persons age 5 years+, 2017-2021	6.2%	1.9%	21.7%
Computer and Internet Use			
Households with a computer, percent, 2017-2021	92.1%	89.2%	93.1%
Households with a broadband Internet subscription, percent, 2017-2021	85.1%	80.7%	87.0%
Education			
High school graduate or higher, percent of persons age 25 years+, 2017-2021	91.0%	93.3%	88.9%
Bachelor's degree or higher, percent of persons age 25 years+, 2017-2021	30.7%	21.3%	33.7%
Health			
With a disability, under age 65 years, percent, 2017-2021	10.2%	10.0%	8.7%
Persons without health insurance, under age 65 years, percent	⚠ 11.3%	⚠ 12.9%	⚠ 9.8%
Economy			
In civilian labor force, total, percent of population age 16 years+, 2017-2021	62.8%	59.4%	63.1%
In civilian labor force, female, percent of population age 16 years+, 2017-2021	59.1%	54.5%	58.7%
Total accommodation and food services sales, 2017 ($1,000) (c)	15,082,366	9,681	938,237,077
Total health care and social assistance receipts/revenue, 2017 ($1,000) (c)	48,192,464	123,150	2,527,903,275
Total transportation and warehousing receipts/revenue, 2017 ($1,000) (c)	15,071,280	D	895,225,411
Total retail sales, 2017 ($1,000) (c)	100,393,968	161,914	4,949,601,481
Total retail sales per capita, 2017 (c)	$16,427	$7,876	$15,224
Transportation			
Mean travel time to work (minutes), workers age 16 years+, 2017-2021	23.8	30.1	26.8

Income & Poverty			
Median household income (in 2021 dollars), 2017-2021	$61,043	$63,876	$69,021
Per capita income in past 12 months (in 2021 dollars), 2017-2021	$33,770	$29,335	$37,638
Persons in poverty, percent	⚠ 12.7%	⚠ 10.1%	⚠ 11.6%
BUSINESSES			
Businesses			
Total employer establishments, 2020	150,761	357	8,000,178
Total employment, 2020	2,566,786	2,652	134,163,349
Total annual payroll, 2020 ($1,000)	128,182,192	102,436	7,564,809,878
Total employment, percent change, 2019-2020	0.8%	-2.3%	0.9%
Total nonemployer establishments, 2019	429,225	1,418	27,104,006
All employer firms, Reference year 2017	116,156	281	5,744,643
Men-owned employer firms, Reference year 2017	62,015	81	3,480,438
Women-owned employer firms, Reference year 2017	26,068	66	1,134,549
Minority-owned employer firms, Reference year 2017	14,044	S	1,014,958
Nonminority-owned employer firms, Reference year 2017	93,019	203	4,371,152
Veteran-owned employer firms, Reference year 2017	7,866	S	351,237
Nonveteran-owned employer firms, Reference year 2017	96,514	217	4,968,606
GEOGRAPHY			
Geography			
Population per square mile, 2020	89.5	50.6	93.8
Population per square mile, 2010	87.1	49.5	87.4
Land area in square miles, 2020	68,746.48	418.94	3,533,038.28
Land area in square miles, 2010	68,741.52	418.96	3,531,905.43
FIPS Code	29	29049	1

Clinton County Multi-Jurisdictional Hazard Mitigation Plan

Appendix B:

Planning Process

Clinton County Commissioner Meeting – Hazard Mitigation Plan

Clinton County Courthouse
October 12, 2021
10:00 am

1) What is the Hazard Mitigation Plan

- **A. HMP flyer**
- **B. Hazard Mitigation Grants flyer**
- **C. 2018 Clinton HMP**

2) Process for Updating the Plan

- **A. Questionnaire**
- **B. Stakeholder meetings (3-4)**
- **C. Risk assessment**
- **D. Mitigation Review**

3) In-Kind Match

- **A. In-Kind form**
- **B. Eligible in-kind**

4) Public Outreach/Participation

- **A. Survey**
- **B. Community Events**
- **C. Ready in 3 materials**

4) Review Stakeholder/Meeting Invitation List

- **A. Update list**

5) Timeline

- **A. Set kick-off meeting date**

Clinton County Hazard Mitigation Plan

Updating the plan:

- Every five years the local Hazard Mitigation Plan (HMP) is updated, which is a requirement for the county and communities to remain eligible for FEMA mitigation funding.
- Representatives from the county, communities, school districts and other taxing jurisdictions are asked to attend four planning meetings. The general contents of the meetings are:
  -First meeting: General overview of the plan and the process of updating it (questionnaire form and risk assessment form)
  -Second meeting: Accessing goals from the last plan and current hazards (evaluation form for past actions)
  -Third meeting: Develop mitigation actions and strategies. Discussing how the plan can be coordinated with other plans (new action form)
  -Fourth meeting: Discussion on how to adopt the plan and maintenance of the plan (adoption resolution form)
- For a jurisdiction to be considered a participant they need to submit the forms listed above in parentheses a timely manner and attend meetings. It's suggested that jurisdictions have at least two people participating so it's easier to divide up responsibilities.
- Public outreach is an important part of the plan update. This can be done by distributing home emergency plan information at different events and functions, asking people to fill out a survey about what their natural disaster concerns are, etc. Mo-Kan can provide materials for distribution.
- Changes from the last plan:
  - Adoption resolutions should be included when submitting the draft
- Draft due **March 17, 2023** to SEMA. Final due **August 7, 2023** (90 days prior to current plan's expiration) to FEMA.

Collecting In-Kind:

Mo-Kan will facilitate meetings, send meeting notices, distribute press releases and encourage participation but Clinton County is ultimately responsible for the match.

The in-kind match is $8,000.00 ($2,000 deposit to be refunded upon completion)

- The volunteer hourly rate is $25.96 (309 documented volunteer hours)
  - Mileage rate is $0.45/mile
- Double documentation is required for meetings. A volunteer must sign on the meeting's sign-in sheet and submit a volunteer form (Mo-Kan provides the volunteer form). If one of these is missing their time will not count towards match.
- What **doesn't** count towards in-kind match:
  - Time from elected officials
  - Signatures from the general public when distributing emergency preparedness information (the person distributing the information can count their time but the person receiving the materials can not)
- What **does** count towards in-kind match:
  - County and city staff time used to gather information and data
  - Attendance at the four planning meetings
  - Attendance at other meetings where the HMP is an agenda item (Planning and Zoning, City Council, LEPC and similar type meetings)
  - Mileage to and from meetings ($.45 per mile)
  - The amount of goods or services donated to support updating the plan (making copies, refreshments at a meeting, room rental fees, etc.). An invoice showing the waived amount of the good or service is required.

Sample of activities to reach full in-kind match amount:

4 planning meetings x 20 people x $25.96 = $2,076.80

4 hours of paperwork x 20 people x $25.96= $2,076.80

10 other types of meetings x 15 people x $21.57 = $3,894

5 outreach events x 10 people x $21.57 = $1,298.00

Tentative Timeline for Clinton County Hazard Mitigation Plan (HMP) Update

TASKS	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	June 22	July 22	Aug 22	Sept 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	April 23	Oct 23
Establish planning committee *																				
Introduction Meeting																				
Kick-Off Meeting I																				
Risk Assessment Meeting II																				
Other meetings																				
Public outreach																				
Mitigation Strategy Meeting III																				
Plan Maintenance Meeting IV																				
Post for 2-week Committee Review																				
Post for 30-day Public Review																				
Jurisdictions adopt resolutions																Jan. 1*				
Final Draft to SEMA																Jan 17*		Mar 17*		
Revisions																				
SEMA submits plan draft to FEMA																				**Oct 31***

***Jan. 17, 2023- Last day to ask for a written request of extension *Jan. 1, 2023- Resolutions due *March 17, 2023- First Draft Due to SEMA *November 5, 2023 plan expires**

*All jurisdictions should have at least one representative attending the planning meetings and working on the forms required to update the plan. It's suggested that two or more people from each jurisdiction work together to divide the responsibilities. It's important that forms are submitted on time in order for the plan to be completed on time.

Clinton County HMP Jurisdiction Mailing List

Contact	Agency	Street Address	City, State, Zip		
Wade Wilken, Jr.	Commissioner	207 N. Main Street	Plattsburg, MO 64477		
Gary McCrea	Commissioner	207 N. Main Street	Plattsburg, MO 64477		
Larry King	Commissioner	207 N. Main Street	Plattsburg, MO 64477		
Beth Farwell	Planning and Zoning	207 N. Main Street	Plattsburg, MO 64477		
Dr. Sandy Steggal	Clinton County R3 School Distric	800 Frost St	Plattsburg, MO 64477	816-539-2183	
Dr. Matt Robinson	Cameron R-I School District	423 N. Chestnut	Cameron, Missouri 64429	816-882-1031	
Chris Fine	Lathrop R-II School District	700 E. St.	Lathrop, MO 64465	816-528-7500	
Rick Bashor	Cameron Police Department	101 N Chestnut St	Cameron, MO 64429		
Beckie Boyle	Plattsburg Chamber of Commerc	114 W Maple St	Plattsburg, MO 64477		
Pam Ice	Cameron Chamber of Commerce	16 N Walnut St	Cameron, MO 64429		
Brad Lawrence	Plattsburg Fire Protection Distric	105 Bush St	Plattsburg, MO 64477		
Mike O'Donnell	Cameron Fire Department	101 N Chestnut St	Cameron, MO 64429		
	Lathrop Fire Department	109 Pine St	Lathrop, MO 64465		
	Cameron Regional Medical Cent	1600 E Evergreen St	Cameron, MO 64429		
Sheriff Lary Fish	Clinton County Sheriff's Departm	207 N Main St #6	Plattsburg, MO 64477		
Betty Dickinson	Clinton County Leader	102 E Maple St	Plattsburg, MO 64477		
Graceanne Cook	Tri-County Ambulance	100 S State Hwy Y	Plattsburg, MO 64477		
	Dekalb-Clinton Ambulance Dist	P O Box 501261 SE Offutt	Maysville, MO 64469		
Roger King	Plattsburg Senior Center	113 N Main St	Plattsburg, MO 64477		
Blair Shock	Clinton County Health Departme	106 Bush St	Plattsburg, MO 64477	816-539-2144	
Barbara O'Connor	Cameron City Clerk	205 N Main Street	Cameron, MO 64429	816-632-2177	clerk@cameronmo.com
Gwen Ballou	Gower City Clerk	PO Box 408	Gower, MO 64454	816-424-6617	gower001@centurytel.net
Carroll Fisher		PO Box 408	Gower, MO 64454		
Susie Freece	Lathrop City Clerk	707 Oak Street	Lathrop, MO 64465	816-528-4253	su1224zy@grm.net
Bob Burns	Lathrop City Administrator	707 Oak Street	Lathrop, MO 64465	816-740-4251	
Mickey Streeter	Plattsburg City Clerk	114 W. Maple Steet	Plattsburg, MO 64477	816-539-2148	
Catherine Stice	Trimble City Clerk	101 S. Fourth Street	Trimble, MO 64492	816-357-2228	clerk@trimblemo.org
Greg Harris	Plattsburg City Administrator	114 W. Maple Steet	Plattsburg, MO 64477		
Justin Hartzell	Director of Public Works	114 W. Maple Steet	Plattsburg, MO 64477	816-539-2341	
Paul Read	Gas Dept.	114 W. Maple Steet	Plattsburg, MO 64477	816-539-2341	
Ron Gorham	Waste Water Plant	114 W. Maple Steet	Plattsburg, MO 64477	816-539-3696	

Clinton County HMP Jurisdiction Mailing List

Jeremy Zimmerman	Water Treatment Plant	114 W. Maple Steet	Plattsburg, MO 64477	816-357-2312	
Mark Gaugh	Cameron	205 N Main Street	Cameron, MO 64429	816-632-2177	
Chip Holman	Mayor	PO Box 408	Gower, MO 64454	816-424-6617	
Dean Langer	Lathrop Mayor	707 Oak Street	Lathrop, MO 64465	816-528-4253	
Jack Lizar	Trimble Mayor	101 S. Fourth Street	Trimble, MO 64492	816-357-2228	
Dave Schauer	Plattsburg Mayor	114 W. Maple Steet	Plattsburg, MO 64477		
Dr. Mensching	East Buchanan School District	100 Smith Street	Gower, MO 64454	816-424-6466	**mensching@ebs.k12.mo.us**
Chad Swindler		PO Box 21	Turney, MO 64493	816-	chadswindler@yahoo.com
Cindy Bingham	104 E. Jefferson		Trimble, MO 64492		
Tim Wymes		205 N Main Street	Cameron, MO 64429	816-632-2177	twymes@cameron.mo.com
Tammy at Health Department also sends HMP invites to LEPC list					

Subject: Clinton County Multi-Jurisdictional Hazard Mitigation Plan Update

On behalf of Clinton County, you are invited to the planning meetings to update the Clinton County Multi-Jurisdictional Hazard Mitigation Plan. Your participation is a key element to the success of the plan update effort. Please see the information about the first meeting below:

Clinton County Multi-Jurisdictional Hazard Mitigation Plan Update
Address: Clinton County Courthouse, 207 N. Main St., Plattsburg, MO 64477
Date & Time: December 9, 2021 at 11AM

At the upcoming meeting, we will discuss the purpose and content of a hazard mitigation plan and the hazards that affect Clinton County, such as tornadoes and floods.

Clinton County requests your assistance in forwarding this invitation to others in your jurisdiction. Participants in the planning committee include, but are not limited to: emergency responders, elected officials, county clerk, city clerks, county and city employees, schools, utilities, private-non-profit representatives, private industry and business, clergy, and community volunteers. People from various backgrounds are needed to participate. No previous experience with emergency management or planning is necessary.

The existing plan, approved by FEMA in November 2018, was developed in accordance with the Disaster Mitigation Act of 2000. To maintain eligibility for certain FEMA Hazard Mitigation Assistance grants, the Act requires jurisdictions to develop a plan to assess their risks to hazards and identify actions that can be taken in advance to reduce future losses. The Act requires Hazard Mitigation Plans to be updated every five years.

Please see the enclosed information sheet about the Hazard Mitigation Plan process.

Mo-Kan Regional Council is the contact for updating the plan and will be working closely with the county commissioners and emergency management director during the update. Please contact Mo-Kan at (816) 233-3144 or email houston@mo-kan.org by **December 6th** to RSVP or ask for additional information.

Thank you,

Houston Roberts
Community Development Planners

Enclosure

224 North 7th Street
Saint Joseph, Missouri 64501
www.mo-kan.org
Phone: (816) 233-3144
Fax: (816) 233-8498

Clinton County Hazard Mitigation Planning Meeting #1

Sign-in Sheet

Date: **Thursday, December 9, 2021**
Time: **11:00 am**
Location: **Clinton County Courthouse, 207 North Main Street, Plattsburg, MO 64477**

Name	Email Address/Phone #
Jeremy Zimmerman	Jzimmerman@Plattsburg-mo.gov 816-539-2148
Rick Bashaw	RBASHAW@CAMERONMO.COM
Ken Pike	gowermo.us@gmail.com
ADAM HILL	AHILL@GOWERPD.ORG
Tim Wymes	twymes@cameronmo.com (816)632-2177
Richard Riddell	RLRiddell@GMAIL.COM
Jay Beeler	jtaylor03@embarqmail.com
Tricia Knight	cczoning@clintoncomo.org
Jennifer Morrison	luve-bug@hotmail.com

Clinton County Hazard Mitigation Planning Meeting #1

Sign-in Sheet

Date: **Thursday, December 9, 2021**
Time: **11:00 am**
Location: **Clinton County Courthouse, 207 North Main Street, Plattsburg, MO 64477**

Name	Email Address/Phone #
RYAN JENSEN	RJENSEN@PLATTSBURG-MO.GOV
Sandy Steggall	Sandy.steggall@ccr3.k12.mo.us
[illegible]	gharris@plattsburg-mo.gov
Carroll Fisher	sowercityhall.us@gmail.com
Patrick Clark	cccoma@clintoncomo.org

Clinton County Hazard Mitigation Plan Update

Planning Meeting #1

Thursday, December 9, 2021
Clinton County Courthouse
Plattsburg, Missouri

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An Economic and Community Development Organization

Meeting Agenda

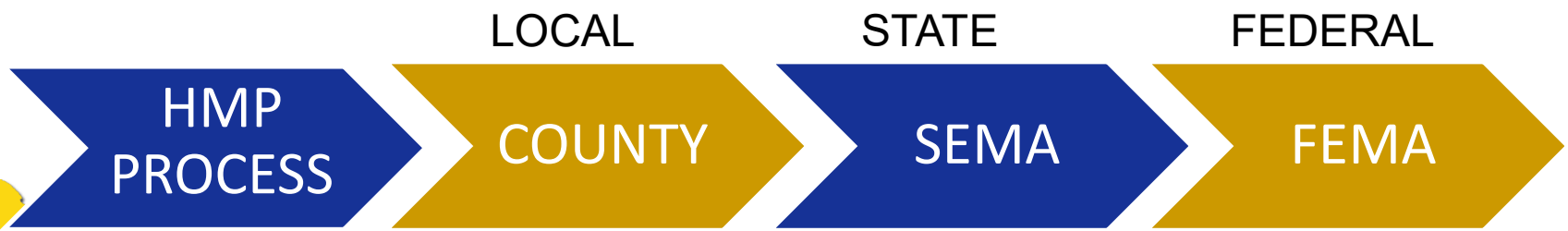
- Welcome and Introductions
- What is the Hazard Mitigation Plan (HMP)? (Background & Purpose)
- Why do we need to participate? (Grant Eligibility & Programs)
- What's the process of updating the plan? (Planning Tasks)
- What are HMP participation requirements?
- Timeline
- Next Steps

Mo-Kan's Role in HMP

- Who is Mo-Kan?
  - Mo-Kan is one of 19 regional planning commissions in Missouri
  - Mo-Kan serves six counties
    - Andrew, Buchanan, Clinton, and DeKalb in Missouri
    - Atchison and Doniphan in Kansas
  - Part of a larger, statewide organization, the Missouri Association of Council of Governments (MACOG)
  - Mo-Kan facilitates the process in cooperation with the county/jurisdictions

What is a Hazard Mitigation Plan?

- Sustained action taken to reduce or eliminate long-term risk to human life and property from hazardous events
- Mitigation planning is a process for communities to:
  - Identify the hazards to which they are at risk
  - Assess the potential impact of those hazards
  - Develop goals, objectives, and actions to reduce impacts
  - Prioritize and implement mitigation actions



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What are the parts of a Hazard Mitigation Plan?

- Chapter 1 – planning process
- Chapter 2 – community profiles and capabilities
- Chapter 3 – risk assessment
- Chapter 4 – mitigation strategy
- Chapter 5 – plan maintenance

(Clinton's 2018 plan was 320 pages)

Why Do We Need to Participate?

- Disaster Mitigation Act of 2000
- Requires local governments to adopt a natural hazard mitigation plan to maintain eligibility for FEMA mitigation funds
- Plan must be updated and approved by FEMA <u>every 5 years</u>
- Goal is to reduce loss of life and property in the event of a natural disaster
- Create more resilient communities

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Approved HMP Establishes Eligibility for FEMA Grants To Participating Jurisdictions

- Hazard Mitigation Grant Program (HMGP)- available after a federally declared disaster- not open
- Building Resilient Infrastructure and Communities (BRIC)– deadline 1-28-22
- Flood Mitigation Assistance (FMA) Program- deadline 1-28-22
  - Repetitive Loss Program
  - Severe Repetitive Loss Program

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Hazard Mitigation Grant Program (HMGP)

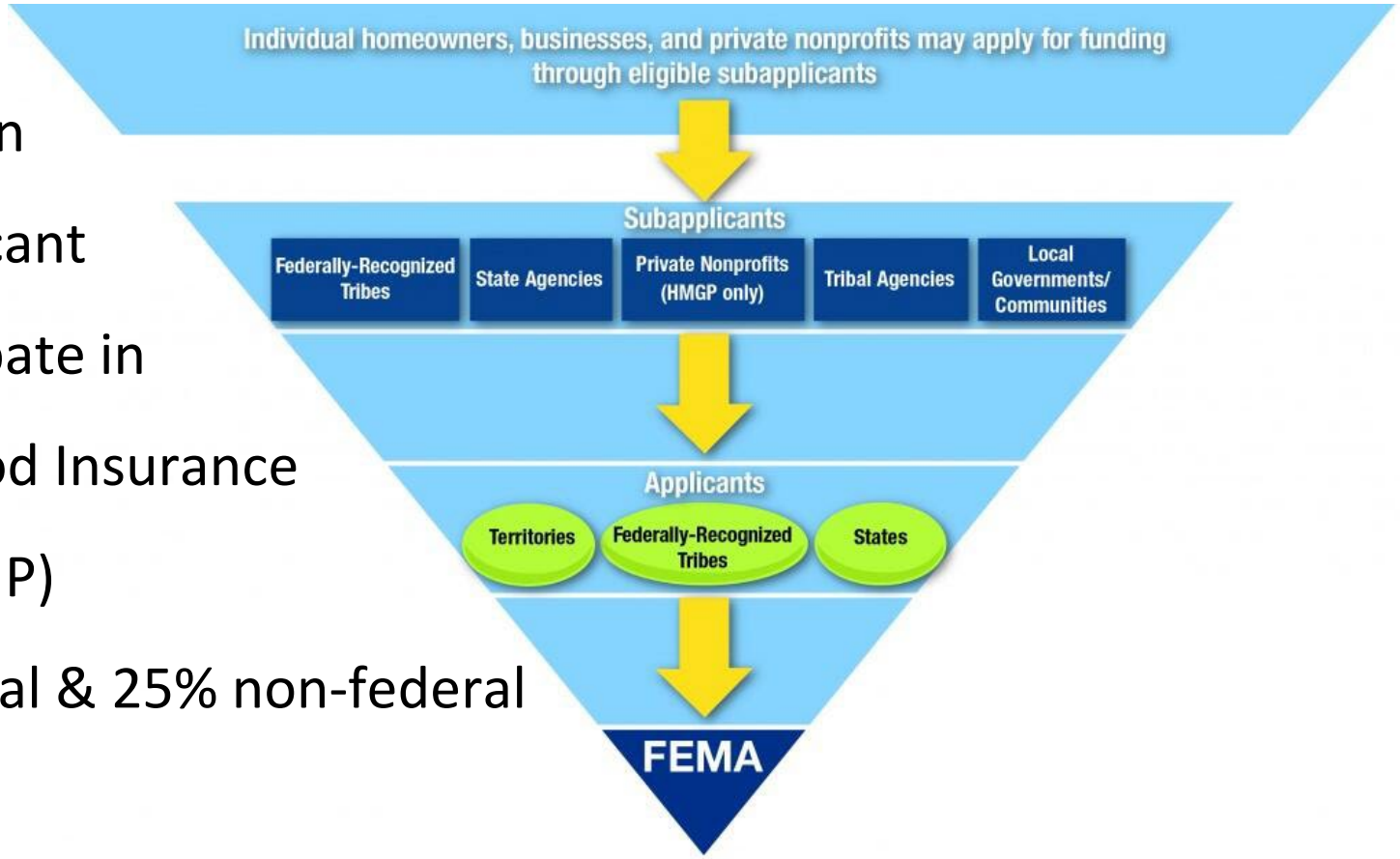
- The Hazard Mitigation Grant Program (HMGP) provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration (21 disasters declared in the county in the last 50 years).
- Eligible applicants are state agencies, local governments, private non-profit organizations, or Indian tribal governments.
- 75% federal & 25% non-federal match
- **An approved local mitigation plan is required.**

Building Resilient Infrastructure & Communities (BRIC)

- Annual Appropriation
- Nationally competitive grant for up to $600,000 for individual projects that focus on pre-disaster mitigation activities that involve critical services/facilities, public infrastructure, public safety or public health
- 75% federal & 25% non-federal match; or 90% & 10% if meets criteria for a small, impoverished community
  - SEMA forwards selected applications to FEMA
  - **An approved local mitigation plan is required.**

Flood Mitigation Assistance Program

- Annual Appropriation
- Sub-applicant must participate in National Flood Insurance Program (NFIP)
- 75% federal & 25% non-federal match
- **An approved local mitigation plan is required.**



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What's the Process to Update Clinton County's Hazard Mitigation Plan?

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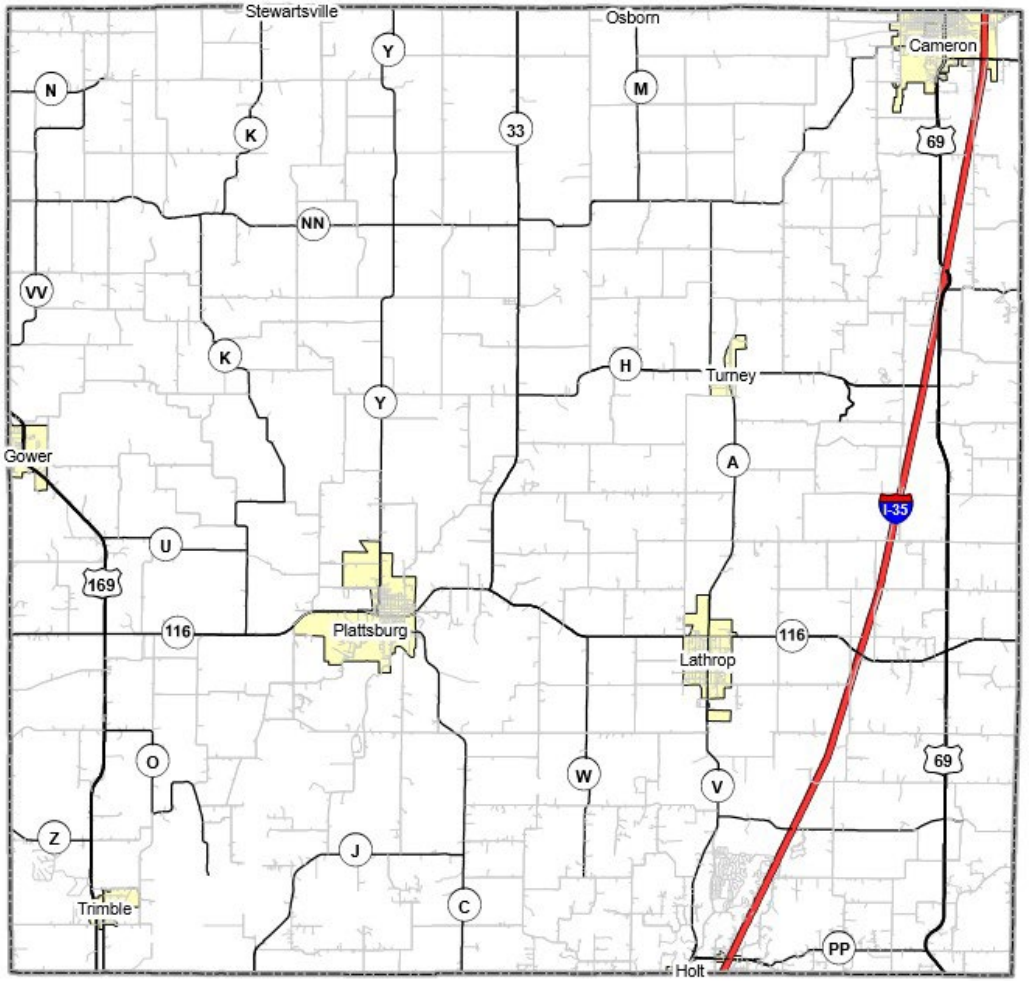
9 Tasks to Complete the Plan Update

- **Task 1: Determine the Planning Area**
- **Task 2: Build the Planning Team**
- **Task 3: Create an Outreach Strategy**
- **Task 4: Review Community Capabilities**
- Task 5: Conduct a Risk Assessment
- Task 6: Develop a Mitigation Strategy
- Task 7: Review and Adopt the Plan
- Task 8: Keep the Plan Current
- Task 9: Create a Safe and Resilient Community

Multi-Jurisdictional Plan Approach
Task 1: Determine the Planning Area

- Clinton County
- Cameron
- Gower
- Lathrop
- Plattsburg
- Trimble
- Village of Turney
- Cameron, Clinton, & Lathrop School Districts



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Anyone missing?

Task 2: Build the Planning Team

Jurisdictions

- Emergency Responders
- County and City Clerks
- Elected Officials
- Public Works Directors
- Floodplain Managers
- Stormwater Managers
- School Principals & Superintendents

Stakeholders

- Business Partners
- Private-non-profits
- State & Federal Agencies
- Academia
- Healthcare Sector
- Senior Living Facilities
- Local/Regional Agencies

Who is missing?

Task 2: Build the Planning Team

Contact	Agency
Patrick Clark	Presiding Commissioner
Jay Bettis	1st District Commissioner
Richard Riddell	2nd District Commissioner
Tricia “P.J.” Knight	Plattsburg Planning and Zoning
Dr. Sandy Steggal	Clinton County R3 School District
Dr. Matt Robinson	Cameron R-I School District
Chris Fine	Lathrop R-II School District
Rick Bashor	Cameron Police Department
Sherri Shatto	Plattsburg Chamber of Commerce
Mary Murdock	Cameron Chamber of Commerce
Rod McQyerrey	Plattsburg Fire Protection District
David Couzens	Plattsburg Police Department
Mike O'Donnell	Cameron Fire Department
David Eads	Lathrop Fire Department
Robert Looper	Holt Fire Department
Misty Ward	Cameron Regional Medical Center
Sheriff Lary Fish	Clinton County Sheriff's Department
Brett Adkinson	Clinton County Leader
Graceanne Cook	Tri-County Ambulance
Linda Weaver	Dekalb-Clinton Ambulance Dist #1
Georgia Rauchie	Plattsburg Senior Center
Blair Shock	Clinton County Health Department

Shellie J. Blades	Cameron City Clerk
Gwen Ballou	Gower City Clerk
Carroll Fisher	Gower City Coordinator
Susie Freece	Lathrop City Clerk
Bob Burns	Lathrop City Administrator
Lisa Read	Plattsburg City Clerk
Melanie Cherven	Trimble City Clerk
Greg Harris	Plattsburg City Administrator
Justin Hartzell	Plattsburg Director of Public Works
Paul Read	Plattsburg Gas Dept.
Ron Gorham	Plattsburg Waste Water Plant
Jeremy Zimmerman	(Asst. City Admin) Plattsburg Water Treatment Plant
Steve Rasmussen	Cameron City Manager
Ken Pike	Gower Mayor
Jennifer Morrison	Lathrop Mayor
Mark Graham	Trimble Mayor
Dave Schauer	Plattsburg Mayor
Dr. John Newell	East Buchanan C-1 School District
Chad Swindler	Turney Chairman
Carlena Braford	Osborn Mayor
Cindy Bingham	
Tim Wymes	Director of Economic Development, Cameron, MO
Tammy Clough	Local Emergency Planning Committee (LEPC) & Clinton County Health Department

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Task 3: Creating an Outreach Strategy- Public Involvement Requirement

- During Drafting Stage
  - Public Survey – please see handout`
    - Online Survey-
    - Hard Copies—City Halls/Libraries/Post Offices
    - Link on County Website/Other Websites?
- Prior to approval
  - Draft Available via County Website
  - Hard Copies - at least two public locations
- Other Ideas/Events for Public Outreach
  - LEPC, fire chiefs or levee district meetings; community events (schools?); mobile events (hazardous waste collection & Second Harvest)

Data Collection Questionnaires
Task 4: Reviewing Community Capabilities

- Please see the questionnaire
- The questionnaire asks for information that's used for reviewing community capabilities
- It's common for several people to contribute information to complete the questionnaire
- Critical facilities information is required
- All questionnaires have been mailed/emailed and we'll collect pages 1-6 today

Critical Facilities Examples

Essential Facilities	High Potential Loss Facilities	Transportation and Lifeline
•Hospitals and other medical facilities •Police stations •Fire station •Emergency Operations Centers	•Power plants •Dams/levees •Military installations •Hazardous material sites •Schools •Shelters •Day care centers •Nursing homes •Main government buildings	•Highways, bridges, and tunnels •Railroads and facilities •Bus facilities •Airports •Water treatment facilities •Natural gas facilities and pipelines •Oil facilities and pipelines •Communications facilities

- Take a few minutes to review and ask questions
- Please submit **before** the next meeting (mail or e-mail)

Inventory of Critical Facilities 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 Cameron	1	1	1	1	0	0	1	1	7	0	2	2	0	0	3	1	0	0	0	5	0	0	0	26
City of Gower	0	0	2	0	0	0	1	1	0	0	1	0	0	1	1	1	0	0	0	2	0	0	0	10
City of Lathrop	0	0	0	0	0	0	1	2	1	0	1	0	0	0	0	1	1	0	5	3	0	0	1	16
City of Holt	0	0	0	0	0	0	1	1	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	6
City of Plattsburg	0	0	3	0	0	1	1	3	2	0	4	0	0	0	2	2	1	0	3	3	0	0	1	26
City of Trimble	0	0	0	0	0	0	1	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	1	6
Village of Turney	0	0	0	0	0	0	1	1	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	2
Unincorporated County	2	0	2	12	5	0	0	3	0	0	139	0	0	2	0	0	0	0	0	0	0	5	2	172
Totals	3	1	8	13	5	1	7	14	11	0	151	2	0	3	6	7	2	0	8	13	0	5	5	265

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What are HMP Participation Requirements for each jurisdiction?

- Attend at least one HMP meeting- preferably two
- Complete data questionnaire form and list of critical/essential facilities
- Complete updated risk assessment
- Evaluate past mitigation actions
- Develop new and update past mitigation actions **(at least one)**
- Provide comments on plan drafts as requested
- Inform the public and provide opportunities for comment on plan
- Adopt the plan (adoption resolution template)

Clinton County Plan Update Timeline

- Planning Committee Meetings
  - Planning Meeting #1, **Today**
    - Data Collection Questionnaire & critical facilities
  - Planning Meeting #2, **February 2022 (Exact Date TBD)**
    - Risk Assessment & update mitigation goals/actions from previous plan
  - Planning Meeting # 3, **April 2022 (Exact Date TBD)**
    - Develop new goals and actions & discuss plan maintenance
  - Planning Meeting #4, **June 2022 (Exact Date TBD)**
  - Complete draft of document and post for public comment, **Sept. 2022**
  - Resolutions due, **January 1, 2023**

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Clinton County Plan Update Timeline

- Clinton County's Current Hazard Mitigation Plan
  - Draft of the update is due to FEMA by **March 17, 2023**
  - The public must have an opportunity to comment on the draft before adopted by the county
  - All jurisdictions must adopt the HMP **prior** to submitting the draft to SEMA

In-Kind Match

- Clinton County is responsible for $ **8,640** in-kind match
- In-kind activities include:
  - Planning Committee (unless elected or appointed)
  - Hosting public meetings and talking to community groups
  - Researching or compiling data related to the plan
  - Donation of supplies, labor or equipment for project in plan
  - Time spent driving to HMP activities

Mo-Kan

DeKalb County HMP In-Kind Contribution

Name: Joe Bob
Address: _____
Jurisdiction: Amity

Date	Hours	Mileage (Round trip)	Activity
	X $25.96 =	**X $.45 =**	
12-7	**1 ½**	**10**	**HMP kick off meeting**

Hours $ Total:	**Mileage $ Total:**	**$ Total:**
1.5 _____ x **25.96 =** **38.94** _____ **# of hours X $ = Total $**	**10** _____ x **.45 =** **4.50** _____ **# of miles X $ = Total $**	**Hours total + Mileage total =** **$43.44** _____

Signature: Joe Bob

Please return form to Trevor Tutt at Mo-Kan (trevor@mo-kan.org)

All donated hours and labor must be documented on timesheet
**** All donated supplies and equipment must be on an invoice***

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The Next Steps

- Fill out, sign and turn in-kind form before you leave today (elected officials' time doesn't count)
- Schedule additional public meetings/public outreach and encourage people to attend – February date?
- Continue completing questionnaire- vulnerability assessment, asset inventory & hazard events (pp. 7-14) and return before next meeting
- Contact Mo-Kan with any questions

Houston Roberts & Trevor Tutt
Community Development Planners
Mo-Kan Regional Council
224 N. 7th Street
St. Joseph, MO 64501
816-233-3144
houston@mo-kan.org trevor@mo-kan.org

Mo-Kan
An Economic and Community Development Organization

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Subject: Clinton County Multi-Jurisdictional Hazard Mitigation Plan Update

On behalf of Clinton County, you are invited to the 2nd meeting of the four-part meeting series to update the Clinton County Multi-Jurisdictional Hazard Mitigation Plan. Your participation is a key element to the success of the plan update effort. Please see the information about the 2nd meeting below:

Clinton County Multi-Jurisdictional Hazard Mitigation Plan Update – Meeting 2
Address: Clinton County Courthouse, 207 N. Main St., Plattsburg, MO 64477
Date & Time: February 24, 2022 at 11AM

During this meeting, we will discuss the plan's goals and the risks from the different types of natural disasters that Clinton County has experienced in the past. **Also, any completed questionnaire forms (risk assessment, asset inventory, and historic hazard events) will be collected from participating jurisdictions at this meeting if they, so please bring those along with any questions you may have.**

Clinton County requests your assistance in forwarding this invitation to others in your jurisdiction. Participants in the planning committee include, but are not limited to: emergency responders, elected officials, county clerk, city clerks, county and city employees, schools, utilities, private-non-profit representatives, private industry and business, clergy, and community volunteers. People from various backgrounds are needed to participate. No previous experience with emergency management or planning is necessary.

The existing plan, approved by FEMA in November 2018, was developed in accordance with the Disaster Mitigation Act of 2000. To maintain eligibility for certain FEMA Hazard Mitigation Assistance grants, the Act requires jurisdictions to develop a plan to assess their risks to hazards and identify actions that can be taken in advance to reduce future losses. The Act requires Hazard Mitigation Plans to be updated every five years.

Mo-Kan Regional Council is the contact for updating the plan and will be working closely with the county commissioners and emergency management director during the update. Please contact Mo-Kan at (816) 233-3144 or email houston@mo-kan.org by **February 23rd** to RSVP or ask for additional information.

Thank you,

Houston Roberts
Community Development Planners

Clinton County Hazard Mitigation Planning Meeting #2

Sign-in Sheet

Date: **Thursday, February 24, 2022**
Time: **11:00 am**
Location: **Clinton County Courthouse, 207 North Main Street, Plattsburg, MO 64477**

Name	Jurisdiction	Email Address/Phone #
Ken Pike	Gower	gowermo.us@gmail.com
Carroll Fisher	Gower	gowercityhall.us@gmail.com
RYAN JENSEN		RJENSEN@PLATTSBURG-MO.GOV
Jay Betts		jwfarms@embarqmail.com
Tricia Knight		ccZoning@clintoncomo.org
Blair Shock		blair.shock@clintoncomo.org
Tammy Crowley		tammy.crowley@clintoncomo.org
Patrick Clark		ccomm@clintoncomo.org
ADAM HILL		AHILL@GOWERPD.ORG
Jennifer Morrison		luve-bug@hotmail.com
Richard Ruddell		rlruddell@gmail.com
Chris Fine		chris.fine@lathamschools.com 816 509-2060
Tim Wymes		twymes@camdenton.com
RICK BASHOR		RBASHOR@CAMDENTONMO.COM

Clinton County Hazard Mitigation Planning Meeting #2

Sign-in Sheet

Date: **Thursday, February 24, 2022**
Time: **11:00 am**
Location: **Clinton County Courthouse, 207 North Main Street, Plattsburg, MO 64477**

Name	Jurisdiction	Email Address/Phone #
Bob Burns	Lathrop	
Larry Fish	Clinton County	

Planning Meeting #2

Clinton County Multi-Jurisdictional Hazard Mitigation Plan Update

February 24, 2022

Clinton County Courthouse

PUBLIC SURVEY QR CODE

PLEASE TAKE A MOMENT **NOW** TO TAKE THE CLINTON COUNTY HMP SURVEY* ONLINE VIA THE QR CODE (take a picture of the QR code with your smart phone), OR CLICK THE LINK AT WWW.MO-KAN.ORG.

***PAPER COPIES ARE AVAILABLE UPON REQUEST**

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Meeting Agenda

- Review
- Public Outreach
- Review Mitigation Goals
- Hazard Profile and Vulnerability Assessment
- Previous Occurrences
- In-Kind Match
- Next Steps

Review

- **What?** Clinton County Hazard Mitigation Plan
- **Who?** All jurisdictions
- **Why?** To reduce loss and life and property

  Also, to stay eligible for FEMA/SEMA funding
- **When?** Draft due March 2023

9 Tasks to Complete the Plan Update

- **Task 1: Determine the Planning Area**
- **Task 2: Build the Planning Team**
- **Task 3: Create an Outreach Strategy**
- **Task 4: Review Community Capabilities and Plan Goals**
- **Task 5: Conduct a Risk Assessment**
- **Task 6: Develop a Mitigation Strategy**
- Task 7: Review and Adopt the Plan
- Task 8: Keep the Plan Current
- Task 9: Create a Safe and Resilient Community

Task 3 – Create an Outreach Strategy

How do you plan to get the word out about the plan this time?

- Ready-In-3 materials available for distribution
- Any upcoming meetings where Mo-Kan staff can speak, like fire chief, LEPC meetings?
- Other ideas?
- Public survey – Survey Monkey

https://www.surveymonkey.com/r/ClintonCoHMP

Task 4 – Review Community Capabilities & Plan Goals

- **Must be submitted in order to be considered a participating jurisdiction!** For the last plan, those jurisdictions that participated were: DeKalb County, Amity, Clarksdale, Maysville, Osborn, Stewartsville, Union Star, and Maysville, Osborn, Stewartsville & Union Star School Districts
- **Data questionnaires already received from:**

Amity
Clarksdale
Stewartsville
Union Star
Maysville School District
Union Star School District

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Common Categories of Mitigation Goals

- Reduce Risk to Life and Property
- Public Education
- Policies/Planning/Training/Communication
- Protection of Critical/Essential Facilities

Every $1 Invested in Disaster Mitigation Saves $6

(pewtrusts.org)

Review of Past Mitigation Goals

- Goals describe the overall direction of the plan
- Jurisdictions will keep/delete/add individual actions that align with goals and objectives

2018 Clinton County HMP Goals (pp. 4.1-4.2)

Goal 1: Protect the Lives, Property and Livelihoods of All Citizens.

Objective 1: Provide sufficient warning of impending disasters.

Objective 2: Increase knowledge of natural hazards among citizens

Objective 3: Protect residential and commercial structures in the present and future

Goal 2: Reduce the impact of disasters.

Objective 1: Manage growth in designated areas through sustainable policies, principles and practices.

Goal 3: Ensure Continued Operation of Government and Emergency Functions in a Disaster.

Objective 1: Increase disaster mitigation management capability in local governments.

Objective 2: Strengthen critical infrastructure.

Determine/Update Mitigation Goals

In groups, review 2018 goals and objectives. Be prepared to discuss:

1. ***Does the objective match the goal?***
2. ***If/why you would change one of the current goals/objectives***
3. ***What objective would you create for a pandemic hazard?***

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State 2018 HMP Goals

Goal 1: Implement mitigation actions that improve the protection of human life, health, and safety from the adverse effects of disasters

Goal 2: Implement mitigation actions that improve the continuity of government and essential services from the adverse effects of disasters

Goal 3: Implement mitigation actions that improve the protection of public and private property from the adverse effects of disasters

Goal 4: Implement mitigation actions that improve the protection of community tranquility from the adverse effects of disasters

(Objectives listed in the handout)

Task 5: Hazard Identification and Risk Assessment

- Hazard Profile
  - Geographic Location
  - Severity/Magnitude/Extent
  - Previous Occurrences
  - Probability of Future Occurrence
- Vulnerability Assessment
  - Vulnerability Overview
  - Potential Losses to Existing Development
  - Future Development
  - Hazard Summary by Jurisdiction
- Problem Statement

Based on existing plan, state plan, additional information from planning committee, additional research/ analysis

https://www.mo-kan.org/community/hazard-mitigation/

Natural Hazards for Consideration

- Dam Failure
- Drought
- Earthquakes
- Extreme Heat
- Fires (Urban/Structural and Wild)
- Flooding (Flash and River)
- Land Subsidence/Sinkholes
- Levee Failure
- Thunderstorm/High Winds/Lightning/Hail
- Tornado
- **Winter Weather/Snow/Ice/Severe Cold**
- New: Pandemic/Public Emergencies

Determine/Update Mitigation Goals

In groups, review the Hazard Identification draft. Be prepared to discuss:

1. ***Something you learned***
2. ***1 question you have***
3. ***1 suggestion you have***

Previous Occurrences

Each participating jurisdiction needs to answer these questions:

1. What significant natural hazards have occurred in the past five years? What was the impact?

2. Have any mitigation actions been implemented in the past five years, such as outdoor warning sirens, tornado safe rooms, adoption of building codes, etc.

HISTORIC HAZARD EVENTS (continued)

Please fill out the sheet on the next page for each significant hazard event that affected **Your Jurisdiction. Make as many copies as necessary to record all events** and complete with as much detail as possible. This includes all events associated with the hazards listed below that have caused previous damage in your jurisdiction. It is especially important to capture events that either were not included in the previous Hazard Mitigation Plan or occurred since the plan was completed. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Jurisdiction	
Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	

Send completed risk assessments to Houston

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Natural Hazards for Consideration

New

Jurisdiction	Dam Failure	Drought	Earthquake	Extreme Temperatures	Flooding (River and Flash)	Land Subsidence/Sinkholes	Levee Failure	Severe Winter Weather	Thunderstorm/Lightning/ Hail/High Wind	Tornado	Wildfire	Public Health Emergencies/ Environmental Issues
DeKalb County	X	X	X	X	X	-	-	X	X	X	X	
Village of Amity	-	X	X	X	X	-	-	X	X	X	X	
City of Clarksdale	X	X	X	X	X	-	-	X	X	X	X	
City of Maysville	X	X	X	X	X	-	-	X	X	X	X	
City of Osborn	X	X	X	X	X	-	-	X	X	X	X	
City of Stewartsville	X	X	X	X	X	-	-	X	X	X	X	
City of Union Star	X	X	X	X	X	-	-	X	X	X	X	
Village of Weatherby	-	X	X	X	-	-	-	X	X	X	x	
Schools and Special Districts												
Maysville School District	X	X	X	X	X	-	-	X	X	X	X	
Osborn School District	X	X	X	X	X	-	-	X	X	X	X	
Stewartsville School District	X	X	X	X	X	-	-	X	X	X	X	
Union Star School District	X	X	X	X	X	-	-	X	X	X	X	

Inventory of Critical/Essential Facilities

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
Village of Amity	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 Clarksdale	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	1	6
City of Maysville	0	0	1	0	1	1	2	0	0	1	0	1	0	0	1	2	1	0	1	0	0	0	1	13
City of Osborn	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	1	0	1	2	0	0	1	8
City of Stewartsville	0	0	0	1	1	0	1	1	0	0	0	1	0	0	0	1	0	0	0	2	0	0	0	8
City of Union Star	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	5
Village of Weatherby	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Unincorporated	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Totals	0	0	1	1	3	1	6	4	2	2	0	2	0	0	1	4	2	0	2	6	0	0	4	42

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Please review this chart for any changes.

Task 6: Develop Mitigation Strategy
What are Mitigation Actions?

- Actions are activities/programs/etc., that support the plan's goals and objectives
- Have long-term and cumulative benefits
- Some may be low-cost and easy to implement
- Others may be dependent on available funding
- Relevant to your jurisdiction
- Jurisdiction must have one action that is potentially fundable by FEMA (**Not all actions will be eligible for FEMA grants)**

Task 6: Develop Mitigation Strategy
What are Mitigation Actions?

Data questionnaire section: Assessment of Previously Proposed Actions

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.1.5	Add shelters in the construction of new public facilitates like libraries, community centers, etc.			✓	NO CONSTRUCTION OF THIS TYPE	X
1.1.9	Maintain up-to-date list of addresses of shelters to assist fire departments and emergency services agencies to locate survivors after a disaster.			✓	NO EMERGENCY SHELTERS	X
1.1.24	Perform street improvements to further improve drainage throughout the community		✓		IN PROCESS OF STREET REPAIRS THEN WILL TACKLE CRITICAL RUN OFF AREAS	✓

Send completed assessments to Houston

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Review Previous Actions

- Status updates required for ALL actions from previous plan (FEMA will not approve plan without this)
- Identified as completed, deleted or continuing
- **Must be received by <u>May 1, 2022</u> or considered a non-participating jurisdiction. This will make pending FEMA grant applications ineligible.**
- At our next meeting, in April, we will have workshop time for reviewing action items/formulating mitigation strategies

Create New Actions

- Should be SMART: specific, measurable, achievable, relevant and time-bound
- Complete form for new action
- Aim for a few meaningful actions
- Due by May 1- email/mail to Houston Roberts
- **Set a date when your jurisdiction will review the HMP on an annual basis – default date will be January of each year**

Specific
Measurable
Achievable
Relevant
Time-bound

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In-Kind Match

- Clinton County is responsible for **$8,000.00** of in-kind match
- At 17% of goal with **$1,365.55** of in-kind match (for meeting 1 & LEPC meetings)
- In-kind match activities include:
  - Planning Committee (unless elected or appointed)
  - Public meeting attendees
  - Hosting public meetings and talking to community groups
  - Researching or compiling information related to the plan
  - Mileage for driving to HMP activities
  - Making copies of materials needed for the update and meetings

All in-kind hours and labor must be properly documented

The Next Steps

- Schedule additional public meetings and public outreach!
- 3rd Planning Committee meeting

  - April, date and time?
- Review actions and/or create new ones (deadline for new actions is May 1, 2022)
- Draft of plan will be posted in August 2022
- Available for public review/comment (30 days)
- Resolution adopting the plan due from jurisdictions by January 1, 2023

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Questions

Trevor Tutt trevor@mo-kan.org
Houston Roberts houston@mo-kan.org

Mo-Kan Regional Council
224 N. 7th Street
St. Joseph, MO 64501
816-233-3144

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Subject: Clinton County Multi-Jurisdictional Hazard Mitigation Plan Update

On behalf of Clinton County, you are invited to the 3rd meeting of the four-part meeting series to update the Clinton County Multi-Jurisdictional Hazard Mitigation Plan. Your participation is a key element to the success of the plan update effort. Please see the information about the 3rd meeting below:

Clinton County Multi-Jurisdictional Hazard Mitigation Plan Update – Meeting 3
Address: Clinton County Courthouse, 207 N. Main St., Plattsburg, MO 64477
Date & Time: April 21, 2022 at 11AM

During this workshop meeting, Mo-Kan staff will work with the planning committee and jurisdiction representatives to review past actions and create new actions. It would be helpful for **2** people to be present from each jurisdiction due to the collaborative nature of this workshop.

If you represent a jurisdiction or school district, please bring the following items:

- Completed Questionnaire Pages Including Asset Inventories (Critical Facilities & Economic Assets)
- Historic Hazard Events
- Previously Proposed Action Assessment Pages.

It is important that these documents are submitted. If your jurisdiction has already submitted these documents, they will be available for review at the meeting**.** New action worksheets will also be made available at this meeting and are **Due May 5, 2022**.

Jurisdictions must attend at least 1 planning meeting to meet participation requirements; however, attending more meetings is highly encouraged. If you are unable to take part, please help by having someone from your agency/sector attend the meeting. Please contact me if no one from your jurisdiction is able to attend so that we can make other arrangements to meet.

If a representative from your jurisdiction does not participate, future funding from FEMA for mitigation projects will be jeopardized. By participating in the planning process and formally adopting the completed plan, your jurisdiction/district will be eligible for federal funding to complete such projects as relocating properties out of a floodplain, construction of tornado safe-rooms, and many other preventative measures meant to protect lives and property.

Mo-Kan Regional Council is the contact for updating the plan and will be working closely with the county commissioners and emergency management director during the update. Please contact Mo-Kan at (816) 233-3144 or email houston@mo-kan.org by **April 19th** to RSVP or ask for additional information.

Thank you,

Houston Roberts
Community Development Planners

Clinton County Hazard Mitigation Planning Meeting #3

Sign-in Sheet

Date: **Tuesday, April 21, 2022**
Time: **11:00 am**
Location: **Clinton County Courthouse**

Name	Email Address/Phone #
RICK BASHOR	RBASHOR@CAMDENCOMO.COM
Carroll Finke	gowercityhall.us@gmail.com
Kenneth Pike	gowermo.us@gmail.com
Tricia Knight	cczoning@clintoncomo.org
Richard Riddell	ON FILE.
Jay Betts	on file
Tammy Crowley	Tammy.Crowley@Clintoncomo.org
ADAM HILL	AHILL@GOWERPD.ORG
Patrick Clark	cccomm@clintoncomo.org
Jennifer Morrison	

Clinton County Hazard Mitigation Plan Update

Planning Meeting #3

Thursday, April 19 @ 11 am
Clinton County Courthouse
Plattsburg, Missouri

Meeting Agenda

- Task 6: Develop a Mitigation Strategy
- New/Modified Actions – turn in by May 5, 2022

Updating Mitigation Strategy

- Goals are general guidelines that explain what you want to achieve
- Mitigation Actions are specific actions that help you achieve goals

There were 54 actions in the last plan; 17 of those are for Clinton County. Each jurisdiction must have one potentially FEMA fundable action in the plan to be considered a "participant."

Determine/Update Mitigation Goals

pg. 4.16-4.25; 4.37-4.46 in 2018 HMP

- **Goal 1: Protect the Lives, Property and Livelihoods of All Citizens.**
  - Objective 1.1: Protect the lives and property of Clinton County residents
  - Objective 1.2: Provide sufficient warning of impending disasters
  - Objective 1.3: Identify the citizens most vulnerable to disasters and plan accordingly
- Clinton- 1.1.a, 1.1.b, 1.2.a

Determine/Update Mitigation Goals

Pg . 4.26-4.33; 4.47-4.52 in 2018 HMP

- **Goal 2: Manage Growth in Designated Hazard Areas Through Sustainable Policies, Principles, and Practices**
  - Objective 2.1: Decrease the impact of natural hazards
  - Objective 2.2: Decrease the cost of the next disaster
  - Objective 2.3: Increase Clinton County's economic resistance to disasters
- Clinton – 2.2a, 2.2b, 2.1.1, 2.3.1

Determine/Update Mitigation Goals

pg. 4.34-3.36;4.53-4.65 in 2018 HMP

- **Goal 3: Ensure Continued Operation of Government and Emergency Functions in a Disaster.**
  - Objective 3.1: Increase disaster mitigation management capability in local governments
  - Objective: 3.2: Strengthen critical infrastructure.
- Clinton – 3.2.1, 3.2.2, 3.1.a, 3.1.b, 3.1.c, 3.1.d, 3.1.e

Determine/Update Mitigation Goals

pg. 4.66-4.69 in 2018 HMP

- **Goal 4: Ensure Access to Information About Hazard Preparation and Recovery.**
  - Objective 4.1: Increase knowledge among citizens about disaster safety
- Clinton – 4.1.a, 4.1.b, 4.1.c

Updating Mitigation Strategy

- Previous Actions – status updates required for ALL actions from previous plan
- Some actions may be low-cost initiatives readily adopted
- Others may be dependent on available funding or outcome of a grant application

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.1.5	Add shelters in the construction of new public facilitates like libraries, community centers, etc.			✓	NO CONSTRUCTION OF THIS TYPE	X
1.1.9	Maintain up-to-date list of addresses of shelters to assist fire departments and emergency services agencies to locate survivors after a disaster.			✓	NO EMERGENCY SHELTERS	X
1.1.24	Perform street improvements to further improve drainage throughout the community		✓		IN PROCESS OF STREET REPAIRS WHEN WILL TACKLE CRITICAL RUN OFF AREAS	✓

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Updating Mitigation Strategy

- New Actions - add new actions, as appropriate:

  - FEMA's Mitigation Ideas Booklet

  - Review problems from recent hazards

  - Consider problems from a potential hazard

- Discuss new action ideas with others in your jurisdiction to assure community support of action

- Consider applying for mitigation grants

New Actions

- Actions should be SMART:

Specific
Measurable
Achievable
Relevant
Time-bound

- Actions need to show action. Do not use words such as encourage, explore, recommend.
- Jurisdictions are not penalized if an action is not accomplished. (Will need to explain why)

Action Worksheet Example/STAPLEE Form

Action Worksheet	
Name of Jurisdiction:	ST. JOSEPH
Risk / Vulnerability	
Problem being Mitigated:	PUBLIC DIDN'T HAVE INFORMATION DURING EMERGENCIES & DISASTERS
Hazard(s) Addressed:	DROUGHT, FLOOD, HEAT WAVE, SEVERE WINTER WEATHER, THUNDERSTORM, TORNADO
Action or Project	
Action/Project Number:	1.1.1
Name of Action or Project:	
Action or Project Description:	HAVE VIDEO & AUDIO PUBLIC SERVICE ANNOUNCEMENTS MADE, DELIVERED TO THE MEDIA & READY TO BE BROADCAST DURING EMERGENCIES & DISASTERS.
Applicable Goal Statement:	PROTECT THE LIVES, PROPERTY & LIVELIHOODS OF ALL CITIZENS
Estimated Cost:	
Benefits:	IMPORTANT INFORMATION CAN BE QUICKLY DISSEMINATED
Plan for Implementation	
Responsible Organization/Department:	EMERGENCY MANAGEMENT DIRECTOR
Action/Project Priority:	
Timeline for Completion:	
Potential Fund Sources:	
Local Planning Mechanisms to be Used in Implementation, if any:	
Progress Report	
Action Status	
Report of Progress	
Completed by:	

USE THIS SPACE IF NEEDED TO EXPLAIN WHAT WAS DONE ON THE ACTION -- PLEASE BE SPECIFIC

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title:	Jurisdiction:
Action ID:	

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? (score a 3 if positive impact, 2 if neutral impact)		
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 would be saved.	
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): _____

Priority Level: ☐High (30+ points) ☐Medium (25-29 points) ☐Low (less than 25 points)

Completed by (name/title/phone #): _____

In-Kind Match

- Clinton County is responsible for $**8,640** in-kind match and the county has turned in **$4,236.93** so far **(49% of goal)**
- In-kind match activities include:
  - Planning Committee (unless elected or appointed)
  - Public meeting attendees
  - Hosting meetings and talking to community groups
  - Researching or compiling data related to the plan
  - Mileage for driving to HMP activities

All donated hours and labor must be documented

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Please turn in….

- Community Data Questionnaire forms (still need from Weatherby)
- Action evaluations (turn in evaluation sheets along with any STAPLEE worksheets or new action forms)
- Volunteer hours (time outside meetings spent on the HMP counts too)

Please turn action worksheets and STAPLEE criteria (if used) to Mo-Kan by Thursday, May 5, 2022

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The Next Steps

- Schedule additional public meetings and public outreach
- 4th Planning Meeting –Tentatively set for Tuesday, June _____, 2022
- Draft of plan will be posted in August 2022
- Available for public review/comment (30 days)
- Resolution adopting the plan due from jurisdictions by January 1, 2023

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Questions

Houston Roberts houston@mo-kan.org

Trevor Tutt trevor@mo-kan.org

Mo-Kan Regional Council
224 N. 7th Street
St. Joseph, MO 64501
816-233-3144

Subject: Clinton County Multi-Jurisdictional Hazard Mitigation Plan Update

On behalf of Clinton County, you are invited to the 4th and Final meeting of the four-part meeting series to update the Clinton County Multi-Jurisdictional Hazard Mitigation Plan. Your participation is a key element to the success of the plan update effort. Please see the information about the 4th meeting below:

Clinton County Multi-Jurisdictional Hazard Mitigation Plan Update – Meeting 4
Address: Clinton County Courthouse, 207 N. Main St., Plattsburg, MO 64477
Date & Time: June 30, 2022 at 11AM

During this workshop meeting, Mo-Kan staff will present information on the plan update, as well as ask for feedback from participants on draft parts of the plan. Mo-Kan staff will also be available to field any questions proposed by jurisdictions.

Jurisdictions must attend at least one planning meeting to meet participation requirements; however, attending more meetings is highly encouraged. If you are unable to take part, please help by having someone from your agency/sector attend the meeting. Please contact us if no one from your jurisdiction is able to attend so that we can make other arrangements to meet. **This is the last opportunity for jurisdictions to attend a meeting if this requirement has not already been fulfilled**.

If a representative from your jurisdiction does not participate, future funding from FEMA for mitigation projects will be jeopardized. By participating in the planning process and formally adopting the completed plan, your jurisdiction/district will be eligible for federal funding to complete such projects as relocating properties out of a floodplain, construction of tornado saferooms, and many other preventative measures meant to protect lives and property.

Clinton County requests your assistance in forwarding this invitation to others in your jurisdiction. Participants in the planning committee include, but are not limited to: emergency responders, elected officials, county clerk, city clerks, county and city employees, schools, utilities, private-non-profit representatives, private industry and business, clergy, and community volunteers. People from various backgrounds are needed to participate. No previous experience with emergency management or planning is necessary.

Mo-Kan Regional Council is the contact for updating the plan and will be working closely with the county commissioners and emergency management director during the update. Please contact Mo-Kan at (816) 233-3144 or email houston@mo-kan.org by **June 27th** to RSVP or ask for additional information.

Thank you,
Houston Roberts
Community Development Planners

Clinton County Hazard Mitigation Planning Meeting #4

Sign-in Sheet

Date: **Thursday, June 30, 2022**
Time: **11:00 am**
Location: **Clinton County Courthouse, 207 North Main Street, Plattsburg, MO 64477**

Name	Jurisdiction	Email Address/Phone #
Ken Pike	Gower	gowermo.us@gmail.com
Carroll Fisher	Gower	gowercityhall.US@gmail.com
✓ Ryan Jensen	Plattsburg	RJensen@Plattsburg-mo.gov
✓ Blair Stueck	Clinton Co	blair.stueck@clintoncomo.org
Jennifer Morrison	Lathrop	luve-bug@hotmail.com
✓ Tricia Knight	CCP&Z	cczoning@clintoncomo.org
✓ Bob Burns	Lathrop	lathropcity@jrm.net
✓ Rick Bashor	Cameron	RBashor@cameronmo.com
Sandy Steggall	CCR3	sandy.steggall@ccr3.k12.mo.us
Larry Fish	Clinton County Sheriff	

Clinton County Hazard Mitigation Planning Meeting #4

Sign-in Sheet

Date: **Thursday, June 30, 2022**
Time: **11:00 am**
Location: **Clinton County Courthouse, 207 North Main Street, Plattsburg, MO 64477**

Name	Jurisdiction	Email Address/Phone #
Tim Wymes	City of Cameron	twymes@cameronmo.com
Richard Riddell	Clinton Co	(on File)
Patrick Clark	Clinton County	(on File)

Clinton County Hazard Mitigation Plan Update

Planning Meeting #4

Thursday, June 30 @ 11 am
Clinton County Courthouse
Plattsburg, Missouri

Meeting Agenda

- Review
- Public Outreach Update
- Plan Maintenance/Implementation
- Draft
- Public Comment
- Adopt the Plan
- In-Kind Match
- Next Steps

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Review

- **What?** Clinton County Hazard Mitigation Plan
- **Who?** All participating jurisdictions
- **Why?** To reduce loss of life and property
  & to stay eligible for FEMA/SEMA funding
- **When?** Draft due March 17, 2023
- **What's in-kind?** Documented local effort of volunteer hours and/or cash

9 Tasks to Complete the Plan Update

- Task 1: Determine the Planning Area
- Task 2: Build the Planning Team
- **Task 3: Create an Outreach Strategy**
- Task 4: Review Community Capabilities and Plan Goals
- Task 5: Conduct a Risk Assessment
- **Task 6: Develop a Mitigation Strategy** (See Jurisdiction Participation handout)
- **Task 7: Review and Adopt the Plan**
- **Task 8: Keep the Plan Current**
- **Task 9: Create a Safe and Resilient Community**

Plan Maintenance

- FEMA regulations require complete plan update every 5 years
- FEMA requires a formal plan maintenance process to ensure that the HMP is an active and relevant document (see Plan Maintenance Process handout)

Plan Maintenance

- Who, how and when will the plan be monitored, evaluated and updated?
  - Annual review? After hazard events?
  - Who will organize the review? Who will participate?
  - Update status of mitigation actions?
- How will the public be involved in plan maintenance?

Plan Implementation

- How will the mitigation strategy be incorporated into other planning mechanisms?

  - Review HMP during planning process to update other plans?

    - comprehensive plans
    - capital improvement plans
    - school infrastructure or emergency plans
    - other ideas?

2018 Plan Maintenance Process

5.1.1 Responsibility for Plan Maintenance

The Mitigation Planning Committee (MPC) is not a standing committee. Responsibility for maintenance will reside with the individual jurisdictions for monitoring, evaluation and maintenance. Maintenance activities for the participating jurisdictions, including school and special districts, may involve:

- 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.

It's the MPC representative's primary duty to see the plan successfully carried out and to report to the community's 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.

Any changes needed?

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2018 Plan Maintenance Process

5.1.2 Plan Maintenance Schedule

The Clinton County Emergency Management Director (EMD) will be responsible for initiating the plan review at the LEPC meeting every other year. For the other jurisdictions, their MPC representative will be responsible for initiating reviews.

In coordination with all participating jurisdictions, a five year written update of the plan will be submitted to the Missouri State Emergency Management Agency (SEMA) and FEMA Region VII per Requirement §201.6(c)(4)(i) of the Disaster Mitigation Act of 2000, unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule.

5.1.3 Plan Maintenance Process

Progress on the proposed actions can be monitored by evaluating changes in vulnerabilities identified in the plan. The MPC (or other designated responsible entity) during the annual meeting should review changes in vulnerability identified as follows:

- Decreased vulnerability as a result of implementing recommended actions,
- Increased vulnerability as a result of failed or ineffective mitigation actions,
- Increased vulnerability due to hazard events, and/or
- Increased vulnerability as a result of new development (and/or annexation).

Future 5-year updates to this plan will include the following activities:

- Consideration of changes in vulnerability due to action implementation,
- Documentation of success stories where mitigation efforts have proven effective,
- Documentation of unsuccessful mitigation actions and why the actions were not effective,
- Documentation of previously overlooked hazard events that may have occurred since the previous plan approval,
- Incorporation of new data or studies with information on hazard risks,
- Incorporation of new capabilities or changes in capabilities,
- Incorporation of growth data and changes to inventories, and
- Incorporation of ideas for new actions and changes in action prioritization.

In order to best evaluate any changes in vulnerability as a result of plan implementation, the participating jurisdictions will adopt the following process:

- Each proposed action in the plan identified an individual, office, or agency responsible for

2018 Plan Maintenance Process

action implementation. This entity will track and report on an annual basis to the jurisdictional MPC (or designated responsible entity) member on action status. The entity will provide input on whether the action as implemented meets the defined objectives and is likely to be successful in reducing risk.

- If the action does not meet identified objectives, the jurisdictional MPC (or designated responsible entity) member will determine necessary remedial action, making any required modifications to the plan.

Changes will be made to the plan to remedy actions that have failed or are not considered feasible. Feasibility will be determined after a review of action consistency with established criteria, time frame, community priorities, and/or funding resources. Actions that were not ranked high but were identified as potential mitigation activities will be reviewed as well during the monitoring of this plan. Updating of the plan will be accomplished by written changes and submissions, as the (MPC or designated responsible entity) deems appropriate and necessary. Changes will be approved by the Clinton County Commissioners and the governing boards of the other participating jurisdictions.

2018 Plan Maintenance Process

5.2 Incorporation into Existing Planning Mechanisms

44 CFR Requirement §201.6(c)(4)(ii): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

Where possible, plan participants, including schools, will use existing plans and/or programs to implement hazard mitigation actions. Those existing plans and programs were described in Chapter 2 of this plan. Based on the capability assessments of the participating jurisdictions, communities in Clinton 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:

- Comprehensive plans of participating jurisdictions
- Ordinances of participating jurisdictions
- Local Emergency Operations Plan
- Capital improvement plans and budgets
- Other community plans
- School District Emergency Plans

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, the Clinton County EMD will provide the updated mitigation strategy with current status of each mitigation action to the county commission as well as all mayors, city clerks, and school district superintendents as appropriate. The EMD will request that the mitigation strategy be incorporated, where appropriate, in other planning mechanisms.

Draft

- When a draft of the plan is near completion (after committee and public comment period), Mo-Kan will coordinate the adoption of the plan with the various jurisdictions
- Draft will be provided to committee (August 1-12th) for committee review & to public for comment (Sept. 1-Sept 30) through Mo-Kan website at mo-kan.org
- Notice should be given to the public that the plan is available for review
- See Draft handout

Plan Adoption

- Jurisdictions must formally adopt the HMP at a council or board meeting
- Jurisdictions will turn in adoption resolution to Mo-Kan by January 1, 2023
- Once all resolutions are received, they will be sent to the state along with the draft, which is due to SEMA by March 17, 2023

In-Kind Match

- Clinton County is responsible for $**8,000**in-kind match and the county has turned in **$6,608.81** so far **(82% of goal)**
- In-kind match activities include:
  - Planning Committee (unless elected or appointed)
  - Public meeting attendees
  - Hosting meetings and talking to community groups
  - Researching or compiling data related to the plan
  - Mileage for driving to HMP activities

All donated hours and labor must be documented

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The Next Steps

- Schedule additional public meetings and public outreach
- Draft of plan will be posted for two-week committee review beginning August 1st (please review your jurisdiction's info in Ch. 2 (planning area/profile capabilities + your jurisdiction's actions in Ch. 4)
- Available in Sept. for public review/comment (30 days)
- Resolution adopting the plan due from jurisdictions by **January 1, 2023**

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Questions

Trevor Tutt trevor@mo-kan.org
Houston Roberts houston@mo-kan.org

Mo-Kan Regional Council
224 N. 7th Street
St. Joseph, MO 64501
816-233-3144

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An Economic and Community Development Organization

CLINTON COUNTY
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

ENHANCING COUNTY AND LOCAL MITIGATION CAPABILITIES TO REDUCE HAZARD VULNERABILITIES IN CLINTON COUNTY

WHAT IS A HAZARD MITIGATION PLAN?

A hazard mitigation plan (HMP) is "the representation of the jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards" (44 CFR§ 201.6).

WHY IS A HAZARD MITIGATION PLAN NECESSARY?

HMPs are necessary to establish and maintain eligibility for grant funds. The planning process is as important as the plan itself because it creates a framework for governments to reduce the negative impacts from future disasters on lives, property, and the economy.

Hazard mitigation planning can significantly reduce the physical, financial, and emotional losses caused by disasters. The Disaster Mitigation Act of 2000 is federal legislation that established a pre-disaster hazard mitigation program. It encourages and rewards state and local pre-disaster planning and promotes sustainability.

Completion of an HMP will result in more effective risk reduction projects and in a faster and more efficient allocation of funding.

WHO'S LEADING THE PLAN?

The Clinton County Emergency Management Agency is leading the update of the countywide HMP, in cooperation with our region's planning council (Mo-Kan). This plan is an opportunity to detail a variety of potential hazards that affect some or all of our residents and will also allow the county and participating municipalities to be eligible for future mitigation funding from the Federal Emergency Management Agency (FEMA).

The goal of the plan is to identify projects that can reduce damages from future hazards.

The plan includes a risk assessment and a hazard mitigation strategy. The primary natural hazards of concern in Clinton County include: Drought, Severe Weather, Severe Winter Storm, Flood, Dam Failure, and Extreme Temperature. In addition, the County is evaluating the pandemic.

The plan will focus on existing buildings and potential future development, infrastructure, critical infrastructure, and critical facilities such as water utilities, roadways, and municipal buildings, that might be impacted.

What are the benefits of participating in the Hazard Mitigation Plan?

There are numerous benefits to participating in the HMP including:

- Awareness of risk and vulnerabilities
- Identification of implementable strategies and funding sources
- Reduction of hazard impact (save lives, property, and the local economy)
- Creation of partnerships and develop comprehensive approaches that enhance project grant funding opportunities.
- Pooling of resources and reducing the level of effort while avoiding duplication of effort.
- Creation of more resilient communities; bounce-back from disasters faster!

FAQS ABOUT THE PLAN

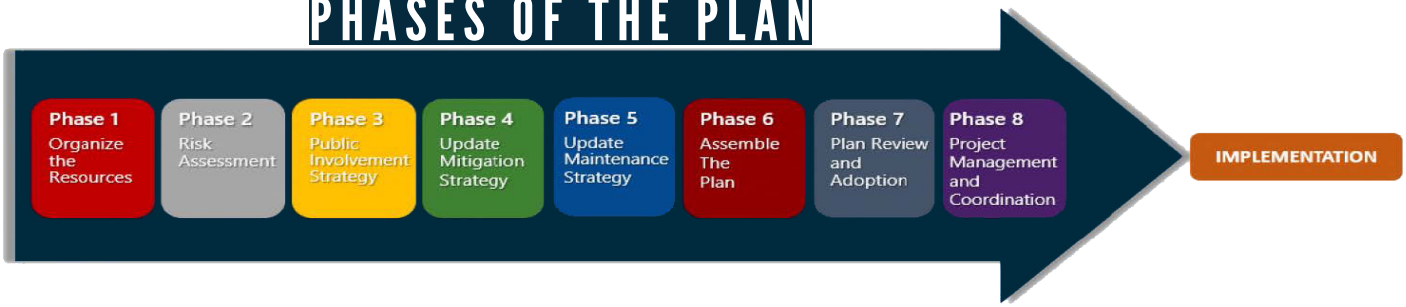
How can you reduce/eliminate risk? Identify mitigation actions/projects/activities or processes that can include **1)** Local plans and regulations; **2)** Structure and infrastructure projects; **3)** Natural systems protection; **4)** Education and awareness programs.

What grant funding is available? FEMA Hazard Mitigation Assistance grant funding is available with a FEMA-approved Hazard Mitigation Plan (annual and post-disaster grant funding opportunities).

How can I support the plan? Take the citizen survey! This will help us obtain input and get a better understanding of citizen preparedness for hazard events.

Where can I see the 2023 plan? Sections of the draft plan will be available in Fall 2022 for download, review and comment at:
https://www.mo-kan.org/community/hazard-mitigation/

PHASES OF THE PLAN



SUPPORT THE PLAN

Public input on the mitigation planning process is very important. Here are a few ways to get involved:

1. Review the existing plan and reach out with comments on the update.
2. Take the citizen survey!

Houston Roberts
Community Planner,
Mo-Kan Regional Council
houston@mo-kan.org
816-233-3144

Blair Shock
Clinton County
Emergency Management
Director
blair.shock@clintoncomo.org

Take the citizen survey!

Clinton County residents can help with the plan by taking a short survey.

To complete the survey, go to:
https://www.surveymonkey.com/r/ClintonCoHMP
OR
Scan the QR code

Clinton County Resident Survey

1. Public Survey: Clinton County Multi-Jurisdictional Hazard Mitigation

Clinton County is updating its Multi-Jurisdictional Hazard Mitigation Plan (HMP). The goal of the HMP is to reduce the impacts of natural hazards by identifying potential hazards and developing mitigation strategies. This important planning process makes our communities more resilient and better prepared before a disaster happens.

Public opinion is important to the planning process. Your comments will help inform your community's representatives who are on the HMP planning committee. By participating in this five-year update of the plan, your community will also remain eligible for mitigation funding programs from the Federal Emergency Management Agency (FEMA). Please take a few minutes to answer the following questions.

We appreciate you taking the time to share your opinions.
Thank you.

1. Where in the county do you live? Please select your community from the list:

- [ ] Unincorporated Community (Hemple, etc.)
- [ ] City of Cameron
- [ ] City of Gower
- [ ] City of Holt
- [ ] City of Lathrop
- [ ] City of Osborn
- [ ] City of Plattsburg
- [ ] City of Trimble
- [ ] Village of Turney

2. Please indicate your opinion on the *likelihood* for each hazard to impact *your community* using the following rating system. Please rate EACH hazard using the following rating system:

	Unlikely	Occasional	Likely	Highly Likely
Dam Failure	☐	☐	☐	☐
Drought	☐	☐	☐	☐
Earthquake	☐	☐	☐	☐
Extreme Heat	☐	☐	☐	☐
Fire	☐	☐	☐	☐
Flooding (Flash and River)	☐	☐	☐	☐
Land Subsidence/Sinkhole	☐	☐	☐	☐
Levee Failure	☐	☐	☐	☐
Public Health Outbreak	☐	☐	☐	☐
Thunderstorm/High Winds/Lightning/Hail	☐	☐	☐	☐
Tornado	☐	☐	☐	☐

	Unlikely	Occasional	Likely	Highly Likely
Winter Weather/Snow/Ice/Severe Cold	☐	☐	☐	☐

3. Please indicate your opinion on the *potential magnitude* of each hazard's impact on your community using the following rating system:

	No Impact	Limited	Critical	Catastrophic
Dam Failure	☐	☐	☐	☐
Drought	☐	☐	☐	☐
Earthquake	☐	☐	☐	☐
Extreme Heat	☐	☐	☐	☐
Fire	☐	☐	☐	☐
Flooding (Flash and River)	☐	☐	☐	☐
Land Subsidence/Sinkhole	☐	☐	☐	☐
Levee Failure	☐	☐	☐	☐
Public Health Outbreak	☐	☐	☐	☐
Thunderstorm/High Winds/Lightning/Hail	☐	☐	☐	☐
Tornado	☐	☐	☐	☐
Winter Weather/Snow/Ice/Severe Cold	☐	☐	☐	☐

4. In your opinion, which of the following strategies are the most effective investments to reduce the risk of future hazard damage? Please check all that apply.

- [ ] Upgrade infrastructure
- [ ] Avoid new construction in areas prone to damage
- [ ] Work more closely with private property owners
- [ ] Invest more resources in preventative maintenance
- [ ] Conduct education and awareness programs
- [ ] Other (please specify)
- [ ] Invest in more monitoring and planning for protection of community assets
- [ ] Planning to address hazards
- [ ] Investment in health care facilities & public health outreach
- [ ] Acquisition of safety equipment

5. FEMA Hazard Mitigation Assistance Grants are administered by the State Emergency Management Agency. Listed below are some types of projects considered.

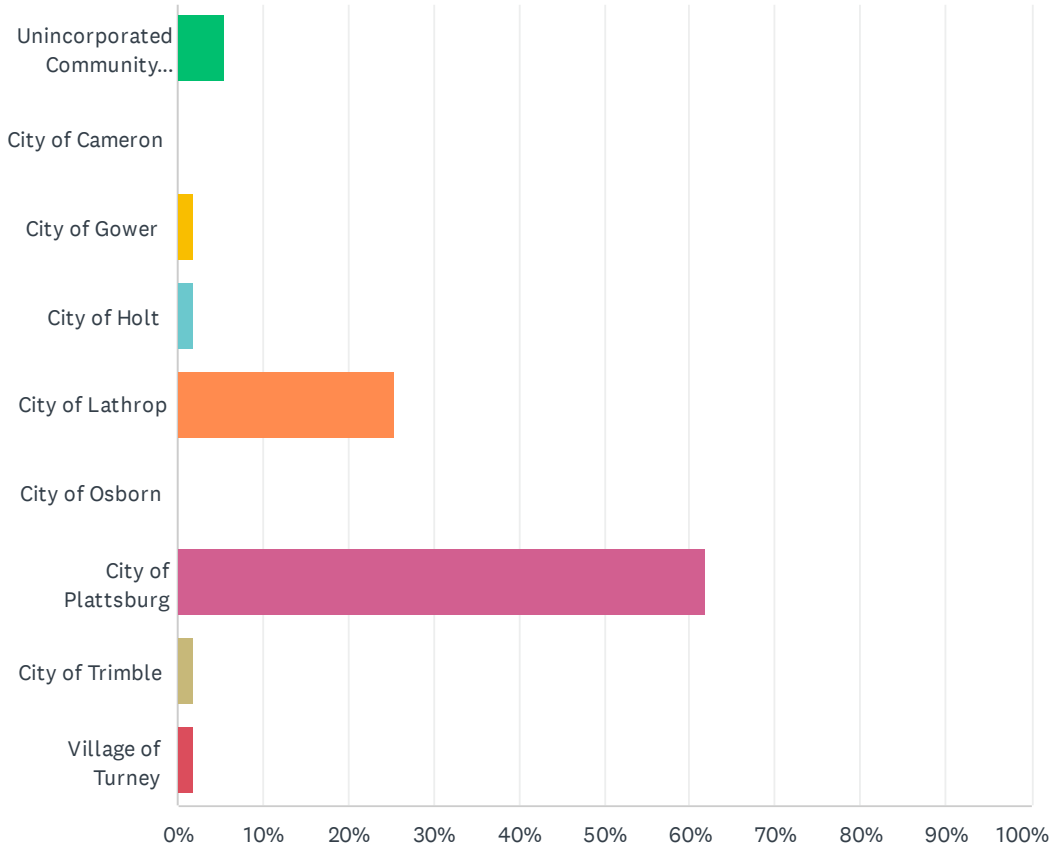
Please indicate your opinion as to which projects could benefit your community. Check all that you think would be beneficial.

- [ ] Flood-prone Property Acquisition & Structure Demolition /Relocation
- [ ] Flood-Prone Structure Elevation
- [ ] Structural Retrofitting of Existing Buildings to Add a Tornado Safe Room
- [ ] Wildfire Mitigation
- [ ] Minor Localized Flood Reduction Projects (storm water management or localized flood control projects)
- [ ] Other (please specify)
- [ ] Retrofitting of Existing Buildings, and Facilities from Wind Damage.
- [ ] New Tornado Safe Room Construction
- [ ] Electrical Utilities Infrastructure Retrofit
- [ ] Soil Erosion Stabilization
- [ ] Safety Equipment/PPE

6. Please comment on any other issues that the Buchanan County Hazard Mitigation Planning Committee should consider in developing a strategy to reduce future losses caused by natural/man-made disasters.

Q1 Where in the county do you live? Please select your community from the list:

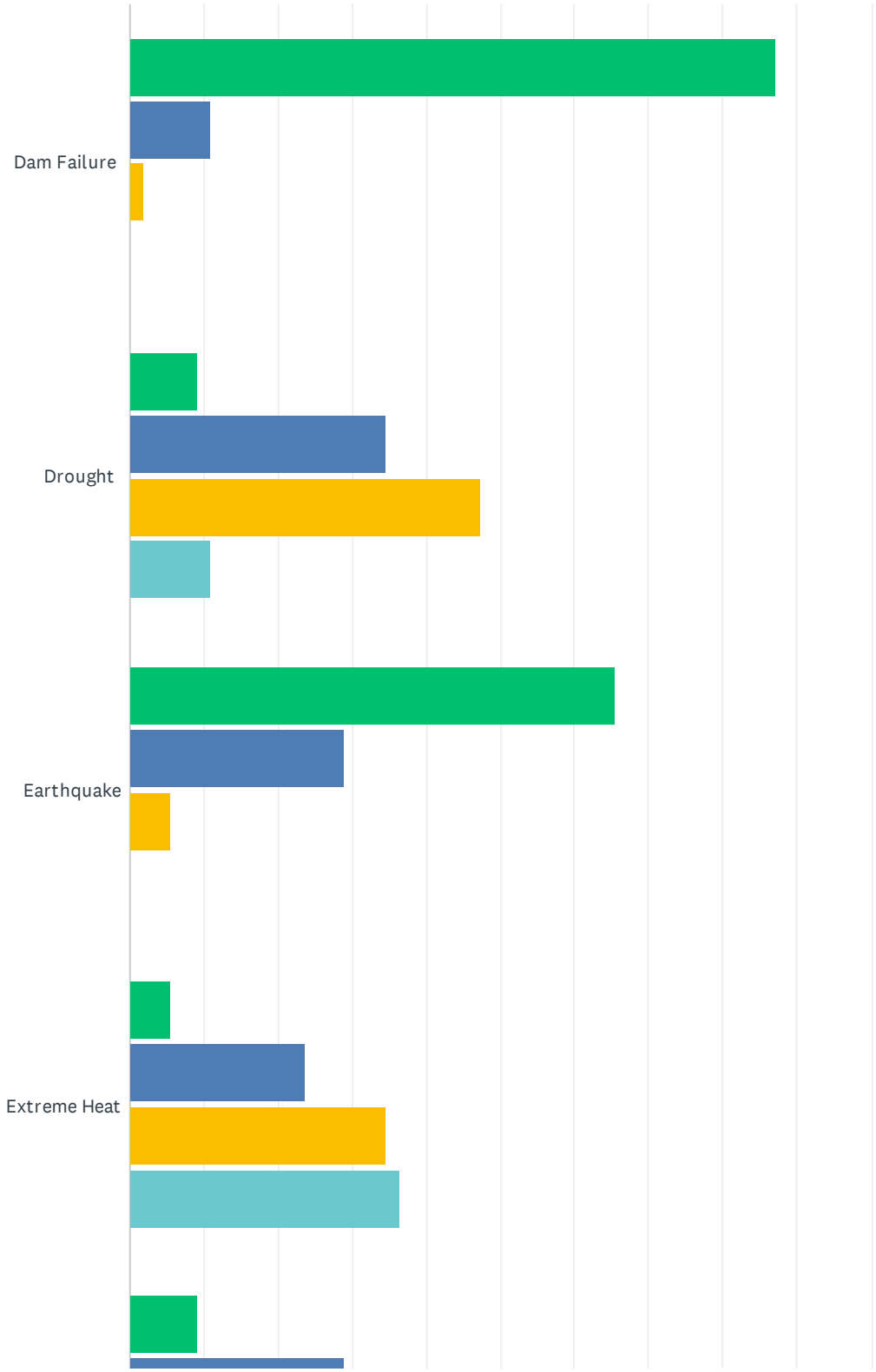
Answered: 55 Skipped: 1

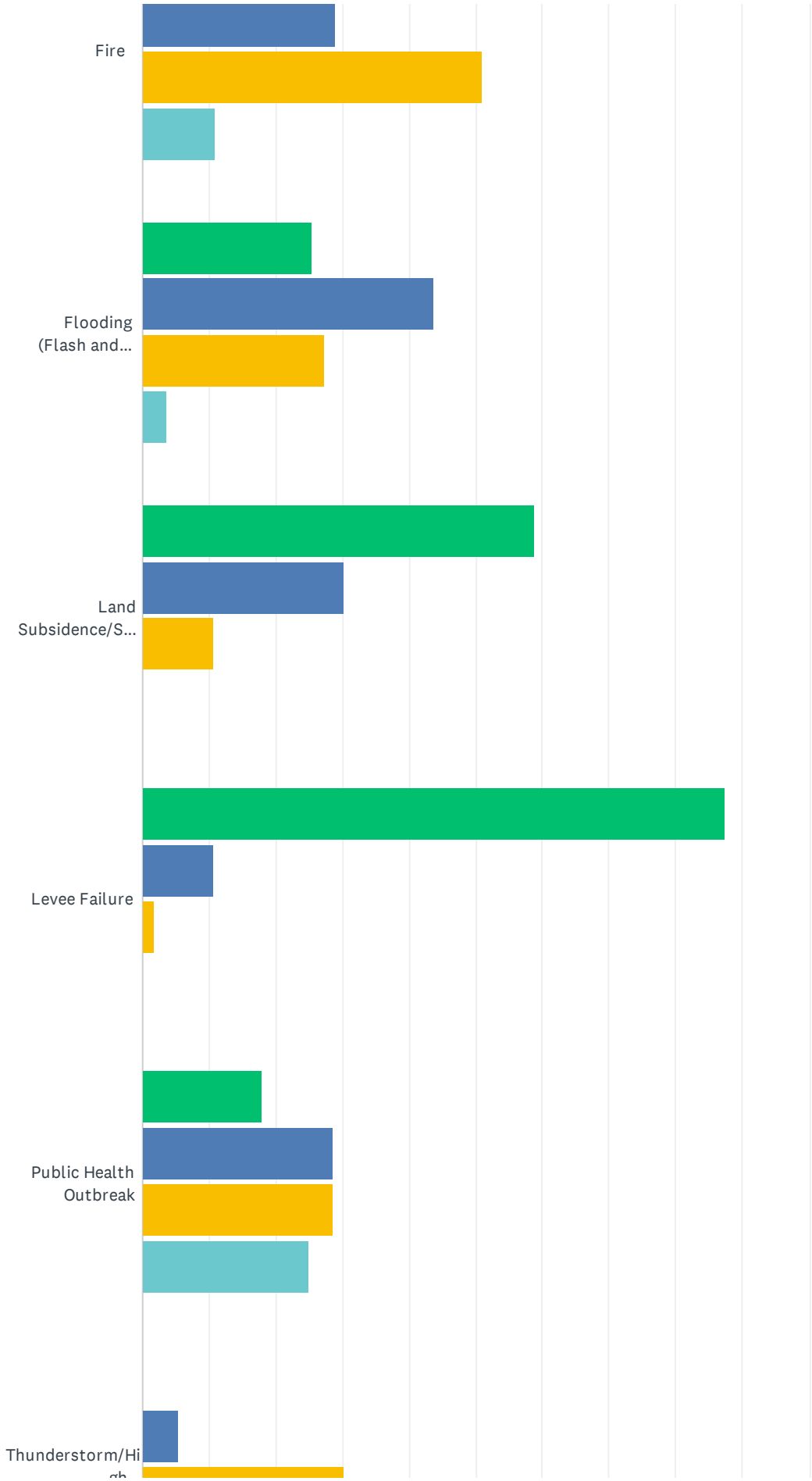


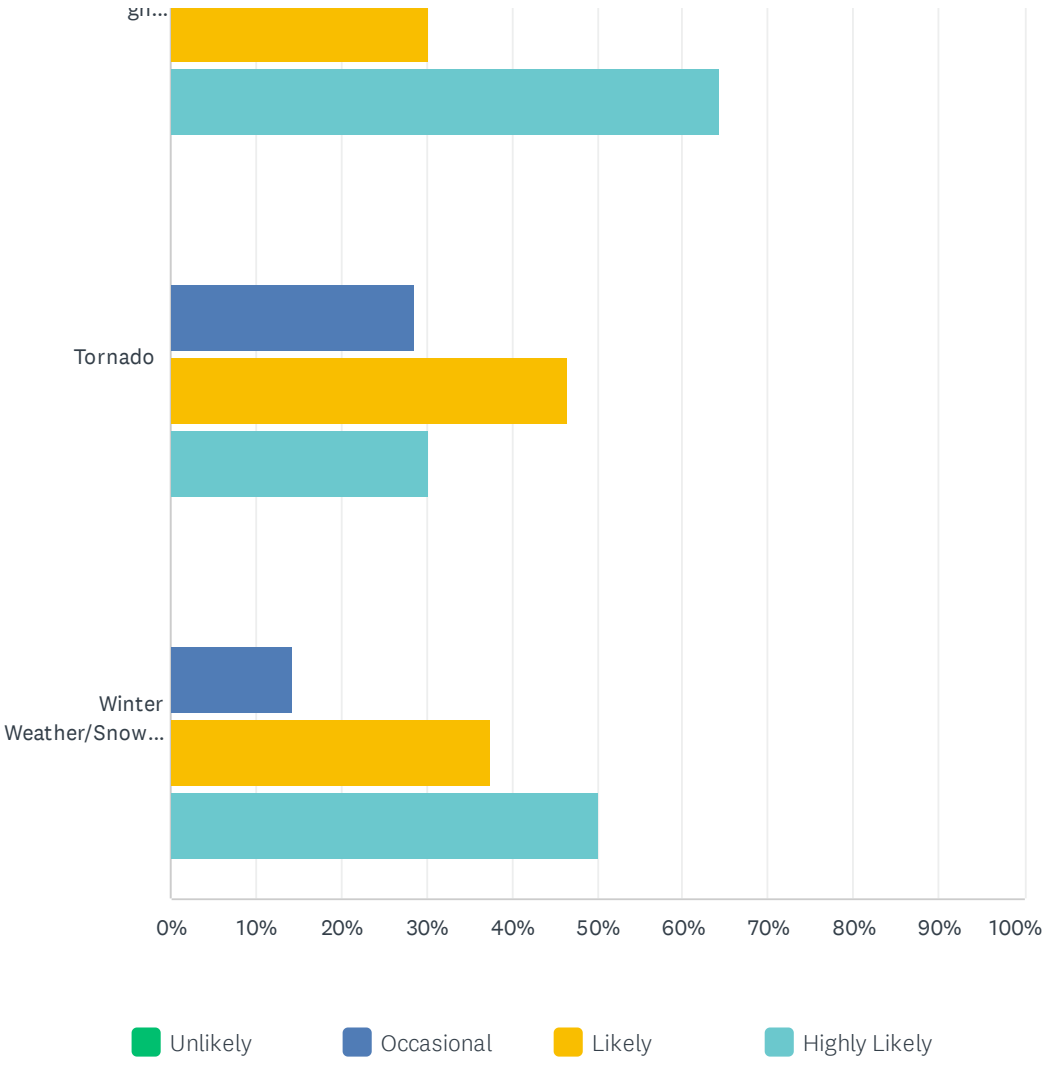
ANSWER CHOICES	RESPONSES	
Unincorporated Community (Hemple, etc.)	5.45%	3
City of Cameron	0.00%	0
City of Gower	1.82%	1
City of Holt	1.82%	1
City of Lathrop	25.45%	14
City of Osborn	0.00%	0
City of Plattsburg	61.82%	34
City of Trimble	1.82%	1
Village of Turney	1.82%	1
Total Respondents: 55		

Q2 Please indicate your opinion on the likelihood for each hazard to impact your community using the following rating system. Please rate EACH hazard using the following rating system:

Answered: 56 Skipped: 0



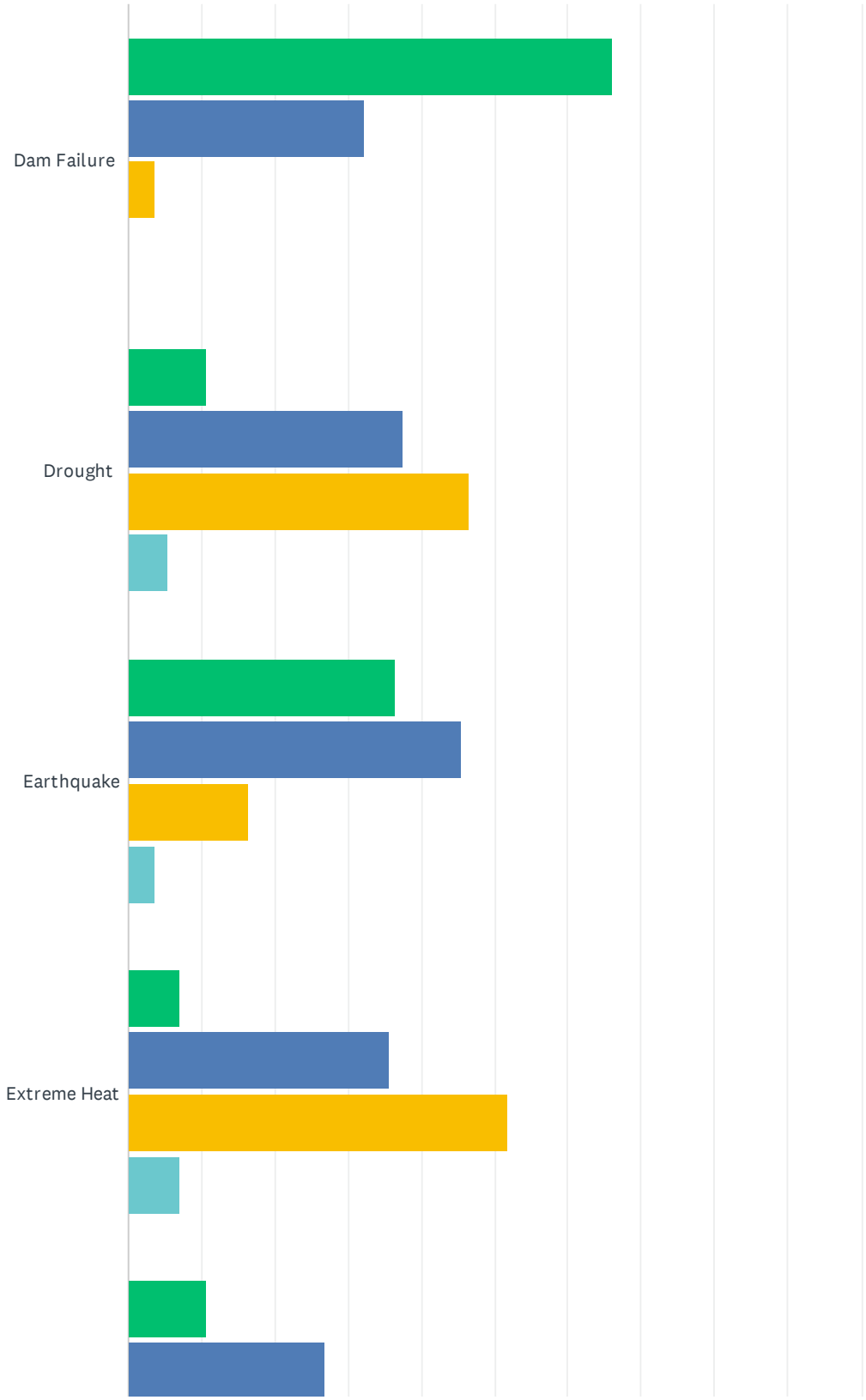

Fire
Flooding (Flash and...
Land Subsidence/S...
Levee Failure
Public Health Outbreak
Thunderstorm/Hi

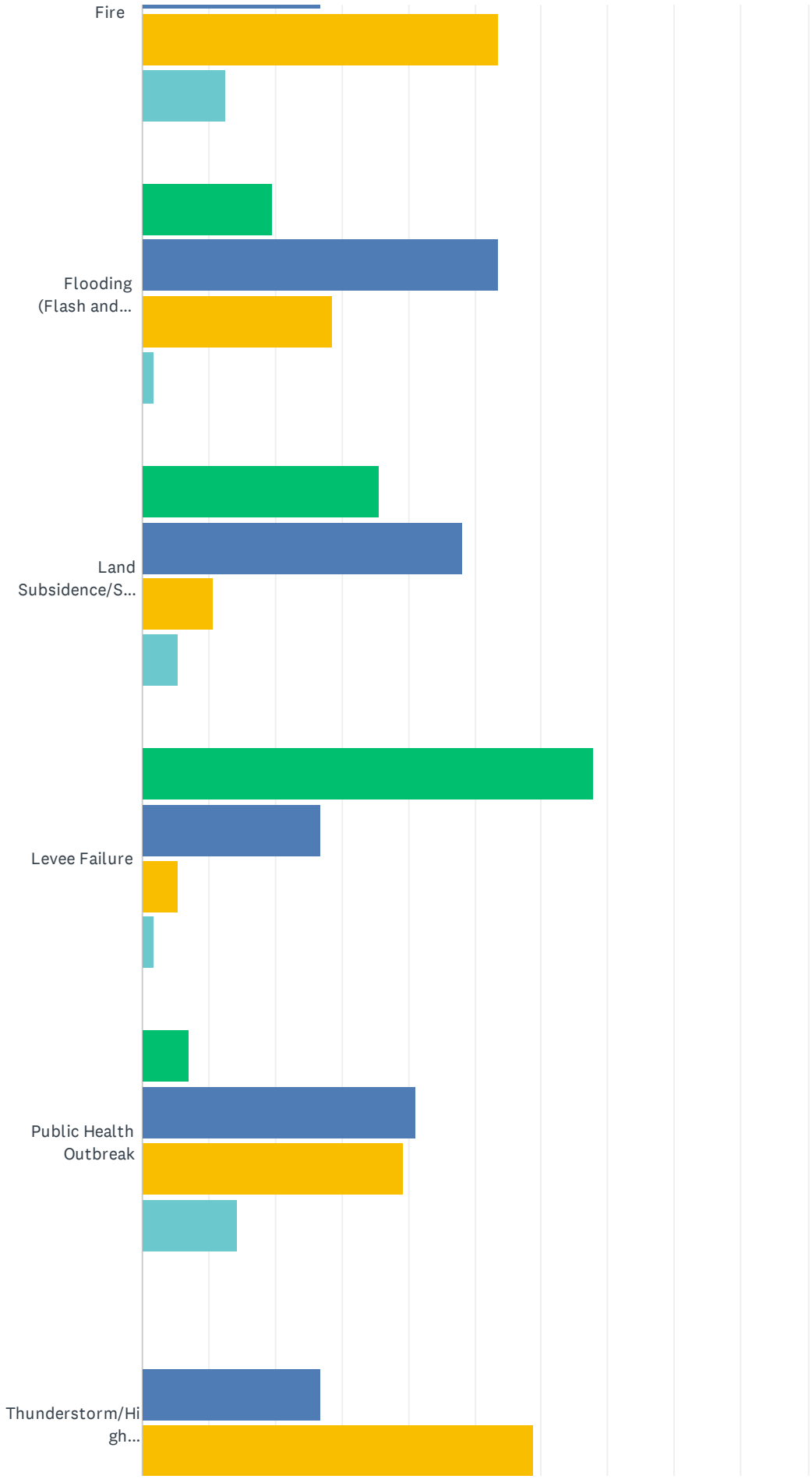

gr...
Tornado
Winter Weather/Snow...
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Unlikely
Occasional
Likely
Highly Likely

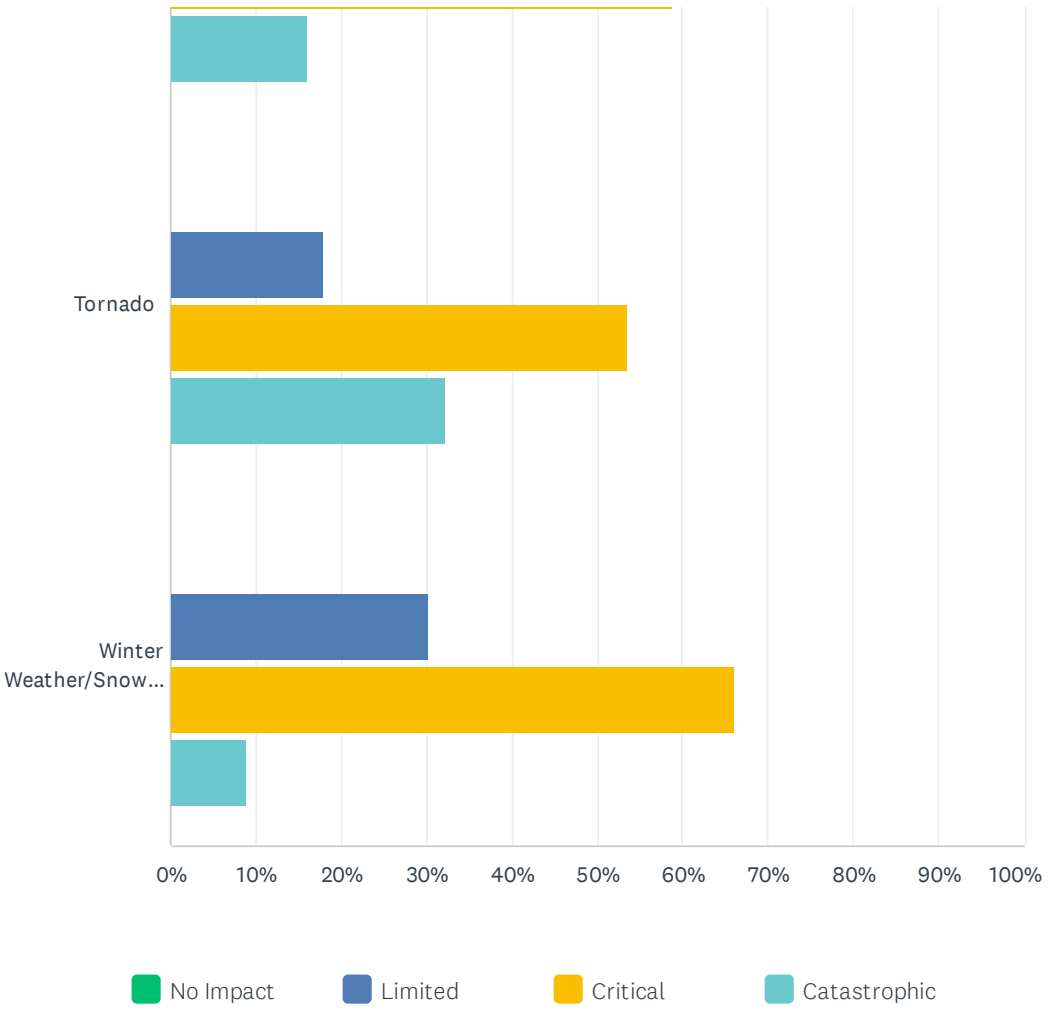
	UNLIKELY	OCCASIONAL	LIKELY	HIGHLY LIKELY	TOTAL RESPONDENTS
Dam Failure	87.27% 48	10.91% 6	1.82% 1	0.00% 0	55
Drought	9.09% 5	34.55% 19	47.27% 26	10.91% 6	55
Earthquake	65.45% 36	29.09% 16	5.45% 3	0.00% 0	55
Extreme Heat	5.45% 3	23.64% 13	34.55% 19	36.36% 20	55
Fire	9.09% 5	29.09% 16	50.91% 28	10.91% 6	55
Flooding (Flash and River)	25.45% 14	43.64% 24	27.27% 15	3.64% 2	55
Land Subsidence/Sinkhole	58.93% 33	30.36% 17	10.71% 6	0.00% 0	56
Levee Failure	87.50% 49	10.71% 6	1.79% 1	0.00% 0	56
Public Health Outbreak	17.86% 10	28.57% 16	28.57% 16	25.00% 14	56
Thunderstorm/High Winds/Lightning/Hail	0.00% 0	5.36% 3	30.36% 17	64.29% 36	56
Tornado	0.00% 0	28.57% 16	46.43% 26	30.36% 17	56
Winter Weather/Snow/Ice/Severe Cold	0.00% 0	14.29% 8	37.50% 21	50.00% 28	56

Q3 Please indicate your opinion on the potential magnitude of each hazard's impact on your community using the following rating system:

Answered: 56 Skipped: 0



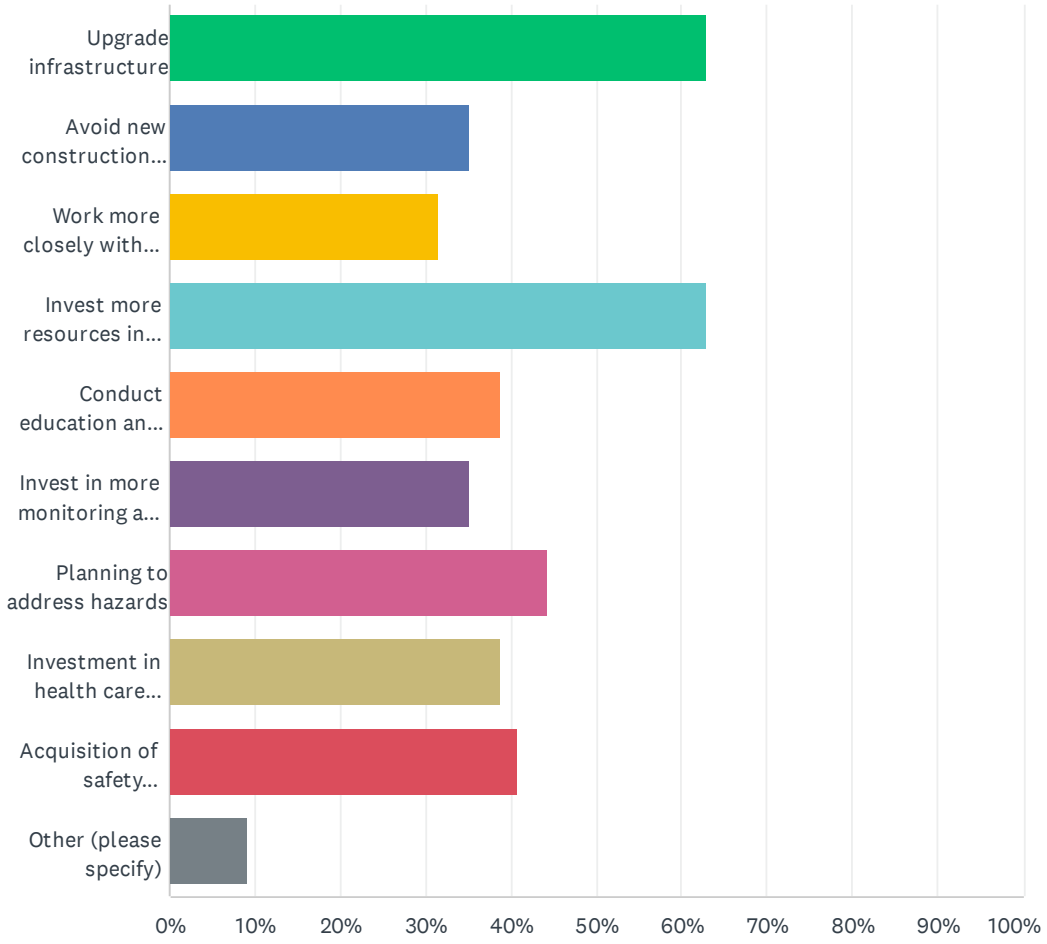

Fire
Flooding (Flash and...
Land Subsidence/S...
Levee Failure
Public Health Outbreak
Thunderstorm/High...


Tornado
Winter Weather/Snow...
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
No Impact
Limited
Critical
Catastrophic

	NO IMPACT	LIMITED	CRITICAL	CATASTROPHIC	TOTAL RESPONDENTS
Dam Failure	66.07% 37	32.14% 18	3.57% 2	0.00% 0	56
Drought	10.71% 6	37.50% 21	46.43% 26	5.36% 3	56
Earthquake	36.36% 20	45.45% 25	16.36% 9	3.64% 2	55
Extreme Heat	7.14% 4	35.71% 20	51.79% 29	7.14% 4	56
Fire	10.71% 6	26.79% 15	53.57% 30	12.50% 7	56
Flooding (Flash and River)	19.64% 11	53.57% 30	28.57% 16	1.79% 1	56
Land Subsidence/Sinkhole	35.71% 20	48.21% 27	10.71% 6	5.36% 3	56
Levee Failure	67.86% 38	26.79% 15	5.36% 3	1.79% 1	56
Public Health Outbreak	7.14% 4	41.07% 23	39.29% 22	14.29% 8	56
Thunderstorm/High Winds/Lightning/Hail	0.00% 0	26.79% 15	58.93% 33	16.07% 9	56
Tornado	0.00% 0	17.86% 10	53.57% 30	32.14% 18	56
Winter Weather/Snow/Ice/Severe Cold	0.00% 0	30.36% 17	66.07% 37	8.93% 5	56

Q4 In your opinion, which of the following strategies are the most effective investments to reduce the risk of future hazard damage? Please check all that apply.

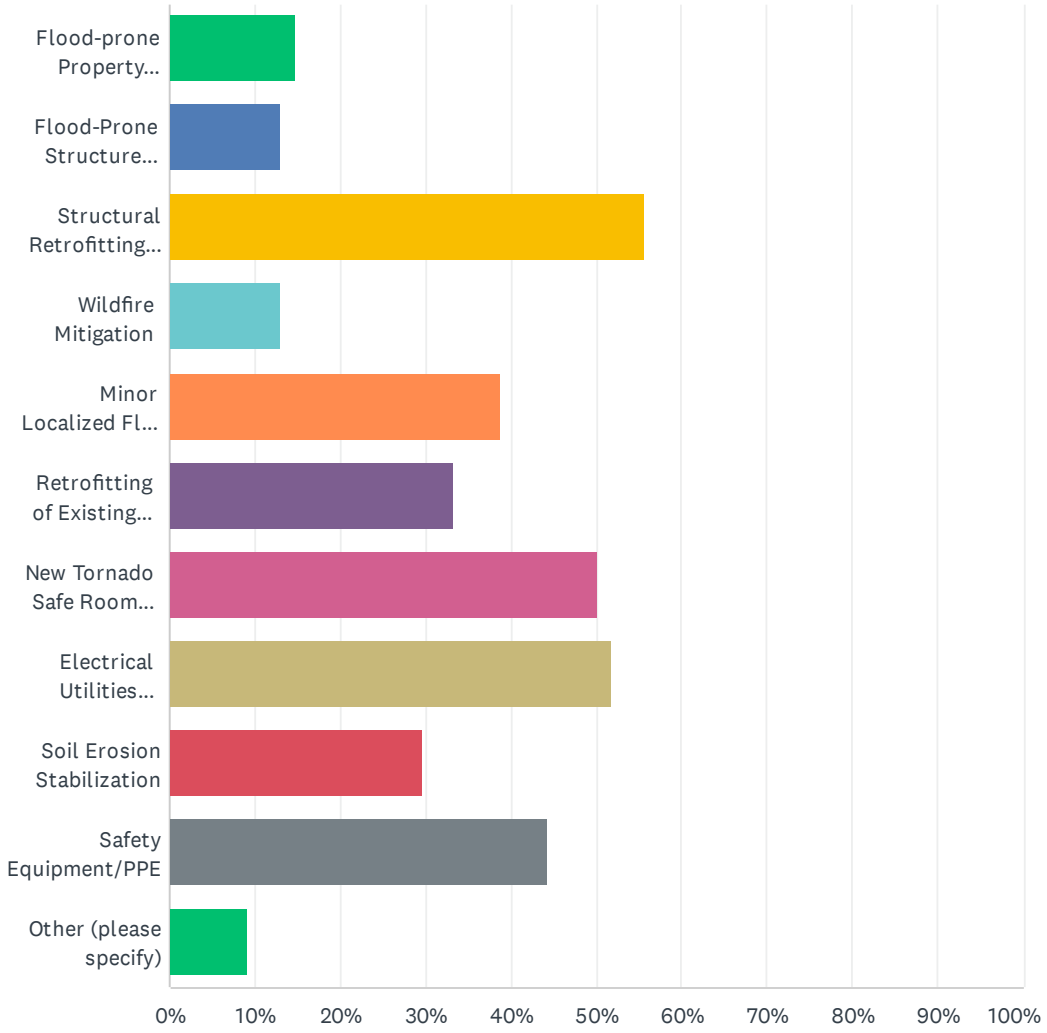
Answered: 54 Skipped: 2



ANSWER CHOICES	RESPONSES	
Upgrade infrastructure	62.96%	34
Avoid new construction in areas prone to damage	35.19%	19
Work more closely with private property owners	31.48%	17
Invest more resources in preventative maintenance	62.96%	34
Conduct education and awareness programs	38.89%	21
Invest in more monitoring and planning for protection of community assets	35.19%	19
Planning to address hazards	44.44%	24
Investment in health care facilities & public health outreach	38.89%	21
Acquisition of safety equipment	40.74%	22
Other (please specify)	9.26%	5
Total Respondents: 54		

Q5 FEMA Hazard Mitigation Assistance Grants are administered by the State Emergency Management Agency. Listed below are some types of projects considered. Please indicate your opinion as to which projects could benefit your community. Check all that you think would be beneficial.

Answered: 54 Skipped: 2



ANSWER CHOICES	RESPONSES	
Flood-prone Property Acquisition & Structure Demolition /Relocation	14.81%	8
Flood-Prone Structure Elevation	12.96%	7
Structural Retrofitting of Existing Buildings to Add a Tornado Safe Room	55.56%	30
Wildfire Mitigation	12.96%	7
Minor Localized Flood Reduction Projects (storm water management or localized flood control projects)	38.89%	21
Retrofitting of Existing Buildings, and Facilities from Wind Damage.	33.33%	18
New Tornado Safe Room Construction	50.00%	27
Electrical Utilities Infrastructure Retrofit	51.85%	28
Soil Erosion Stabilization	29.63%	16
Safety Equipment/PPE	44.44%	24
Other (please specify)	9.26%	5
Total Respondents: 54		

Q6 Please comment on any other issues that the Buchanan County Hazard Mitigation Planning Committee should consider in developing a strategy to reduce future losses caused by natural/man-made disasters.

Answered: 2 Skipped: 54

Clinton County Multi-Jurisdictional Hazard Mitigation Plan

Appendix C:

Mitigation Actions

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: ___Clinton County _____

The contractor/plan development facilitator has provided a list of actions proposed in the previously approved plan for each jurisdiction. Use the worksheet below to evaluate whether each action is still current, feasible, desirable, and/or creates benefit that outweighs the cost.

The worksheet should include information on the status of the action and progress made in implementation, if any. This includes:

- For **completed actions** provide a description of the implementation process. This may be a success story you would like to publicize in your community.
- Some of the actions might have been **ongoing** in nature, such public information and education programs. When this is the case, indicate what activity has occurred during the previous five years, and indicate if this program is still viable enough that it should be carried on into the future.
- If **no progress** has been made in the implementation of a given action, discuss why. Note that implementation is not a requirement. However, if no progress has been made, perhaps this is an action that would be appropriate to delete in the updated plan.

During review of the previously approved actions, consider whether any new actions should be proposed. Perhaps damages from a recent hazard event have indicated the need for new approaches to protect property and life. Review the problem statements from the updated plan for ideas. Also review the FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013).*

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✔ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.1.1	Review emergency access routes and evacuation routes; mitigate any problem Areas.					
1.1.2	Assess existing public facilities for the location of suitable "safe areas." If available, these "safe areas" should be clearly marked and employees and visitors should be informed of their location in public facilities.					

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✔ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.2.1	Use electronic media to alert residents of emergencies and to provide necessary information.					
1.2.3	Submit notice of interest for acquiring an outdoor warning siren.					
2.1.1	Adoption and enforcement of floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs).					
2.2.1	Develop a countywide multi-jurisdiction comprehensive storm water / watershed management plan.					
2.2.2	Incorporate hazard buffer zones into subdivision platting regulations.					
2.3.1	Add backup generators to critical facilities, including water distribution, wastewater treatment facilities and emergency shelters.					
3.1.1	Maintain a publicly accessible list of names, positions, contact information, roles, and responsibilities for all public safety positions and departments.					
3.1.2	Execute and maintain mutual aid agreements with all relevant agencies.					
3.1.3	Coordinate and link web sites for counties, municipalities, school districts, Local Emergency Planning Commission and emergency services.					
3.1.4	Continue to safeguard the most important government records in case of power outage or disaster, update plans as necessary.					

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✔ Delete – X Modify – M
		Complete	Ongoing	No Progress		
3.1.5	Make all GIS hazard information available online to county and municipal permitting departments.					
3.2.1	Review, prioritize, institute and monitor needed upgrades or retrofits for critical buildings and infrastructure.					
3.2.2	Develop plans for backup water systems for critical facilities.					
4.1.1	Educate grade school-age children in disaster preparedness and how to survive disasters.					
4.1.2	Publish detailed hazard maps on all city and county websites and provide paper copies to the public.					
4.1.3	Continue to educate inform dam owners and citizens living near the inundation zones of dams about the need to properly maintain and upgrade these structures, particularly those that are more than 50 years old.					
4.1.4	Educate grade school-age children in disaster preparedness and how to survive disasters.					

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: _Cameron _____

The contractor/plan development facilitator has provided a list of actions proposed in the previously approved plan for each jurisdiction. Use the worksheet below to evaluate whether each action is still current, feasible, desirable, and/or creates benefit that outweighs the cost.

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- For **completed actions** provide a description of the implementation process. This may be a success story you would like to publicize in your community.
- Some of the actions might have been **ongoing** in nature, such public information and education programs. When this is the case, indicate what activity has occurred during the previous five years, and indicate if this program is still viable enough that it should be carried on into the future.
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During review of the previously approved actions, consider whether any new actions should be proposed. Perhaps damages from a recent hazard event have indicated the need for new approaches to protect property and life. Review the problem statements from the updated plan for ideas. Also review the FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013).*

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.2.2	Submit notice of interest for acquiring an outdoor warning siren.		x		Lack of Funding	
2.1.2	Adoption and enforcement of floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs)		x		We do have a flood plan ordinance but continue to comply and follow the ordinance	
	Submit notice of interest for upgrading Radio communications Police, Fire, EMS		x		Lack of Funding	

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
	Monitor drought for shortage of water with our city reservoir.		x		Working on building a water line from St. Joseph to Cameron.	
	Upgrade water rescue boat and equipment with Fire Department.		X		Lack of Funding	

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: ___Gower_____

The contractor/plan development facilitator has provided a list of actions proposed in the previously approved plan for each jurisdiction. Use the worksheet below to evaluate whether each action is still current, feasible, desirable, and/or creates benefit that outweighs the cost.

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- Some of the actions might have been **ongoing** in nature, such public information and education programs. When this is the case, indicate what activity has occurred during the previous five years, and indicate if this program is still viable enough that it should be carried on into the future.
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#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.1.3	City will inform citizens about the importance of having and using a weather radio or a weather phone app.	✓				✓
1..2.3	Submit notice of interest for acquiring an outdoor warning siren.			✓	Sirens already in place and operational	✓
1.2.4	Coordinate with residents and businesses to stay informed on changing and dangerous weather by using current technology.		✓		Utilizing Social Media, Text Meg., and other methods of warning	✓

2.1.3	Adoption and enforcement of floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs).			✓	Not in Flood Plain	X

ACTION WORKSHEET Guidance

Action Worksheet	
Name of Jurisdiction:	City of Gower, Missouri
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Storm, Winter Storm
Problem being Mitigated:	Provide shelter for the community in the event of a sever storm or power outage due to storms during any season, particularly to provide warmth or cooling.
Action or Project	
Applicable Goal Statement:	City is in need of a safe place where community members can go in the event of approaching storms or when storms or other events have caused power outages affecting community protection from hazardous heat or cold.
Action/Project Number:	3.1
Name of Action or Project:	Emergency Shelter with backup power generation
Mitigation Category:	Emergency Services
Action or Project Description:	Provide or partner with an organization within the city to provide a safe place for community members to go to in the event of an emergency due to approaching storms or prolonged power outages which require providing cooling during extreme heat situations and warmth during extreme and/or prolonged icey/cold weather.
Estimated Cost:	
Benefits:	The preservation of life for those in the community with no basement or other shelter in the event of tornadic storms and a place for those vulnerable citizens to escape sweltering and/or freezing conditions in their homes as the weather would dictate.
Plan for Implementation	
Responsible Organization/Department:	City of Gower
Supporting Organization/Department:	Gower Christian Church/Gower Baptist Church
Action/Project Priority:	Medium
Timeline for Completion:	3-5 years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	
Progress Report	
Action Status:	
Report of Progress:	

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: ____Lathrop_____

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- For **completed actions** provide a description of the implementation process. This may be a success story you would like to publicize in your community.
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#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.1.4	Maintain an up-to-date list of addresses with shelters to assist fire departments and emergency services agencies to locate survivors after natural hazard event.		✓			✓
1.2.5	Submit notice of interest for a grant for an outdoor warning siren.	✓				X
1.3.2	Increase the number of facilities with generators/emergency power that can be used as shelters in the event of natural disasters.		✓		Added 4 additional generators. Would like one more for shelter	✓

1.3.3	Require construction of a wind-resistant shelter with a capacity suitable to handle the expected population in any new trailer park, or park undergoing renovation or expansion.		✓		would like to add to current trailer park & future parks.	✓
2.1.5	Adoption and enforcement of floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs).		✓			✓
2.3.2	Add backup generators to critical facilities, including water distribution, wastewater treatment facilities and emergency shelters.		✓		Added 3 generators for waste water Treatment	✓
2.3.3	Create up-to-date commercial and industrial disaster plans that are coordinated with community disaster plans.		✓			✓
2.3.4	Maintain emergency lists with names and phone numbers of plant managers and other large employers.		✓			✓
3.1.6	Coordinate and link web sites for counties, municipalities, school districts, Local Emergency Planning Commission and emergency services.		✓			✓
3.1.7	Continue to safeguard the most important government records in case of power outage or disaster, update plans as necessary.		✓			✓
3.1.8	Coordinate and link web sites for counties, municipalities, school districts, Local Emergency Planning Commission and emergency services.		✓			✓
3.2.3	Review, prioritize, institute and monitor needed upgrades or retrofits for critical buildings and infrastructures.		✓			✓

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: ___Plattsburg_____

The contractor/plan development facilitator has provided a list of actions proposed in the previously approved plan for each jurisdiction. Use the worksheet below to evaluate whether each action is still current, feasible, desirable, and/or creates benefit that outweighs the cost.

The worksheet should include information on the status of the action and progress made in implementation, if any. This includes:

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#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
2.1.6	Adoption and enforcement of floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs).		✓		Recently hired a Part-Time Code Enforcement Officer	
3.1.11	Continue to safeguard the most important government records in case of power outage or disaster, update plans as necessary.		✓		Ongoing project. Exploring options to digitize records.	✓

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Earthquake, Severe Thunderstorms, Severe Winter Weather, Tornadoes, Utility Emergencies
Problem being Mitigated:	Unexpected Loss of Electricity
Action or Project	
Applicable Goal Statement:	Decrease community vulnerability in the event of an unexpected loss of electricity (MU-13 Protect Infrastructure and Critical Facilities)
Action/Project Number:	3.2.6
Name of Action or Project:	
Mitigation Category:	Structure & Infrastructure Projects
Action or Project Description:	Purchase and install backup electrical generators (and quick generator hook-ups) for public buildings, community facilities, and critical infrastructure.
Estimated Cost:	$60,000
Benefits:	This will improve community resiliency by allowing public buildings and critical infrastructure to continue operating if a disaster were to disrupt the electrical supply.
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Preparedness Agency
Supporting Organization/Department:	City of Plattsburg – Public Works Department
Action/Project Priority:	Medium Priority
Timeline for Completion:	With funding, this project would take approximately three years to complete.
Potential Fund Sources:	FEMA Grant Funding, State Funding, Municipal Funds, Funds from other government entities, Private donations
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping
Progress Report	
Action Status:	
Report of Progress:	

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Dam Failure, Severe Thunderstorm
Problem being Mitigated:	Flooding / Flash Flooding
Action or Project	
Applicable Goal Statement:	Reduce number of properties threatened by flooding / flash flooding (F-12 Remove Existing Structures from Flood Hazard Areas)
Action/Project Number:	2.2.7
Name of Action or Project:	
Mitigation Category:	Prevention; Local Planning & Regulations
Action or Project Description:	Plattsburg has 17 residential, 5 commercial, and 1 governmental structure located in the flood plain or flood hazard zone. This project would be to purchase some of these properties to demolish the structures in order to reduce risks associated with flood emergencies
Estimated Cost:	$25,000 - $5,000,000 (depending on number of properties purchased)
Benefits:	This would not only reduce the number of properties vulnerable in case of a flood, but some of the structures could be relocated to higher ground and re-sold and some of the property could be repurposed for use which isn't incompatible for
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Preparedness Agency
Supporting Organization/Department:	City of Plattsburg – Administration Department
Action/Project Priority:	Medium Priority
Timeline for Completion:	This project could be completed on an instance-by-instance basis as the individually identified floodplain / flood hazard zone properties became available for purchase.
Potential Fund Sources:	FEMA Grant Funding, HUD Funding, Municipal Funds, Funding from area Community Action Agency
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping, Floodplain Map
Progress Report	
Action Status:	
Report of Progress:	

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Tornadoes, Attack, Civil Disorder, Hazardous Materials Release
Problem being Mitigated:	Tornadoes and other similar emergencies where mass notification in a short period of time is necessary
Action or Project	
Applicable Goal Statement:	Provide mass warning and notification in the event of a sudden emergency or disaster
Action/Project Number:	1.2.3
Name of Action or Project:	
Mitigation Category:	Structure & Infrastructure Projects
Action or Project Description:	Purchase and install two additional outdoor warning sirens to supplement our existing outdoor warning siren network for the portions of our community where our existing sirens cannot be heard.
Estimated Cost:	$57,000
Benefits:	This would increase warning and notification of an impending emergency for approximately 25% of our community in the far Northern and Southeastern portions of our city. These sirens would be able to be heard at our two largest outdoor parks, areas where citizens would be most vulnerable to a tornado due to a lack of sheltering options. Likewise, one of these sirens would cover the industrial park where many employees work in windowless factories and may be unaware of changing weather conditions outside.
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Planning Agency
Supporting Organization/Department:	City of Plattsburg – Public Works Department
Action/Project Priority:	High Priority
Timeline for Completion:	With funding, this project could be completed within five months.
Potential Fund Sources:	FEMA Grants, State Grants, Municipal Funds, Bonds
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping, Storm Siren Coverage Map
Progress Report	
Action Status:	
Report of Progress:	

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Tornadoes
Problem being Mitigated:	Lack of sheltering space
Action or Project	
Applicable Goal Statement:	Provide community storm shelters for the general public
Action/Project Number:	1.1.7
Name of Action or Project:	
Mitigation Category:	Structure & Infrastructure Projects
Action or Project Description:	Have four commercially fabricated, FEMA-approved, above-ground community storm shelters professionally installed in four strategically selected locations throughout town.
Estimated Cost:	$121,000
Benefits:	This would allow residents who don't have access to a basement or a saferoom the ability to safely ride out a tornado in a FEMA-approved shelter.
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Planning Agency
Supporting Organization/Department:	City of Plattsburg – Public Works Department; Plattsburg Parks Board; City of Plattsburg – Administration Department; Plattsburg Fire Protection District
Action/Project Priority:	1st Shelter = High Priority; 2nd – 4th Shelter = Medium Priority
Timeline for Completion:	With funding, we could purchase and install one shelter every six months, for a total project timeline of two years.
Potential Fund Sources:	FEMA Grants, State Grants, Municipal Funds, Private Donations, Bonds, Community Partnerships
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping
Progress Report	
Action Status:	
Report of Progress:	

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Tornadoes, Severe Winter Weather, Extreme Temperatures, Public Health Emergencies, Utility Emergencies
Problem being Mitigated:	Displaced persons due to an emergency; Life/Safety risk associated with extreme heat or cold (MU-12 Protect Structures)
Action or Project	
Applicable Goal Statement:	Upgrade existing structure to make it useful as a community shelter, cooling center, warming center, or Emergency Operations Center annex in case of emergencies or disasters.
Action/Project Number:	1.1.8
Name of Action or Project:	
Mitigation Category:	Structure & Infrastructure Projects
Action or Project Description:	There is an existing structure adjacent to City Hall which is owned by a non-profit organization and is available for community needs. This project is to add a generator to the building and purchase a limited supply of cots, bedding, emergency rations kits, and shelter supplies so that the building can be utilized as an emergency shelter or a cooling/warming center.
Estimated Cost:	$85,000
Benefits:	This would provide emergency shelter for at-risk populations who are affected by various types of disasters. Additionally, the location near City Hall makes the building a suitable backup Emergency Operations Center.
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Planning Agency
Supporting Organization/Department:	Community Courtyard Board of Directors
Action/Project Priority:	Medium Priority
Timeline for Completion:	With funding, this project would take approximately eighteen months to complete.
Potential Fund Sources:	FEMA Grants, Private Donations, Municipal Funds
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping
Progress Report	
Action Status:	
Report of Progress:	

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Severe Thunderstorm
Problem being Mitigated:	Flooding / Flash Flooding
Action or Project	
Applicable Goal Statement:	Decrease risk of loss of life or property damage due to flooding / flash flooding (F-13 Improve Stormwater Drainage System Capacity) (F-21 Preserve Floodplain as Open Space)
Action/Project Number:	2.1.4
Name of Action or Project:	
Mitigation Category:	Structure & Infrastructure Projects; Natural Systems Protection
Action or Project Description:	Purchase a vacant piece of sloped land within the flood hazard zone which channels water toward a residential neighborhood and installation of an underground stormwater detention system to prevent flash flooding from inundating existing drainage ditch and flooding portions of our community.
Estimated Cost:	$140,000
Benefits:	Stormwater would be captured and slowly released into the drainage ditch over time, preventing flooding (which occurs frequently.) Additionally, trash and contaminants would be captured in the detention system and properly disposed-of.
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Planning Agency
Supporting Organization/Department:	City of Plattsburg – Public Works Department
Action/Project Priority:	Medium Priority
Timeline for Completion:	With funding, two years
Potential Fund Sources:	FEMA Grants, State Funding, Municipal Funds
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping, Floodplain Map
Progress Report	
Action Status:	
Report of Progress:	

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Severe Thunderstorm, Public Health Emergencies/Environmental Issues
Problem being Mitigated:	Flooding / Flash Flooding
Action or Project	
Applicable Goal Statement:	Decrease risk of loss of life or property damage due to flooding / flash flooding (F-13 Improve Stormwater Drainage System Capacity)
Action/Project Number:	2.1.5
Name of Action or Project:	
Mitigation Category:	Structure & Infrastructure Projects
Action or Project Description:	Installation of a storm sewer system in the portion(s) of our city which are prone to flooding; replacing open-trench drainage ditches with closed-pipe systems.
Estimated Cost:	$1,750,000
Benefits:	Reduction of flooding-related damages and risk to life; mosquito/vector control (eliminating open ditches); eliminating dangers to pedestrians associated with open trenches
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Planning Agency
Supporting Organization/Department:	City of Plattsburg – Public Works Department
Action/Project Priority:	Medium Priority
Timeline for Completion:	With funding, the project should be completed within three years.
Potential Fund Sources:	FEMA Grants, State Funding, Municipal Funds, Bonds
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping, Floodplain Map
Progress Report	
Action Status:	
Report of Progress:	

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Flooding, Severe Thunderstorm
Problem being Mitigated:	Flooding / Flash Flooding
Action or Project	
Applicable Goal Statement:	Decrease risk of loss of life or property damage due to flooding / flash flooding (F-13 Improve Stormwater Drainage System Capacity)
Action/Project Number:	2.1.3
Name of Action or Project:	
Mitigation Category:	Structure & Infrastructure Projects
Action or Project Description:	Improve existing stormwater drainage ditch by dredging ditch to a deeper level, cleaning out debris, lining ditch with rock or concrete, and taking other measures to keep stormwater from overflowing the ditch.
Estimated Cost:	$65,000
Benefits:	Reduction of flooding-related damages and risk to life; neighborhood beautification
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Planning Agency
Supporting Organization/Department:	City of Plattsburg – Public Works Department
Action/Project Priority:	High Priority
Timeline for Completion:	With funding, the project should be completed within two years.
Potential Fund Sources:	FEMA Grants, State Funding, Municipal Funds
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping, Floodplain Map
Progress Report	
Action Status:	
Report of Progress:	

Action Worksheet	
Name of Jurisdiction:	Plattsburg
Risk / Vulnerability	
Hazard(s) Addressed:	Tornadoes
Problem being Mitigated:	Lack of severe weather shelters in residential structures
Action or Project	
Applicable Goal Statement:	Increase the number of residential storm shelters in the community (T-1 Encourage Construction of Safe Rooms)
Action/Project Number:	1.3.4
Name of Action or Project:	
Mitigation Category:	Local Planning and Regulations
Action or Project Description:	Establish a local grant program to encourage the construction of residential severe weather shelters.
Estimated Cost:	$168,000
Benefits:	This would provide grant funding to retrofit existing residential structures that don't have a safe severe weather shelter with an approved shelter. This program could partially fund severe weather shelters in a minimum of 42 residences (if we allocated a maximum of $4,000 per shelter.)
Plan for Implementation	
Responsible Organization/Department:	City of Plattsburg – Emergency Planning Agency
Supporting Organization/Department:	City of Plattsburg – Building Inspections & Code Enforcement Dept.
Action/Project Priority:	High-Medium Priority
Timeline for Completion:	With funding, we could complete the project within three years.
Potential Fund Sources:	FEMA Grants, State Grants, Municipal Funds, Private Donations
Local Planning Mechanisms to be Used in Implementation, if any:	Municipal Emergency Operations Plan, County Emergency Operations Plan, GIS Mapping
Progress Report	
Action Status:	
Report of Progress:	

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: __Trimble_____

The contractor/plan development facilitator has provided a list of actions proposed in the previously approved plan for each jurisdiction. Use the worksheet below to evaluate whether each action is still current, feasible, desirable, and/or creates benefit that outweighs the cost.

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#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.2.6	Submit notice of interest for an outdoor warning siren.	✓	✓		AWAITING INSTALLATION SUMMER 2022	
1.3.4	Develop a campaign for citizens to make a plan to assist elderly, disabled and other vulnerable friends or neighbors during a natural hazard.			✓		
2.1.7	Adoption and enforcement of floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs).		✓			

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
2.3.5	Develop plans for backup water systems for critical facilities.					

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
4.1.4	Educate grade school-age children in disaster preparedness and how to survive disasters.	✓	✓		• Safety training is provided to all staff annually. • The assistant principals create a district-wide drill schedule to practice tornado, fire, intruder, and earthquake protocols. • Processes and procedures for all safety drills and possible events are shared with the students at the start of the year and prior to each drill • Teachers offer constant reminders and practice in between drills within the classrooms independent of scheduled drills • Each drill is reviewed for strengths and weaknesses • Science weather curriculum units include instruction of what to do in the event of flooding, tornados, fires, etc. • The district works cooperatively with the city, police, and law enforcement agencies to ensure we have a common plan in place in the event of a disaster • The fire department annually presents information to our elementary students to share what to do in case of a fire at school and home	✓

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.2.2	Adding backup generators to the buildings to provide heat and electricity during power outa		✓	✓	• the district has not physically purchased generators • The district is determining which building is most easily accessible for citizens in the event of a weather event and need for shelter and would like to finish the construction at the high school prior to moving forward. The high school is the largest building available with the largest capacity, but construction prevents it from being the ideal building to use for the community shelter. • After determining the most accessible and largest building for community access, the district will seek bids for a generator that will adequately provide emergency power.	

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: ___ Lathrop R-II School District_____

The contractor/plan development facilitator has provided a list of actions proposed in the previously approved plan for each jurisdiction. Use the worksheet below to evaluate whether each action is still current, feasible, desirable, and/or creates benefit that outweighs the cost.

The worksheet should include information on the status of the action and progress made in implementation, if any. This includes:

- For **completed actions** provide a description of the implementation process. This may be a success story you would like to publicize in your community.
- Some of the actions might have been **ongoing** in nature, such public information and education programs. When this is the case, indicate what activity has occurred during the previous five years, and indicate if this program is still viable enough that it should be carried on into the future.
- If **no progress** has been made in the implementation of a given action, discuss why. Note that implementation is not a requirement. However, if no progress has been made, perhaps this is an action that would be appropriate to delete in the updated plan.

During review of the previously approved actions, consider whether any new actions should be proposed. Perhaps damages from a recent hazard event have indicated the need for new approaches to protect property and life. Review the problem statements from the updated plan for ideas. Also review the FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013).*

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.1.6	Submit notice of interest for a safe room.			✓	working on other projects.	✓
3.1.9	Maintain a publicly accessible list of names, positions, contact information, roles, and responsibilities for all public safety positions and departments.	✓				✓
3.1.10	Coordinate and link web sites for counties, municipalities, school districts, Local Emergency Planning Commission and emergency services.		✓			✓

2023 Action Clinton County R-III 4.1.5

Action Worksheet	
Name of Jurisdiction:	Clinton County R-III School District
Risk / Vulnerability	
Problem being Mitigated:	Children not knowing what to do during a natural disaster
Hazard(s) Addressed:	All
Action or Project	
Action/Project Number:	4.1.5
Name of Action or Project:	Grade School Disaster Preparedness
Action or Project Description:	Educate grade school-age children in disaster preparedness and how to survive disasters.
Applicable Goal Statement:	Ensure Access to Information About Hazard Preparation and Recovery
Estimated Cost:	None
Benefits:	Children will be prepared in the event of a natural disaster
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	High
Timeline for Completion:	1 year
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	School Emergency Plan
Progress Report	
Action Status	Continuing, In Progress
Report of Progress	New Action

Clinton County Multi-Jurisdictional Hazard Mitigation Plan

Appendix D:

Adoption Resolutions

CLINTON COUNTY, Missouri RESOLUTION NO. _

A RESOLUTION OF CLINTON COUNTY ADOPTING CLINTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS Clinton County recognizes the threat that natural hazards pose to people and property within Clinton County and

WHEREAS has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the Clinton County Multi-Jurisdictional Hazard Mitigation Plan, hereafter referred to as the *Plan*, in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the *Plan* identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Clinton County from the impacts of future hazards and disasters; and

WHEREAS Clinton County recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards Clinton County will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by Clinton County demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY Clinton County in the State of Missouri, THAT:

In accordance with (*local rule for adopting resolutions*), Clinton County adopts the final *FEMA-approved Plan*.

ADOPTED by a vote of 3 in favor and ϕ against, and ϕ abstaining, this 2nd day of February, 2023.

By (Sig): Patrick Clark
Print name: Patrick Clark Presiding Commissioner

ATTEST:
By (Sig.): David Woody by Christine Owen
Print name: Christine Owen

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

Resolution 2023-1

A RESOLUTION OF THE CITY OF CAMERON ADOPTING THE CLINTON COUNTY MULTI-JURISDICTIONAL HAZARD-MITIGATION PLAN

WHEREAS, the City of Cameron recognizes the threat that natural hazards pose to people and property of the City of Cameron; and

WHEREAS, the City of Cameron has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the Clinton County Multi-Jurisdictional Hazard Mitigation Plan, hereafter referred to as the *Plan*, in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, the *Plan* identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in City of Cameron from the impacts of future hazards and disasters; and

WHEREAS, the City of Cameron recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards. The City of Cameron will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS, adoption by the City of Cameron demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CAMERON, MISSOURI AS FOLLOWS:

Section 1. The City of Cameron hereby adopts the final *FEMA-approved Plan* attached hereto and made apart hereof.

Section 2. The Mayor is authorized to sign this Resolution approving it on behalf of the City of Cameron, Missouri.

Section 3. The City Clerk is directed to attest to the Mayor's signature.

PASSED & APPROVED this 17th day of January 2023.

Mayor Roy Estes

ATTEST:

City Clerk

APPROVED AS TO FORM:

City Attorney Padraic Corcoran

CITY OF GOWER, Missouri RESOLUTION NO. 2301

A RESOLUTION OF CITY OF GOWER ADOPTING CLINTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS City of Gower recognizes the threat that natural hazards pose to people and property City of Gower and

WHEREAS has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the Clinton County Multi-Jurisdictional Hazard Mitigation Plan, hereafter referred to as the *Plan*, in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the *Plan* identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in City of Gower from the impacts of future hazards and disasters; and

WHEREAS City of Gower recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards City of Gower will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by City of Gower demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY City of Gower in the State of Missouri, THAT:

In accordance with (*local rule for adopting resolutions*), City of Gower adopts the final *FEMA-approved Plan*.

ADOPTED by a vote of 4 in favor and 0 against, and 0 abstaining, this 13th day of February, 2023.

By (Sig): Kenneth D. Pike

Print name: Kenneth D. Pike

ATTEST:
By (Sig.): Gwen Ballou

Print name: Gwen Ballou

APPROVED AS TO FORM:
By (Sig.): Randy Jameson

Print name: Randy Jameson

CITY OF GOWER 1870 STATE OF MISSOURI

CITY OF LATHROP, Missouri RESOLUTION NO. 1

A RESOLUTION OF CITY OF LATHROP ADOPTING CLINTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS City of Lathrop recognizes the threat that natural hazards pose to people and property City of Lathrop and

WHEREAS has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the Clinton County Multi-Jurisdictional Hazard Mitigation Plan, hereafter referred to as the *Plan*, in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the *Plan* identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in City of Lathrop from the impacts of future hazards and disasters; and

WHEREAS City of Lathrop recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards City of Lathrop will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by City of Lathrop demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY City of Lathrop in the State of Missouri, THAT:

In accordance with (*local rule for adopting resolutions*), City of Lathrop adopts the final *FEMA-approved Plan*.

ADOPTED by a vote of 4 in favor and Ø against, and Ø abstaining, this 17 day of January 2023

By (Sig): Jennifer J Morrison
Print name: Jennifer Morrison

ATTEST:
By (Sig.): Susie Freece
Print name: Susie Freece

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

RESOLUTION #2023-02

A RESOLUTION BY THE MAYOR AND BOARD OF ALDERMEN OF THE CITY OF PLATTSBURG, MISSOURI, ADOPTING THE "CLINTON COUNTY HAZARD MITIGATION PLAN" AS THE CITY'S HAZARD MITIGATION PLAN

WHEREAS, the City of Plattsburg recognizes the need to have a Hazard Mitigation Plan in place to assist City leadership and citizens in planning for various emergencies and disasters; and

WHEREAS, having a Hazard Mitigation Plan in-place makes it easier for the City to apply for Hazard Mitigation Grants through various federal entities; and

WHEREAS, the staff at Mo-Kan Regional Council have drafted a Hazard Mitigation Plan for Clinton County, Missouri which includes plans for all of the municipalities therein; and

WHEREAS, the Clinton County Hazard Mitigation Plan is of good quality and satisfies all of the requirements for the City of Plattsburg's municipal hazard mitigation plan,

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND BOARD OF ALDERMEN OF THE CITY OF PLATTSBURG, MISSOURI AS FOLLOWS:

The City of Plattsburg does hereby approve and adopt the Clinton County Hazard Mitigation Plan as prepared by the staff at the Mo-Kan Regional Council as the official hazard mitigation plan for the City of Plattsburg.

PASSED, APPROVED, & ADOPTED THIS 9th DAY OF JANUARY IN THE YEAR 2023 BY THE MAYOR & BOARD OF ALDERMEN OF THE CITY OF PLATTSBURG, BY A VOTE OF 6 IN FAVOR, 0 OPPOSED, AND 0 ABSTAINING.

James M. Kennedy,
Mayor

ATTEST:

Lisa A. Read,
City Clerk

Resolution # 010423

Adopting the Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas: The City of Trimble recognizes the threat that natural hazards pose to people and property within our community: and

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

Whereas: U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards; and

Whereas: The Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas: an adopted Local Hazard Mitigation Act Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas: The City of Trimble fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas: The Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region V11 officials will review the "Clinton County Multi-Jurisdictional Local Hazard Mitigation Plan" and approved it as to form and content; and

Whereas: The City of Trimble desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Clinton County Mitigation Jurisdictional Local Hazard Mitigation Plan; and

Whereas: adoption by the governing body for The City of Trimble demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan: and

Whereas: adoption of this legitimizes the plan and authorizes responsible agencies to carry out responsibilities under the plan:

Now, therefore, be it resolved, That City of Trimble has adopted the 2023 "Clinton County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan.

Date 1-04-2023

Certifying Official MAYOR

Attest

CAMERON RI SCHOOL DISTRICT, Missouri RESOLUTION NO. 1

A RESOLUTION OF CAMERON RI SCHOOL DISTRICT ADOPTING CLINTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS Cameron RI School District recognizes the threat that natural hazards pose to people and property Cameron RI School District and

WHEREAS has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the Clinton County Multi-Jurisdictional Hazard Mitigation Plan, hereafter referred to as the *Plan*, in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the *Plan* identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Cameron RI School District from the impacts of future hazards and disasters; and

WHEREAS Cameron RI School District recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards Cameron RI School District will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by Cameron RI School District demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY Cameron RI School District in the State of Missouri, THAT:

In accordance with (*local rule for adopting resolutions*), Cameron RI School District adopts the final *FEMA-approved Plan*.

ADOPTED by a vote of 6 in favor and 0 against, and 0 abstaining, this 17th day of January, 2023.

By (Sig): Dan Kercher
Print name: Dan Kercher

ATTEST:
By (Sig.): Kelly B Walker
Print name: KELLY B WALKER

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

LATHROP RII SCHOOL DISTRICT, Missouri RESOLUTION NO. _

A RESOLUTION OF LATHROP RII SCHOOL DISTRICT ADOPTING CLINTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS Lathrop RII School District recognizes the threat that natural hazards pose to people and property Lathrop RII School District and

WHEREAS has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the Clinton County Multi-Jurisdictional Hazard Mitigation Plan, hereafter referred to as the *Plan*, in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the *Plan* identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Lathrop RII School District from the impacts of future hazards and disasters; and

WHEREAS Lathrop RII School District recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards Lathrop RII School District will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by Lathrop RII School District demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY Lathrop RII School District in the State of Missouri, THAT:

In accordance with (*local rule for adopting resolutions*), Lathrop RII School District adopts the final *FEMA-approved Plan*.

ADOPTED by a vote of 7 in favor and 0 against, and 0 abstaining, this 12th day of January, 2023.

By (Sig): _____
Print name: Matthew Holsted

ATTEST:
By (Sig.): _____
Print name: Lauren B. Claypool

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

CLINTON COUNTY R-III SCHOOL DISTRICT, Missouri RESOLUTION NO. ____

A RESOLUTION OF CLINTON COUNTY R-III SCHOOL DISTRICT ADOPTING CLINTON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS Clinton County R-III School District recognizes the threat that natural hazards pose to people and property Clinton County R-III School District and

WHEREAS has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the Clinton County Multi-Jurisdictional Hazard Mitigation Plan, hereafter referred to as the *Plan*, in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the *Plan* identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Clinton County R-III School District from the impacts of future hazards and disasters; and

WHEREAS Clinton County R-III School District recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards Clinton County R-III School District will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by Clinton County R-III School District demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan.*

NOW THEREFORE, BE IT RESOLVED BY Clinton County R-III School District in the State of Missouri, THAT:

In accordance with (*local rule for adopting resolutions*), Clinton County R-III School District adopts the final *FEMA-approved Plan*.

ADOPTED by a vote of 7 in favor and 0 against, and __ abstaining, this 20 day of February, 2023

By (Sig): _____
Print name: Charles Keith Cacnie III

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

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